



# 2012

## EMERGENCY RESPONSE GUIDEBOOK

A Guidebook for First Responders During the Initial Phase of a Dangerous Goods/Hazardous Materials Transportation Incident



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**



Transport  
Canada

Transports  
Canada



Secretariat of Transport  
and Communications

## SHIPPING DOCUMENTS (PAPERS)

Shipping Documents (Papers) are synonymous and can be found as follows:

- Road – kept in the cab of a motor vehicle
- Rail – kept in possession of a crew member
- Aviation – kept in possession of the aircraft pilot
- Marine – kept in a holder on the bridge of a vessel

Shipping Documents (Papers) provide vital information regarding the hazardous materials/dangerous goods to initiate protective actions\*

Information provided:

- 4-Digit Identification Number, UN or NA (go to Yellow Pages) \*\*
- Proper Shipping name (go to Blue Pages)
- Hazard Class or Division number of material
- Packing Group
- Emergency Response Telephone Number
- Information describing the hazards of the material (entered on or attached to shipping document)

EMERGENCY CONTACT 1-000-000-0000		EXAMPLE OF EMERGENCY CONTACT TELEPHONE NUMBER			
		HAZARD CLASS OR DIVISION NO.			
NO. & TYPE OF PACKAGES			QUANTITY		
1 TANKTRUCK	UN1219	ISOPROPANOL	3	II	12 000 LITERS
ID NUMBER		SHIPPING NAME		PACKING GROUP	

### EXAMPLE OF PLACARD AND PANEL WITH ID NUMBER

The 4-digit ID Number may be shown on the diamond-shaped placard or on an adjacent orange panel displayed on the ends and sides of a cargo tank, vehicle or rail car.



A Numbered Placard

OR

A Placard and an Orange Panel



1219

\* For the purposes of this guidebook, the terms hazardous materials/dangerous goods are synonymous.

\*\* After January 1, 2013 in the United States, the identification number **must** appear first in the basic description. For example, "UN2744, Cyclobutyl chloroformate, 6.1, (3, 8), PG II". This is currently optional in Canada.

**HOW TO USE THIS GUIDEBOOK**  
**RESIST RUSHING IN !**  
**APPROACH INCIDENT FROM UPWIND, UPHILL OR UPSTREAM**  
**STAY CLEAR OF ALL SPILLS, VAPORS, FUMES, SMOKE AND SUSPICIOUS SOURCES**

**STEP ONE: IDENTIFY THE MATERIAL** AND USE ANY OF THE FOLLOWING:

- **IDENTIFICATION NUMBER** (4-DIGIT ID AFTER UN/NA) FROM A:
  - PLACARD
  - ORANGE PANEL
  - SHIPPING PAPER OR PACKAGE
- **NAME OF THE MATERIAL** FROM A:
  - SHIPPING DOCUMENT OR PACKAGE

**STEP TWO: IDENTIFY 3-DIGIT GUIDE NUMBER, USE:**

- ID NUMBER INDEX in **yellow-bordered pages** or
- NAME OF MATERIAL INDEX in **blue-bordered pages**

Guide number supplemented with the letter **(P)** indicates that the material may undergo violent polymerization if subjected to heat or contamination.

**INDEX ENTRIES HIGHLIGHTED IN GREEN** are a TIH (Toxic Inhalation Hazard) material, a chemical warfare agent or a Dangerous Water Reactive Material (produces toxic gas upon contact with water).

**IDENTIFY ID NUMBER AND NAME OF MATERIAL** IN TABLE 1 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES (**the green-bordered pages**).

**IF NECESSARY, BEGIN PROTECTIVE ACTIONS IMMEDIATELY** (see Protective Actions page 288). If no protective action required, use the information jointly with the 3-digit guide.

**IF A REFERENCE TO A GUIDE CANNOT BE FOUND AND THIS INCIDENT IS BELIEVED TO INVOLVE DANGEROUS GOODS:**

- **Use GUIDE 111**, UNTIL ADDITIONAL INFORMATION BECOMES AVAILABLE
- **Use GUIDE 112**, EXPLOSIVES (other than 1.4 and 1.6)
- **Use GUIDE 114**, EXPLOSIVES (1.4 and 1.6)

**STEP THREE: TURN TO THE NUMBERED GUIDE** (**the orange-bordered pages**) **READ CAREFULLY.**

**IF A PLACARD IS THE ONLY SOURCE OF INFORMATION**, turn to pages 6-7 and **use the 3-digit guide next to the placard and Proceed to Numbered Guide in orange-bordered pages.**

**AS A LAST RESORT:** IF ONLY THE CONTAINER CAN BE IDENTIFIED, CONSULT THE TABLE OF RAIL CAR AND ROAD TRAILER IDENTIFICATION CHART (pages 8-9). INFORMATION ASSOCIATED WITH THESE CONTAINERS IS FOR WORST-CASE SCENARIOS.

**CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER:**

- Listed on the shipping paper, if available.
- If shipping paper is not available, **IMMEDIATELY CALL the appropriate emergency response agency telephone number listed on the inside back cover of this guidebook.**
- Provide as much information as possible, such as the name of the carrier (trucking company or railroad) and vehicle number.

**BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK!**

First responders must be trained in the use of this guidebook.

## **SAFETY PRECAUTIONS**

### **RESIST RUSHING IN!**

#### **APPROACH CAUTIOUSLY FROM *UPWIND, UPHILL OR UPSTREAM*:**

- Stay clear of ***Vapor, Fumes, Smoke*** and ***Spills***
- Keep vehicle at a safe distance from the scene

#### **SECURE THE SCENE:**

- Isolate the area and protect yourself and others

#### **IDENTIFY THE HAZARDS USING ANY OF THE FOLLOWING:**

- Placards
- Container labels
- Shipping documents
- Rail Car and Road Trailer Identification Chart
- Material Safety Data Sheets (MSDS)
- Knowledge of persons on scene
- Consult applicable guide page

#### **ASSESS THE SITUATION:**

- Is there a fire, a spill or a leak?
- What are the weather conditions?
- What is the terrain like?
- Who/what is at risk: people, property or the environment?
- What actions should be taken – evacuation, shelter in-place or dike?
- What resources (human and equipment) are required?
- What can be done immediately?

#### **OBTAIN HELP:**

- Advise your headquarters to notify responsible agencies and call for assistance from qualified personnel

#### **RESPOND:**

- Enter only when wearing appropriate protective gear
- Rescue attempts and protecting property must be weighed against you becoming part of the problem
- Establish a command post and lines of communication
- Continually reassess the situation and modify response accordingly
- Consider safety of people in the immediate area first, including your own safety

**ABOVE ALL:** Do not assume that gases or vapors are harmless because of lack of a smell—odorless gases or vapors may be harmful. Use **CAUTION** when handling empty containers because they may still present hazards until they are cleaned and purged of all residues.

## **NOTIFICATION AND REQUEST FOR TECHNICAL INFORMATION**

Follow the steps outlined in your organization's standard operating procedures and/or local emergency response plan for obtaining qualified assistance. Generally, the notification sequence and requests for technical information beyond what is available in this guidebook should occur in the following order:

### **1. NOTIFY YOUR ORGANIZATION/AGENCY**

- Based on information provided, this will set in motion a series of events
- Actions may range from dispatching additional trained personnel to the scene, to activating the local emergency response plan
- Ensure that local fire and police departments have been notified

### **2. CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER ON THE SHIPPING DOCUMENT**

- If shipping paper is not available, use guidance under next section "**NATIONAL ASSISTANCE**"

### **3. NATIONAL ASSISTANCE**

- Contact the appropriate emergency response agency listed on the inside back cover of this guidebook
- Provide as much information about the hazardous material and the nature of the incident
- The agency will provide immediate advice on handling the early stages of the incident
- The agency will also contact the shipper or manufacturer of the material for more detailed information if necessary
- The agency will request on-scene assistance when necessary

### **4. PROVIDE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE:**

- Your name, call-back telephone number, FAX number
- Location and nature of problem (spill, fire, etc.)
- Name and identification number of material(s) involved
- Shipper/consignee/point-of-origin
- Carrier name, rail car or truck number
- Container type and size
- Quantity of material transported/released
- Local conditions (weather, terrain)
- Proximity to schools, hospitals, waterways, etc.
- Injuries and exposures
- Local emergency services that have been notified

## HAZARD CLASSIFICATION SYSTEM

The hazard class of dangerous goods is indicated either by its class (or division) number or name. Placards are used to identify the class or division of a material. The hazard class or division number must be displayed in the lower corner of a placard and is required for both primary and subsidiary hazard classes and divisions, if applicable. For other than Class 7 or the OXYGEN placard, text indicating a hazard (for example, "CORROSIVE") is not required. Text is shown only in the U.S. The hazard class or division number and subsidiary hazard classes or division numbers placed in parentheses (when applicable), must appear on the shipping document after each proper shipping name.

### **Class 1 - Explosives**

Division 1.1	Explosives with a mass explosion hazard
Division 1.2	Explosives with a projection hazard
Division 1.3	Explosives with predominantly a fire hazard
Division 1.4	Explosives with no significant blast hazard
Division 1.5	Very insensitive explosives with a mass explosion hazard
Division 1.6	Extremely insensitive articles

### **Class 2 - Gases**

Division 2.1	Flammable gases
Division 2.2	Non-flammable, non-toxic* gases
Division 2.3	Toxic* gases

### **Class 3 - Flammable liquids (and Combustible liquids [U.S.]**

### **Class 4 - Flammable solids; Spontaneously combustible materials; and Dangerous when wet materials/Water-reactive substances**

Division 4.1	Flammable solids
Division 4.2	Spontaneously combustible materials
Division 4.3	Water-reactive substances/Dangerous when wet materials

### **Class 5 - Oxidizing substances and Organic peroxides**

Division 5.1	Oxidizing substances
Division 5.2	Organic peroxides

### **Class 6 - Toxic\* substances and Infectious substances**

Division 6.1	Toxic* substances
Division 6.2	Infectious substances

### **Class 7 - Radioactive materials**

### **Class 8 - Corrosive substances**

### **Class 9 - Miscellaneous hazardous materials/Products, Substances or Organisms**

\* The words "poison" or "poisonous" are synonymous with the word "toxic".

## INTRODUCTION TO THE TABLE OF PLACARDS

### **USE THE TABLE OF PLACARDS ONLY WHEN THE ID NUMBER OR PROPER SHIPPING NAME IS NOT AVAILABLE.**

The next two pages display the placards used on transport vehicles carrying dangerous goods with the applicable reference GUIDE circled. Follow these steps:

- 1. Approach scene from upwind, uphill or upstream at a safe distance to safely identify and/or read the placard or orange panel. Use binoculars if available.**
- 2. Match the vehicle placard(s) with one of the placards displayed on the next two pages.**
- 3. Consult the circled guide number associated with the placard. Use that guide information for now. For example:**

- Use GUIDE **(127)** for a FLAMMABLE (Class 3) placard



- Use GUIDE **(153)** for a CORROSIVE (Class 8) placard



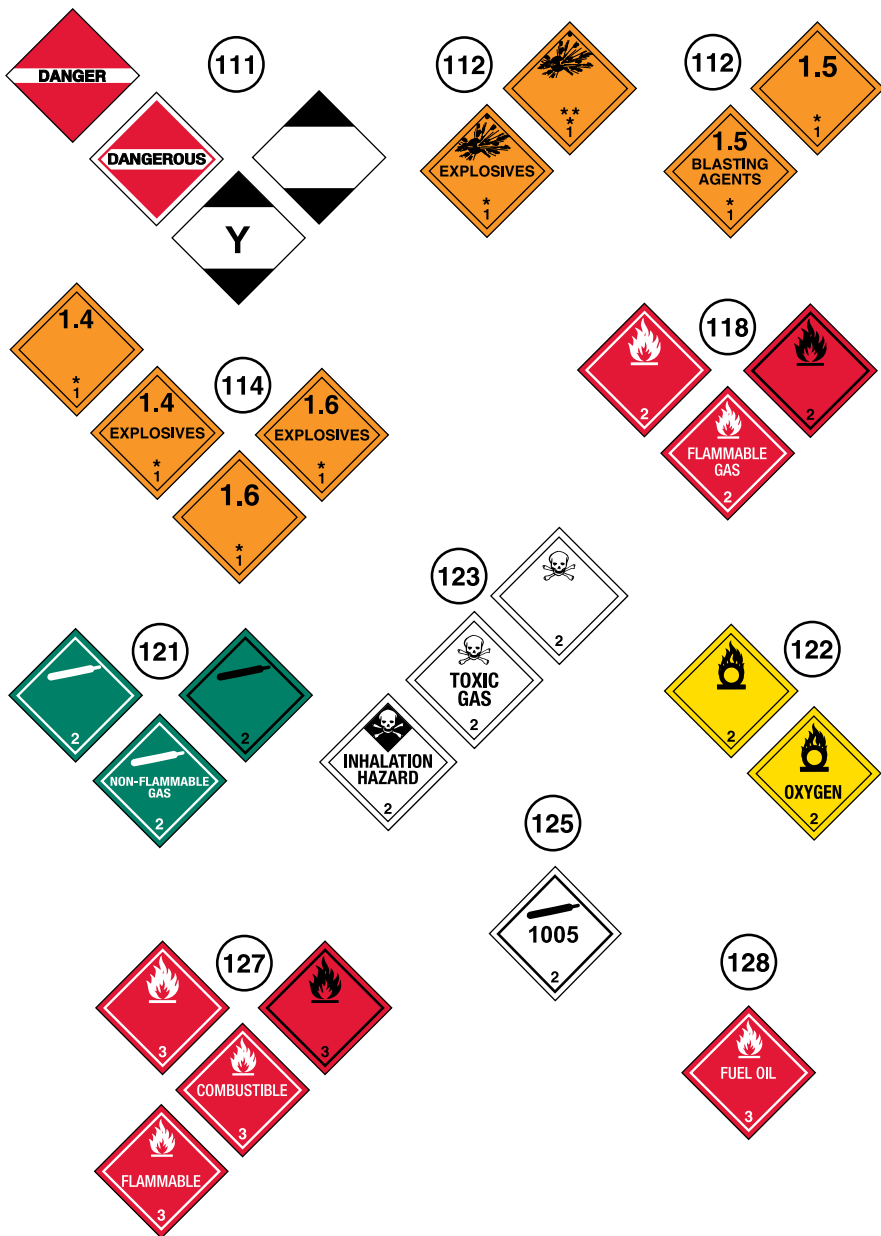
- Use GUIDE **(111)** when the DANGER/DANGEROUS placard is displayed or the nature of the spilled, leaking or burning material is not known. Also use this GUIDE when the presence of dangerous goods is suspected but no placards can be seen.

If multiple placards point to more than one guide, initially use the most conservative guide (i.e., the guide requiring the greatest degree of protective actions).

- 4. Guides associated with the placards provide the most significant risk and/or hazard information.**
- 5. When specific information, such as ID number or proper shipping name, becomes available, the more specific Guide recommended for that material must be consulted.**
- 6. Asterisks (\*) on orange placards represent explosives “Compatibility Group” letters; refer to the Glossary (page 375).**
- 7. Double asterisks (\*\*) on orange placards represent the division of the explosive.**

# TABLE OF PLACARDS AND INITIAL

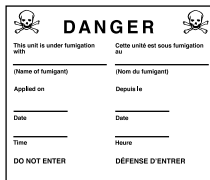
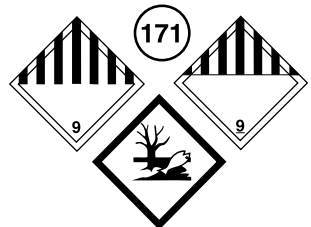
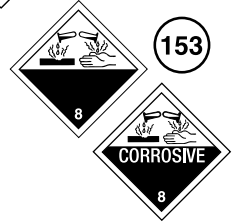
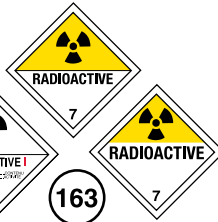
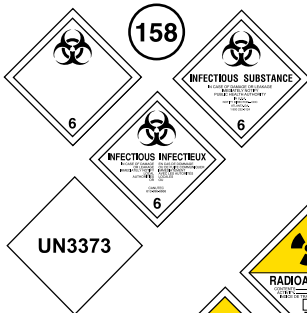
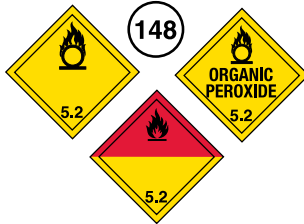
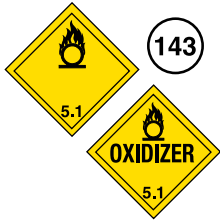
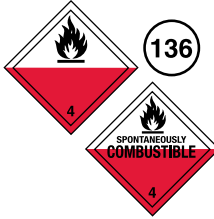
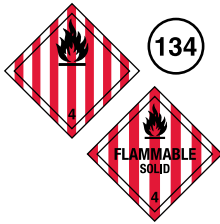
USE THIS TABLE ONLY IF MATERIALS CANNOT BE SPECIFICALLY IDENTIFIED BY



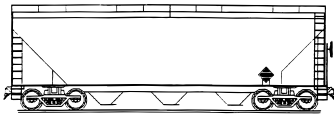


# RESPONSE GUIDE TO USE ON-SCENE

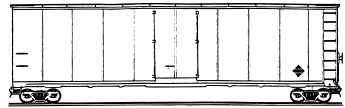
USING THE SHIPPING DOCUMENT, NUMBERED PLACARD, OR ORANGE PANEL NUMBER



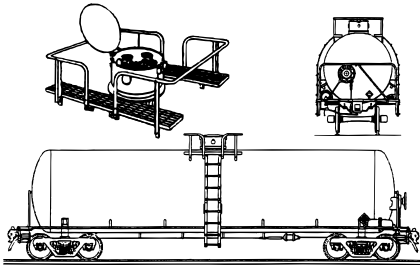
# RAIL CAR IDENTIFICATION CHART\*



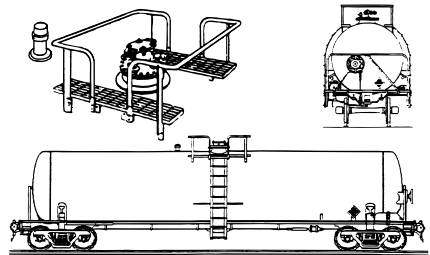
**Hopper Car  
Dry Bulk** (140)



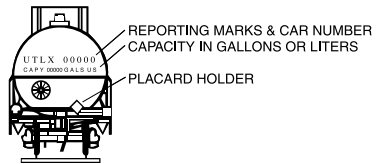
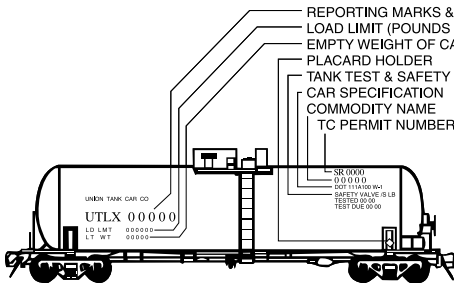
**Box Car  
Mixed Cargo** (111)



**Pressure Tank Car  
Compressed Liquefied Gases**  
(Closed Dome Only on top) (117)



**Low Pressure Tank Car  
Liquids**  
(Closed Dome and Outlets on top) (131)



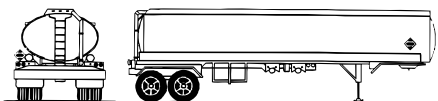
**CAUTION:** Emergency response personnel must be aware that rail tank cars vary widely in construction, fittings and purpose. Tank cars could transport products that may be solids, liquids or gases. The products may be under pressure. It is essential that products be identified by consulting shipping documents or train consist or contacting dispatch centers before emergency response is initiated.

The information stenciled on the sides or ends of tank cars, as illustrated above, may be used to identify the product utilizing:

- a. the commodity name shown; or
- b. the other information shown, especially reporting marks and car number which, when supplied to a dispatch center, will facilitate the identification of the product.

\* **The recommended guides should be considered as last resort if the material cannot be identified by any other means.**

## ROAD TRAILER IDENTIFICATION CHART\*



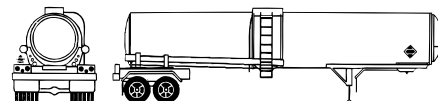
DOT406, TC406, SCT-306  
Non-pressure Liquid Tank  
(MC306, TC306)

131



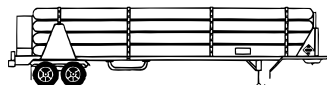
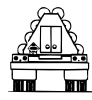
MC338, TC338, SCT-338  
Cryogenic Liquid Tank  
(TC341, CGA341)

117



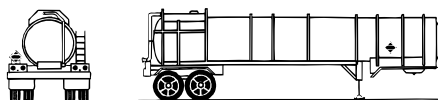
DOT407, TC407, SCT-307  
Low Pressure Chemical Tank  
(MC307, TC307)

137



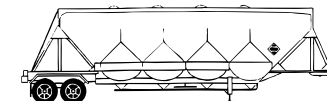
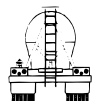
Compressed Gas/  
Tube Trailer

117



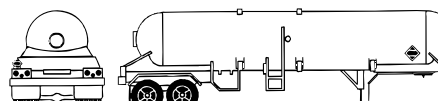
DOT412, TC412, SCT-312  
Corrosive Liquid Tank  
(MC312, TC312)

137



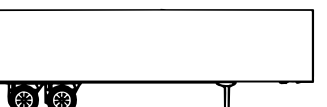
Dry Bulk Cargo  
Trailer

134



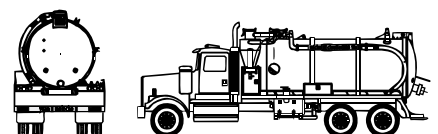
MC331, TC331, SCT-331  
High Pressure Tank

117



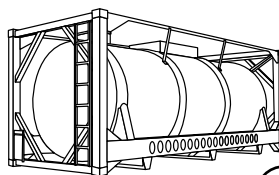
Mixed Cargo

111



DOT407, TC407, DOT412, TC412  
Vacuum Loaded Tank  
(TC350)

137



Intermodal Tank

117

**CAUTION:** This chart depicts only the most general shapes of road trailers. Emergency response personnel must be aware that there are many variations of road trailers, not illustrated above, that are used for shipping chemical products. The suggested guides are for the most hazardous products that may be transported in these trailer types.

\* The recommended guides should be considered as last resort if the material cannot be identified by any other means.

## HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

Hazard identification numbers utilized under European and some South American regulations, may be found in the top half of an orange panel on some intermodal bulk containers. The United Nations 4-digit identification number is in the bottom half of the orange panel.



The hazard identification number in the top half of the orange panel consists of two or three digits. In general, the digits indicate the following hazards:

- 2 - Emission of gas due to pressure or chemical reaction
- 3 - Flammability of liquids (vapors) and gases or self-heating liquid
- 4 - Flammability of solids or self-heating solid
- 5 - Oxidizing (fire-intensifying) effect
- 6 - Toxicity or risk of infection
- 7 - Radioactivity
- 8 - Corrosivity
- 9 - Risk of spontaneous violent reaction

**NOTE:** The risk of spontaneous violent reaction within the meaning of digit 9 include the possibility, due to the nature of a substance, of a risk of explosion, disintegration and polymerization reaction followed by the release of considerable heat or flammable and/or toxic gases.

- Doubling of a digit indicates an intensification of that particular hazard (i.e., 33, 66, 88).
- Where the hazard associated with a substance can be adequately indicated by a single digit, the digit is followed by a zero (i.e., 30, 40, 50).
- A hazard identification number prefixed by the letter "X" indicates that the substance will react dangerously with water (i.e., X88).

## HAZARD IDENTIFICATION NUMBERS DISPLAYED ON SOME INTERMODAL CONTAINERS

The hazard identification numbers listed below have the following meanings:

20	Asphyxiant gas
22	Refrigerated liquefied gas, asphyxiant
223	Refrigerated liquefied gas, flammable
225	Refrigerated liquefied gas, oxidizing (fire-intensifying)
23	Flammable gas
239	Flammable gas which can spontaneously lead to violent reaction
25	Oxidizing (fire-intensifying) gas
26	Toxic gas
263	Toxic gas, flammable
265	Toxic gas, oxidizing (fire-intensifying)
268	Toxic gas, corrosive
<hr/>	
30	Flammable liquid, or flammable liquid or solid in the molten state with a flash point above 60°C, heated to a temperature equal to or above its flash point, or self-heating liquid
323	Flammable liquid which reacts with water, emitting flammable gas
X323	Flammable liquid which reacts dangerously with water, emitting flammable gas
33	Highly flammable liquid
333	Pyrophoric liquid
X333	Pyrophoric liquid which reacts dangerously with water
336	Highly flammable liquid, toxic
338	Highly flammable liquid, corrosive
X338	Highly flammable liquid, corrosive, which reacts dangerously with water
339	Highly flammable liquid which can spontaneously lead to violent reaction
36	Flammable liquid, toxic, or self-heating liquid, toxic
362	Flammable liquid, toxic, which reacts with water, emitting flammable gas
X362	Flammable liquid, toxic, which reacts dangerously with water, emitting flammable gas
368	Flammable liquid, toxic, corrosive
38	Flammable liquid, corrosive or self-heating liquid, corrosive
382	Flammable liquid, corrosive, which reacts with water, emitting flammable gas
X382	Flammable liquid, corrosive, which reacts dangerously with water, emitting flammable gas
39	Flammable liquid which can spontaneously lead to violent reaction
<hr/>	
40	Flammable solid, or self-reactive substance, or self-heating substance
423	Solid which reacts with water, emitting flammable gas, or flammable solid which reacts with water, emitting flammable gas, or self-heating solid which reacts with water, emitting flammable gas

**HAZARD IDENTIFICATION NUMBERS**  
**DISPLAYED ON SOME INTERMODAL CONTAINERS**

X423	Solid which reacts dangerously with water, emitting flammable gas, or flammable solid which reacts dangerously with water, emitting flammable gas, or self-heating solid which reacts dangerously with water, emitting flammable gas
43	Spontaneously flammable (pyrophoric) solid
X432	Spontaneously flammable (pyrophoric) solid which reacts dangerously with water, emitting flammable gas
44	Flammable solid, in the molten state at an elevated temperature
446	Flammable solid, toxic, in the molten state at an elevated temperature
46	Flammable solid, toxic, or self-heating solid, toxic
462	Toxic solid which reacts with water, emitting flammable gas
X462	Solid which reacts dangerously with water, emitting toxic gas
48	Flammable or self-heating solid, corrosive
482	Corrosive solid which reacts with water, emitting flammable gas
X482	Solid which reacts dangerously with water, emitting corrosive gas
<hr/>	
50	Oxidizing (fire-intensifying) substance
539	Flammable organic peroxide
55	Strongly oxidizing (fire-intensifying) substance
556	Strongly oxidizing (fire-intensifying) substance, toxic
558	Strongly oxidizing (fire-intensifying) substance, corrosive
559	Strongly oxidizing (fire-intensifying) substance which can spontaneously lead to violent reaction
56	Oxidizing (fire-intensifying) substance, toxic
568	Oxidizing (fire-intensifying) substance, toxic, corrosive
58	Oxidizing (fire-intensifying) substance, corrosive
59	Oxidizing (fire-intensifying) substance which can spontaneously lead to violent reaction
<hr/>	
60	Toxic substance
606	Infectious substance
623	Toxic liquid which reacts with water, emitting flammable gas
63	Toxic substance, flammable
638	Toxic substance, flammable, corrosive
639	Toxic substance, flammable, which can spontaneously lead to violent reaction
64	Toxic solid, flammable or self-heating
642	Toxic solid which reacts with water, emitting flammable gas
65	Toxic substance, oxidizing (fire-intensifying)
66	Highly toxic substance
663	Highly toxic substance, flammable
664	Highly toxic solid, flammable or self-heating

**HAZARD IDENTIFICATION NUMBERS**  
**DISPLAYED ON SOME INTERMODAL CONTAINERS**

665	Highly toxic substance, oxidizing (fire-intensifying)
668	Highly toxic substance, corrosive
X668	Highly toxic substance, corrosive, which reacts dangerously with water
669	Highly toxic substance which can spontaneously lead to violent reaction
68	Toxic substance, corrosive
69	Toxic substance which can spontaneously lead to violent reaction
<hr/>	
70	Radioactive material
78	Radioactive material, corrosive
<hr/>	
80	Corrosive substance
X80	Corrosive substance which reacts dangerously with water
823	Corrosive liquid which reacts with water, emitting flammable gas
83	Corrosive substance, flammable
X83	Corrosive substance, flammable, which reacts dangerously with water
839	Corrosive substance, flammable, which can spontaneously lead to violent reaction
X839	Corrosive substance, flammable, which can spontaneously lead to violent reaction and which reacts dangerously with water
84	Corrosive solid, flammable or self-heating
842	Corrosive solid which reacts with water, emitting flammable gas
85	Corrosive substance, oxidizing (fire-intensifying)
856	Corrosive substance, oxidizing (fire-intensifying) and toxic
86	Corrosive substance, toxic
88	Highly corrosive substance
X88	Highly corrosive substance which reacts dangerously with water
883	Highly corrosive substance, flammable
884	Highly corrosive solid, flammable or self-heating
885	Highly corrosive substance, oxidizing (fire-intensifying)
886	Highly corrosive substance, toxic
X886	Highly corrosive substance, toxic, which reacts dangerously with water
89	Corrosive substance which can spontaneously lead to violent reaction
<hr/>	
90	Miscellaneous dangerous substance; environmentally hazardous substance
99	Miscellaneous dangerous substance transported at an elevated temperature

## PIPELINE TRANSPORTATION

In North America, hazardous materials are transported through millions of miles of underground pipelines and related structures that can contain natural gas, natural gas liquids, crude oil, gasoline, diesel fuel, anhydrous ammonia, carbon dioxide, jet fuel and other commodities. Although pipelines are buried, there are above-ground structures and signs indicating the presence of underground transmission pipelines (see page 19 for U.S. pipeline location information). Natural gas also is transported via underground distribution pipelines.

### Gas Pipelines

#### **Natural Gas Transmission Pipelines**

Large-diameter, steel pipelines transporting flammable, toxic and non-toxic natural gas at very high pressure.

**Structures:** Compressor Station Buildings, Valves, Metering Stations, and Aerial Patrol Markers.

**Markers:** “Warning, Caution, or Danger” appear at road, railroad, and water crossings, or may be posted at property boundaries and include operator’s emergency Point-of-Contact (POC) and product transported.



#### **Natural Gas Distribution Pipelines**

Natural gas is delivered directly to customers via distribution pipelines--typically smaller-diameter, lower-pressure pipelines, and can be steel, plastic, or cast iron.

**Structures:** Regulator stations, customer meters and regulators, and valve box covers are the only above-ground indicators of gas distribution pipelines.

#### **Gas Gathering and Gas Well Production Pipelines**

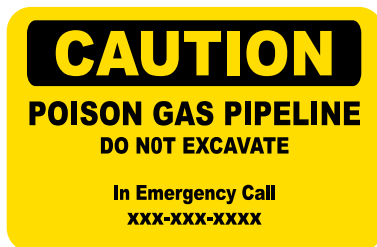
Gas gathering/gas well production pipelines collect “raw” natural gas from wellheads and transport product to gas-processing and/or gas-treating plants. These gathering pipelines carry natural gas mixed with some level of gas liquids, water and, in some areas, contaminants such as hydrogen sulfide (H<sub>2</sub>S).

**Structures** – Compressor Station Buildings, Valves, Metering Stations, and Aerial Patrol Markers.



**Markers** – Often appear at road, railroad, and water crossings. Signs may be posted at property boundaries. Signs include operator's POC and product transported. Warning, Caution, or Danger will appear on signs.

**Note:** Pipelines transporting natural gas containing dangerous levels of H<sub>2</sub>S may have signs that say: "Sour Gas" or "Poison Gas".



## For Natural Gas Pipeline Incidents

**Two important things to remember:**

- Never attempt to extinguish a gas fire; this could prolong/worsen incident/cause another leak in the pipeline.
- Never attempt to operate pipeline valves; this could prolong/worsen incident/cause another leak in the pipeline.

**SIGNS OF GAS PIPELINE RUPTURE:**

- Loud roaring or explosive sound; OR
- Large flames and loud roaring noise.

**Follow these steps:**

- Immediately evacuate area;
- Move upwind, away from flames; prevent individuals from entering;
- If no flames present, do not start/turn off vehicles/electrical equipment (ex: cell phones, pagers, two-way radios, or lights) as this could cause spark/ignition;
- Abandon equipment used in/near area;
- If flames present, driving away from area is acceptable;
- Move far enough from noise to allow normal conversation;
- From safe location, call **911** or contact the local fire/law enforcement; and
- Notify pipeline operator.

## **ANY ONE OF THESE COULD INDICATE A SUSPECTED GAS PIPELINE LEAK:**

- Whistling/hissing sound;
- Distinctive, strong odor, similar to rotten eggs;
- Dense fog, mist, or white cloud;
- Bubbling in water, ponds, or creeks;
- Dust or dirt blowing up from ground; OR
- Discolored/dead vegetation above pipeline right-of-way.

### **Follow these steps:**

- Evacuate area to where you can no longer hear, see, or smell gas;
- Do not start/turn off vehicles/electrical equipment (ex: cell phones, pagers, two-way radios or lights) as this could cause spark/ignition;
- Abandon equipment used in/near the area;
- Avoid open flames;
- Prevent individuals from entering area;
- Call **911** or contact the local fire/law enforcement from a safe location; and
- Notify pipeline operator.

### **Considerations for Establishing Protective Action Distance:**

- Type of product (eg. sour vs sweet);
- Pressure and diameter of pipe;
- Timing of valve closure by utility (quickly for automated valves/longer for manually operated valves);
- Dissipation time of gas in pipe once valves are closed;
- Heat factor of natural gas;
- Local variables such as climate/weather, wind direction, topography, population density, demographics, and fire suppression methods available;
- Nearby building construction material/density;
- Wild land/urban interface; and
- Natural and manmade barriers (highway).

If you know the material involved, identify the three-digit guide number by looking up the name in the alphabetical list (blue-bordered pages), then using the three-digit guide number, consult the recommendations in the assigned guide.

## Liquids Pipelines

### **Petroleum and Hazardous Liquids Pipelines**

Crude oil, refined petroleum products, and hazardous liquids often are transported by pipelines and include gasoline, jet fuels, diesel fuel, home heating oils, carbon dioxide and anhydrous ammonia. Sometimes liquids pipelines transport natural gas liquids, which, like carbon dioxide and anhydrous ammonia, rapidly change from liquid to gaseous state when released from a pressurized pipeline.

**Structures** – Storage Tanks, Valves, Pump Stations, Aerial Patrol Markers

**Markers** – Often appear at road, railroad and water crossings, and may be posted at property boundaries. Signs include operator emergency POCs and product transported. Warning, Caution, or Danger appear on signs.



## **For Petroleum and Hazardous Liquids Pipeline Incidents**

### **Two important things to remember:**

- Never attempt to extinguish flame before shutting off supply, as this can cause formation of explosive mixtures, and
- Never attempt to operate pipeline valves. This could prolong/worsen incident—or cause another pipeline leak.

### **SIGNS OF LIQUIDS PIPELINE RUPTURE:**

- Loud roaring, hissing, or explosive sound; OR
- Very large flames and loud roaring noise.

### **Follow these steps:**

- Immediately evacuate area;
- Move upwind, far from flames, prevent individuals from entering area;
- If no flames present, do not start/turn off vehicles/electrical equipment (ex: cell phones, pagers, two-way radios, or lights) as this could cause spark/ignition;
- Abandon equipment used in/near the area;
- Keep traffic away; secure the area;

- If flames present, driving away from area is acceptable;
- Move far enough away from noise to allow normal conversation;
- From safe location, call **911** or contact the local fire/law enforcement; and
- From a safe area, call toll-free emergency number on right-of-way marker to notify pipeline operator.

**ANY ONE OF THESE COULD INDICATE SUSPECTED LIQUIDS PIPELINE LEAK:**

- Liquids bubbling up from ground;
- “Oil slick” on flowing/standing water;
- Flames appearing from ground;
- Vapor clouds;
- Discolored vegetation or snow; and
- Unusual petroleum, skunk or rotten-egg odor.

**Follow these steps:**

- Do not drive into vapor cloud;
- Carefully evacuate the immediate area so you can no longer hear, see, smell odor;
- Avoid introducing sources of ignition--do not start/turn off vehicles/electrical equipment (ex: cell phones, pagers, two-way radios, or lights); as this could cause spark/ignition;
- Abandon equipment being used in/near area;
- Avoid open flames;
- Prevent individuals from entering area;
- Call **911** or contact the local fire/law enforcement from a safe location; and
- Notify pipeline operator.

**Considerations For Establishing Protective Action Distance:**

- Type of product (eg. sour vs sweet);
- Pressure/diameter of pipe;
- Timing of valve closure by utility (quickly for automated valves/longer for manually operated valves);
- Dissipation time of material in pipe once valves closed;
- Heat factor of product;
- Local variables such as climate/weather, wind direction, topography, population density, demographics and fire suppression methods available for use;

- Nearby building construction material/density;
- Wild land/urban interface; and
- Natural and man-made barriers (highway).

If you know the material involved, identify the three-digit guide number by looking up the name in the alphabetical list (blue-bordered pages), then using the three-digit guide number, consult the recommendations in the assigned guide.

### **U.S. Pipeline Resources**

U.S. Pipeline Location Source: The National Pipeline Mapping System (NPMS) < <http://www.npms.phmsa.dot.gov> > indicates the locations of hazardous liquids and natural gas transmission pipelines found within the U.S.

U.S. Pipeline Training: Where appropriate, reference Pipeline Emergencies training materials, produced by PHMSA and the National Association of State Fire Marshals (NASFM). This training guide is available at < <http://www.pipelineemergencies.com> > and offers a thorough overview of U.S. pipeline operations and emergency response considerations.

## GREEN HIGHLIGHTED ENTRIES IN YELLOW PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE:**
  - Go directly to **Table 1** (green bordered pages)
  - Look up the ID number and name of material
  - Identify initial isolation and protective action distances
  
- **IF THERE IS A FIRE or A FIRE IS INVOLVED:**
  - Also consult the assigned orange guide
  - If applicable, apply the evacuation information shown under PUBLIC SAFETY

**Note:** If the name in **Table 1** is shown with “*When Spilled In Water*”, these materials produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange guide.

**ID Guide Name of Material**  
**No. No.**

---	112	Ammonium nitrate-fuel oil mixtures
---	158	Biological agents
---	112	Blasting agent, n.o.s.
---	112	Explosives, division 1.1, 1.2, 1.3 or 1.5
---	114	Explosives, division 1.4 or 1.6
---	153	Toxins
1001	116	Acetylene
1001	116	Acetylene, dissolved
1002	122	Air, compressed
1003	122	Air, refrigerated liquid (cryogenic liquid)
1003	122	Air, refrigerated liquid (cryogenic liquid), non-pressurized
1005	125	Ammonia, anhydrous
1005	125	Anhydrous ammonia
1006	121	Argon
1006	121	Argon, compressed
1008	125	Boron trifluoride
1008	125	Boron trifluoride, compressed
1009	126	Bromotrifluoromethane
1009	126	Refrigerant gas R-13B1
1010	116P	Butadienes, stabilized
1010	116P	Butadienes and hydrocarbon mixture, stabilized
1011	115	Butane
1011	115	Butane mixture
1012	115	Butylene
1013	120	Carbon dioxide
1013	120	Carbon dioxide, compressed
1014	122	Carbon dioxide and Oxygen mixture, compressed

**ID Guide Name of Material**  
**No. No.**

1014	122	Oxygen and Carbon dioxide mixture, compressed
1015	126	Carbon dioxide and Nitrous oxide mixture
1015	126	Nitrous oxide and Carbon dioxide mixture
1016	119	Carbon monoxide
1016	119	Carbon monoxide, compressed
1017	124	Chlorine
1018	126	Chlorodifluoromethane
1018	126	Refrigerant gas R-22
1020	126	Chloropentafluoroethane
1020	126	Refrigerant gas R-115
1021	126	1-Chloro-1,2,2,2-tetrafluoroethane
1021	126	Chlorotetrafluoroethane
1021	126	Refrigerant gas R-124
1022	126	Chlorotrifluoromethane
1022	126	Refrigerant gas R-13
1023	119	Coal gas
1023	119	Coal gas, compressed
1026	119	Cyanogen
1026	119	Cyanogen gas
1027	115	Cyclopropane
1028	126	Dichlorodifluoromethane
1028	126	Refrigerant gas R-12
1029	126	Dichlorofluoromethane
1029	126	Refrigerant gas R-21
1030	115	1,1-Difluoroethane
1030	115	Difluoroethane
1030	115	Refrigerant gas R-152a
1032	118	Dimethylamine, anhydrous
1033	115	Dimethyl ether

**ID Guide No. No. Name of Material**

1035	115	Ethane
1035	115	Ethane, compressed
1036	118	Ethylamine
1037	115	Ethyl chloride
1038	115	Ethylene, refrigerated liquid (cryogenic liquid)
1039	115	Ethyl methyl ether
1039	115	Methyl ethyl ether
1040	119P	Ethylene oxide
1040	119P	Ethylene oxide with Nitrogen
1041	115	Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	115	Carbon dioxide and Ethylene oxide mixtures, with more than 6% Ethylene oxide
1041	115	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	115	Ethylene oxide and Carbon dioxide mixtures, with more than 6% Ethylene oxide
1043	125	Fertilizer, ammoniating solution, with free Ammonia
1044	126	Fire extinguishers with compressed gas
1044	126	Fire extinguishers with liquefied gas
1045	124	Fluorine
1045	124	Fluorine, compressed
1046	121	Helium
1046	121	Helium, compressed
1048	125	Hydrogen bromide, anhydrous
1049	115	Hydrogen
1049	115	Hydrogen, compressed

**ID Guide No. No. Name of Material**

1050	125	Hydrogen chloride, anhydrous
1051	117	AC
1051	117	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide
1051	117	Hydrogen cyanide, anhydrous, stabilized
1051	117	Hydrogen cyanide, stabilized
1052	125	Hydrogen fluoride, anhydrous
1053	117	Hydrogen sulfide
1053	117	Hydrogen sulphide
1055	115	Isobutylene
1056	121	Krypton
1056	121	Krypton, compressed
1057	115	Lighter refills (cigarettes) (flammable gas)
1057	115	Lighters (cigarettes) (flammable gas)
1058	120	Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air
1060	116P	Methylacetylene and Propadiene mixture, stabilized
1060	116P	Propadiene and Methylacetylene mixture, stabilized
1061	118	Methylamine, anhydrous
1062	123	Methyl bromide
1063	115	Methyl chloride
1063	115	Refrigerant gas R-40
1064	117	Methyl mercaptan
1065	121	Neon
1065	121	Neon, compressed
1066	121	Nitrogen



**ID Guide Name of Material**  
**No. No.**

1066 121 Nitrogen, compressed  
1067 124 Dinitrogen tetroxide  
1067 124 Nitrogen dioxide  
1069 125 Nitrosyl chloride  
1070 122 Nitrous oxide  
1070 122 Nitrous oxide, compressed  
1071 119 Oil gas  
1071 119 Oil gas, compressed  
1072 122 Oxygen  
1072 122 Oxygen, compressed  
1073 122 Oxygen, refrigerated liquid  
(cryogenic liquid)  
1075 115 Butane  
1075 115 Butane mixture  
1075 115 Butylene  
1075 115 Isobutane  
1075 115 Isobutane mixture  
1075 115 Isobutylene  
1075 115 Liquefied petroleum gas  
1075 115 LPG  
1075 115 Petroleum gases, liquefied  
1075 115 Propane  
1075 115 Propane mixture  
1075 115 Propylene  
1076 125 CG  
1076 125 Diphosgene  
1076 125 DP  
1076 125 Phosgene  
1077 115 Propylene  
1078 126 Dispersant gas, n.o.s.  
1078 126 Refrigerant gas, n.o.s.

**ID Guide Name of Material**  
**No. No.**

1079 125 Sulfur dioxide  
1079 125 Sulphur dioxide  
1080 126 Sulfur hexafluoride  
1080 126 Sulphur hexafluoride  
1081 116P Tetrafluoroethylene, stabilized  
1082 119P Trifluorochloroethylene,  
stabilized  
1083 118 Trimethylamine, anhydrous  
1085 116P Vinyl bromide, stabilized  
1086 116P Vinyl chloride, stabilized  
1087 116P Vinyl methyl ether, stabilized  
1088 127 Acetal  
1089 129 Acetaldehyde  
1090 127 Acetone  
1091 127 Acetone oils  
1092 131P Acrolein, stabilized  
1093 131P Acrylonitrile, stabilized  
1098 131 Allyl alcohol  
1099 131 Allyl bromide  
1100 131 Allyl chloride  
1104 129 Amyl acetates  
1105 129 Amyl alcohols  
1105 129 Pentanols  
1106 132 Amylamines  
1107 129 Amyl chloride  
1108 128 n-Amylene  
1108 128 1-Pentene  
1109 129 Amyl formates  
1110 127 n-Amyl methyl ketone  
1110 127 Amyl methyl ketone  
1110 127 Methyl amyl ketone

**ID Guide Name of Material  
No. No.**

1111	130	Amyl mercaptan
1112	140	Amyl nitrate
1113	129	Amyl nitrite
1114	130	Benzene
1120	129	Butanols
1123	129	Butyl acetates
1125	132	n-Butylamine
1126	130	1-Bromobutane
1126	130	n-Butyl bromide
1127	130	Butyl chloride
1127	130	Chlorobutanes
1128	129	n-Butyl formate
1129	129	Butyraldehyde
1130	128	Camphor oil
1131	131	Carbon bisulfide
1131	131	Carbon bisulphide
1131	131	Carbon disulfide
1131	131	Carbon disulphide
1133	128	Adhesives (flammable)
1134	130	Chlorobenzene
1135	131	Ethylene chlorohydrin
1136	128	Coal tar distillates, flammable
1139	127	Coating solution
1143	131P	Crotonaldehyde
1143	131P	Crotonaldehyde, stabilized
1144	128	Crotonylene
1145	128	Cyclohexane
1146	128	Cyclopentane
1147	130	Decahydronaphthalene
1148	129	Diacetone alcohol
1149	128	Butyl ethers

**ID Guide Name of Material  
No. No.**

1149	128	Dibutyl ethers
1150	130P	1,2-Dichloroethylene
1150	130P	Dichloroethylene
1152	130	Dichloropentanes
1153	127	Ethylene glycol diethyl ether
1154	132	Diethylamine
1155	127	Diethyl ether
1155	127	Ethyl ether
1156	127	Diethyl ketone
1157	128	Diisobutyl ketone
1158	132	Diisopropylamine
1159	127	Diisopropyl ether
1160	132	Dimethylamine, aqueous solution
1160	132	Dimethylamine, solution
1161	129	Dimethyl carbonate
1162	155	Dimethyldichlorosilane
1163	131	1,1-Dimethylhydrazine
1163	131	Dimethylhydrazine, unsymmetrical
1164	130	Dimethyl sulfide
1164	130	Dimethyl sulphide
1165	127	Dioxane
1166	127	Dioxolane
1167	128P	Divinyl ether, stabilized
1169	127	Extracts, aromatic, liquid
1170	127	Ethanol
1170	127	Ethanol, solution
1170	127	Ethyl alcohol
1170	127	Ethyl alcohol, solution
1171	127	Ethylene glycol monoethyl ether
1172	129	Ethylene glycol monoethyl ether acetate

**ID Guide Name of Material**  
**No. No.**

1173 **129** Ethyl acetate  
1175 **130** Ethylbenzene  
1176 **129** Ethyl borate  
1177 **130** 2-Ethylbutyl acetate  
1177 **130** Ethylbutyl acetate  
1178 **130** 2-Ethylbutyraldehyde  
1179 **127** Ethyl butyl ether  
1180 **130** Ethyl butyrate  
1181 **155** Ethyl chloroacetate  
1182 **155** Ethyl chloroformate  
1183 **139** Ethyldichlorosilane  
1184 **131** Ethylene dichloride  
1185 **131P** Ethyleneimine, stabilized  
1188 **127** Ethylene glycol monomethyl ether  
1189 **129** Ethylene glycol monomethyl ether acetate  
1190 **129** Ethyl formate  
1191 **129** Ethylhexaldehydes  
1191 **129** Octyl aldehydes  
1192 **129** Ethyl lactate  
1193 **127** Ethyl methyl ketone  
1193 **127** Methyl ethyl ketone  
1194 **131** Ethyl nitrite, solution  
1195 **129** Ethyl propionate  
1196 **155** Ethyltrichlorosilane  
1197 **127** Extracts, flavoring, liquid  
1197 **127** Extracts, flavouring, liquid  
1198 **132** Formaldehyde, solution, flammable  
1198 **132** Formaldehyde, solutions (Formalin)  
1199 **132P** Furaldehydes

**ID Guide Name of Material**  
**No. No.**

1199 **132P** Furfural  
1199 **132P** Furfuraldehydes  
1201 **127** Fusel oil  
1202 **128** Diesel fuel  
1202 **128** Fuel oil  
1202 **128** Fuel oil, no. 1,2,4,5,6  
1202 **128** Gas oil  
1202 **128** Heating oil, light  
1203 **128** Gasohol  
1203 **128** Gasoline  
1203 **128** Motor spirit  
1203 **128** Petrol  
1204 **127** Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin  
1206 **128** Heptanes  
1207 **130** Hexaldehyde  
1208 **128** Hexanes  
1208 **128** Neohexane  
1210 **129** Ink, printer's, flammable  
1210 **129** Printing ink, flammable  
1210 **129** Printing ink related material  
1212 **129** Isobutanol  
1212 **129** Isobutyl alcohol  
1213 **129** Isobutyl acetate  
1214 **132** Isobutylamine  
1216 **128** Isooctenes  
1218 **130P** Isoprene, stabilized  
1219 **129** Isopropanol  
1219 **129** Isopropyl alcohol  
1220 **129** Isopropyl acetate  
1221 **132** Isopropylamine  
1222 **130** Isopropyl nitrate

**ID Guide Name of Material  
No. No.**

1223	<b>128</b>	Kerosene
1224	<b>127</b>	Ketones, liquid, n.o.s.
1228	<b>131</b>	Mercaptan mixture, liquid, flammable, poisonous, n.o.s.
1228	<b>131</b>	Mercaptan mixture, liquid, flammable, toxic, n.o.s.
1228	<b>131</b>	Mercaptans, liquid, flammable, poisonous, n.o.s.
1228	<b>131</b>	Mercaptans, liquid, flammable, toxic, n.o.s.
1229	<b>129</b>	Mesityl oxide
1230	<b>131</b>	Methanol
1230	<b>131</b>	Methyl alcohol
1231	<b>129</b>	Methyl acetate
1233	<b>130</b>	Methylamyl acetate
1234	<b>127</b>	Methylal
1235	<b>132</b>	Methylamine, aqueous solution
1237	<b>129</b>	Methyl butyrate
1238	<b>155</b>	Methyl chloroformate
1239	<b>131</b>	Methyl chloromethyl ether
1242	<b>139</b>	Methyldichlorosilane
1243	<b>129</b>	Methyl formate
1244	<b>131</b>	Methylhydrazine
1245	<b>127</b>	Methyl isobutyl ketone
1246	<b>127P</b>	Methyl isopropenyl ketone, stabilized
1247	<b>129P</b>	Methyl methacrylate monomer, stabilized
1248	<b>129</b>	Methyl propionate
1249	<b>127</b>	Methyl propyl ketone
1250	<b>155</b>	Methyltrichlorosilane
1251	<b>131P</b>	Methyl vinyl ketone, stabilized
1259	<b>131</b>	Nickel carbonyl
1261	<b>129</b>	Nitromethane

**ID Guide Name of Material  
No. No.**

1262	<b>128</b>	Isooctane
1262	<b>128</b>	Octanes
1263	<b>128</b>	Paint (flammable)
1263	<b>128</b>	Paint related material (flammable)
1264	<b>129</b>	Paraldehyde
1265	<b>128</b>	Isopentane
1265	<b>128</b>	n-Pentane
1265	<b>128</b>	Pentanes
1266	<b>127</b>	Perfumery products, with flammable solvents
1267	<b>128</b>	Petroleum crude oil
1268	<b>128</b>	Petroleum distillates, n.o.s.
1268	<b>128</b>	Petroleum products, n.o.s.
1270	<b>128</b>	Oil, petroleum
1270	<b>128</b>	Petroleum oil
1272	<b>129</b>	Pine oil
1274	<b>129</b>	n-Propanol
1274	<b>129</b>	normal Propyl alcohol
1274	<b>129</b>	Propyl alcohol, normal
1275	<b>129</b>	Propionaldehyde
1276	<b>129</b>	n-Propyl acetate
1277	<b>132</b>	Monopropylamine
1277	<b>132</b>	Propylamine
1278	<b>129</b>	1-Chloropropane
1278	<b>129</b>	Propyl chloride
1279	<b>130</b>	1,2-Dichloropropane
1279	<b>130</b>	Dichloropropane
1279	<b>130</b>	Propylene dichloride
1280	<b>127P</b>	Propylene oxide
1281	<b>129</b>	Propyl formates
1282	<b>129</b>	Pyridine
1286	<b>127</b>	Rosin oil

**ID Guide Name of Material**  
**No. No.**

1287 **127** Rubber solution  
1288 **128** Shale oil  
1289 **132** Sodium methylate, solution in alcohol  
1292 **129** Ethyl silicate  
1292 **129** Tetraethyl silicate  
1293 **127** Tinctures, medicinal  
1294 **130** Toluene  
1295 **139** Trichlorosilane  
1296 **132** Triethylamine  
1297 **132** Trimethylamine, aqueous solution  
1298 **155** Trimethylchlorosilane  
1299 **128** Turpentine  
1300 **128** Turpentine substitute  
1301 **129P** Vinyl acetate, stabilized  
1302 **127P** Vinyl ethyl ether, stabilized  
1303 **130P** Vinylidene chloride, stabilized  
1304 **127P** Vinyl isobutyl ether, stabilized  
1305 **155P** Vinyltrichlorosilane  
1305 **155P** Vinyltrichlorosilane, stabilized  
1306 **129** Wood preservatives, liquid  
1307 **130** Xylenes  
1308 **170** Zirconium metal, liquid suspension  
1308 **170** Zirconium suspended in a flammable liquid  
1308 **170** Zirconium suspended in a liquid (flammable)  
1309 **170** Aluminum powder, coated  
1310 **113** Ammonium picrate, wetted with not less than 10% water  
1312 **133** Borneol  
1313 **133** Calcium resinate

**ID Guide Name of Material**  
**No. No.**

1314 **133** Calcium resinate, fused  
1318 **133** Cobalt resinate, precipitated  
1320 **113** Dinitrophenol, wetted with not less than 15% water  
1321 **113** Dinitrophenolates, wetted with not less than 15% water  
1322 **113** Dinitroresorcinol, wetted with not less than 15% water  
1323 **170** Ferrocium  
1324 **133** Films, nitrocellulose base  
1325 **133** Flammable solid, n.o.s.  
1325 **133** Flammable solid, organic, n.o.s.  
1325 **133** Fusee (rail or highway)  
1326 **170** Hafnium powder, wetted with not less than 25% water  
1327 **133** Bhusa, wet, damp or contaminated with oil  
1327 **133** Hay, wet, damp or contaminated with oil  
1327 **133** Straw, wet, damp or contaminated with oil  
1328 **133** Hexamethylenetetramine  
1328 **133** Hexamine  
1330 **133** Manganese resinate  
1331 **133** Matches, "strike anywhere"  
1332 **133** Metaldehyde  
1333 **170** Cerium, slabs, ingots or rods  
1334 **133** Naphthalene, crude  
1334 **133** Naphthalene, refined  
1336 **113** Nitroguanidine (Picrite), wetted with not less than 20% water  
1336 **113** Nitroguanidine, wetted with not less than 20% water  
1336 **113** Picrite, wetted  
1337 **113** Nitrostarch, wetted with not less than 20% water

**ID Guide Name of Material**  
**No. No.**

1337	113	Nitrostarch, wetted with not less than 30% solvent
1338	133	Phosphorus, amorphous
1338	133	Phosphorus, amorphous, red
1338	133	Red phosphorus
1338	133	Red phosphorus, amorphous
1339	139	Phosphorus heptasulfide, free from yellow and white Phosphorus
1339	139	Phosphorus heptasulphide, free from yellow and white Phosphorus
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus
1341	139	Phosphorus sesquisulfide, free from yellow and white Phosphorus
1341	139	Phosphorus sesquisulphide, free from yellow and white Phosphorus
1343	139	Phosphorus trisulfide, free from yellow and white Phosphorus
1343	139	Phosphorus trisulphide, free from yellow and white Phosphorus
1344	113	Picric acid, wetted with not less than 30% water
1344	113	Trinitrophenol, wetted with not less than 30% water
1345	133	Rubber scrap, powdered or granulated
1345	133	Rubber shoddy, powdered or granulated
1346	170	Silicon powder, amorphous
1347	113	Silver picrate, wetted with not less than 30% water

**ID Guide Name of Material**  
**No. No.**

1348	113	Sodium dinitro-o-cresolate, wetted with not less than 15% water
1348	113	Sodium dinitro-ortho-cresolate, wetted
1349	113	Sodium picramate, wetted with not less than 20% water
1350	133	Sulfur
1350	133	Sulphur
1352	170	Titanium powder, wetted with not less than 25% water
1353	133	Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	133	Fibers impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	133	Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.
1353	133	Toe puffs, nitrocellulose base
1354	113	Trinitrobenzene, wetted with not less than 30% water
1355	113	Trinitrobenzoic acid, wetted with not less than 30% water
1356	113	TNT, wetted with not less than 30% water
1356	113	Trinitrotoluene, wetted with not less than 30% water
1357	113	Urea nitrate, wetted with not less than 20% water
1358	170	Zirconium metal, powder, wet
1358	170	Zirconium powder, wetted with not less than 25% water
1360	139	Calcium phosphide
1361	133	Carbon, animal or vegetable origin
1361	133	Charcoal
1362	133	Carbon, activated
1363	135	Copra

**ID Guide Name of Material**  
**No. No.**

1364 **133** Cotton waste, oily  
1365 **133** Cotton  
1365 **133** Cotton, wet  
1366 **135** Diethylzinc  
1369 **135** p-Nitrosodimethylaniline  
1370 **135** Dimethylzinc  
1372 **133** Fiber, animal or vegetable,  
n.o.s., burnt, wet or damp  
1372 **133** Fibers, animal or vegetable,  
burnt, wet or damp  
1372 **133** Fibres, animal or vegetable,  
burnt, wet or damp  
1373 **133** Fabrics, animal or vegetable or  
synthetic, n.o.s. with oil  
1373 **133** Fibers, animal or vegetable or  
synthetic, n.o.s. with oil  
1373 **133** Fibres, animal or vegetable or  
synthetic, n.o.s. with oil  
1374 **133** Fish meal, unstabilized  
1374 **133** Fish scrap, unstabilized  
1376 **135** Iron oxide, spent  
1376 **135** Iron sponge, spent  
1378 **170** Metal catalyst, wetted  
1379 **133** Paper, unsaturated oil treated  
**1380 135 Pentaborane**  
1381 **136** Phosphorus, white, dry or under  
water or in solution  
1381 **136** Phosphorus, yellow, dry or  
under water or in solution  
1381 **136** White phosphorus, dry  
1381 **136** White phosphorus, in solution  
1381 **136** White phosphorus, under water  
1381 **136** Yellow phosphorus, dry  
1381 **136** Yellow phosphorus, in solution  
1381 **136** Yellow phosphorus, under water

**ID Guide Name of Material**  
**No. No.**

1382 **135** Potassium sulfide, anhydrous  
1382 **135** Potassium sulfide, with  
less than 30% water of  
crystallization  
1382 **135** Potassium sulfide, with less  
than 30% water of hydration  
1382 **135** Potassium sulphide, anhydrous  
1382 **135** Potassium sulphide, with  
less than 30% water of  
crystallization  
1382 **135** Potassium sulphide, with less  
than 30% water of hydration  
1383 **135** Aluminum powder, pyrophoric  
1383 **135** Pyrophoric alloy, n.o.s.  
1383 **135** Pyrophoric metal, n.o.s.  
**1384 135 Sodium dithionite**  
**1384 135 Sodium hydrosulfite**  
**1384 135 Sodium hydrosulphite**  
1385 **135** Sodium sulfide, anhydrous  
1385 **135** Sodium sulfide, with less than  
30% water of crystallization  
1385 **135** Sodium sulphide, anhydrous  
1385 **135** Sodium sulphide, with less than  
30% water of crystallization  
1386 **135** Seed cake, with more than 1.5%  
oil and not more than 11%  
moisture  
1387 **133** Wool waste, wet  
1389 **138** Alkali metal amalgam  
1389 **138** Alkali metal amalgam, liquid  
1389 **138** Alkali metal amalgam, solid  
1390 **139** Alkali metal amides  
1391 **138** Alkali metal dispersion  
1391 **138** Alkaline earth metal dispersion  
1392 **138** Alkaline earth metal amalgam

**ID Guide Name of Material  
No. No.**

1392	<b>138</b>	Alkaline earth metal amalgam, liquid
1393	<b>138</b>	Alkaline earth metal alloy, n.o.s.
1394	<b>138</b>	Aluminum carbide
1395	<b>139</b>	Aluminum ferrosilicon powder
1396	<b>138</b>	Aluminum powder, uncoated
1397	<b>139</b>	Aluminum phosphide
1398	<b>138</b>	Aluminum silicon powder, uncoated
1400	<b>138</b>	Barium
1401	<b>138</b>	Calcium
1402	<b>138</b>	Calcium carbide
1403	<b>138</b>	Calcium cyanamide, with more than 0.1% Calcium carbide
1404	<b>138</b>	Calcium hydride
1405	<b>138</b>	Calcium silicide
1407	<b>138</b>	Caesium
1407	<b>138</b>	Cesium
1408	<b>139</b>	Ferrosilicon
1409	<b>138</b>	Hydrides, metal, n.o.s.
1409	<b>138</b>	Metal hydrides, water-reactive, n.o.s.
1410	<b>138</b>	Lithium aluminum hydride
1411	<b>138</b>	Lithium aluminum hydride, ethereal
1413	<b>138</b>	Lithium borohydride
1414	<b>138</b>	Lithium hydride
1415	<b>138</b>	Lithium
1417	<b>138</b>	Lithium silicon
1418	<b>138</b>	Magnesium alloys powder
1418	<b>138</b>	Magnesium powder
1419	<b>139</b>	Magnesium aluminum phosphide
1420	<b>138</b>	Potassium, metal alloys

**ID Guide Name of Material  
No. No.**

1420	<b>138</b>	Potassium, metal alloys, liquid
1421	<b>138</b>	Alkali metal alloy, liquid, n.o.s.
1422	<b>138</b>	Potassium sodium alloys
1422	<b>138</b>	Potassium sodium alloys, liquid
1422	<b>138</b>	Sodium potassium alloys
1422	<b>138</b>	Sodium potassium alloys, liquid
1423	<b>138</b>	Rubidium
1423	<b>138</b>	Rubidium metal
1426	<b>138</b>	Sodium borohydride
1427	<b>138</b>	Sodium hydride
1428	<b>138</b>	Sodium
1431	<b>138</b>	Sodium methylate
1431	<b>138</b>	Sodium methylate, dry
1432	<b>139</b>	Sodium phosphide
1433	<b>139</b>	Stannic phosphides
1435	<b>138</b>	Zinc ashes
1435	<b>138</b>	Zinc dross
1435	<b>138</b>	Zinc residue
1435	<b>138</b>	Zinc skimmings
1436	<b>138</b>	Zinc dust
1436	<b>138</b>	Zinc powder
1437	<b>138</b>	Zirconium hydride
1438	<b>140</b>	Aluminum nitrate
1439	<b>141</b>	Ammonium dichromate
1442	<b>143</b>	Ammonium perchlorate
1444	<b>140</b>	Ammonium persulfate
1444	<b>140</b>	Ammonium persulphate
1445	<b>141</b>	Barium chlorate
1445	<b>141</b>	Barium chlorate, solid
1446	<b>141</b>	Barium nitrate
1447	<b>141</b>	Barium perchlorate
1447	<b>141</b>	Barium perchlorate, solid



**ID Guide Name of Material**  
**No. No.**

1448	141	Barium permanganate
1449	141	Barium peroxide
1450	141	Bromates, inorganic, n.o.s.
1451	140	Caesium nitrate
1451	140	Cesium nitrate
1452	140	Calcium chlorate
1453	140	Calcium chlorite
1454	140	Calcium nitrate
1455	140	Calcium perchlorate
1456	140	Calcium permanganate
1457	140	Calcium peroxide
1458	140	Borate and Chlorate mixtures
1458	140	Chlorate and Borate mixtures
1459	140	Chlorate and Magnesium chloride mixture
1459	140	Chlorate and Magnesium chloride mixture, solid
1459	140	Magnesium chloride and Chlorate mixture
1459	140	Magnesium chloride and Chlorate mixture, solid
1461	140	Chlorates, inorganic, n.o.s.
1462	143	Chlorites, inorganic, n.o.s.
1463	141	Chromium trioxide, anhydrous
1465	140	Didymium nitrate
1466	140	Ferric nitrate
1467	143	Guanidine nitrate
1469	141	Lead nitrate
1470	141	Lead perchlorate
1470	141	Lead perchlorate, solid
1470	141	Lead perchlorate, solution
1471	140	Lithium hypochlorite, dry
1471	140	Lithium hypochlorite mixture

**ID Guide Name of Material**  
**No. No.**

1471	140	Lithium hypochlorite mixtures, dry
1472	143	Lithium peroxide
1473	140	Magnesium bromate
1474	140	Magnesium nitrate
1475	140	Magnesium perchlorate
1476	140	Magnesium peroxide
1477	140	Nitrates, inorganic, n.o.s.
1479	140	Oxidizing solid, n.o.s.
1481	140	Perchlorates, inorganic, n.o.s.
1482	140	Permanganates, inorganic, n.o.s.
1483	140	Peroxides, inorganic, n.o.s.
1484	140	Potassium bromate
1485	140	Potassium chlorate
1486	140	Potassium nitrate
1487	140	Potassium nitrate and Sodium nitrite mixture
1487	140	Sodium nitrite and Potassium nitrate mixture
1488	140	Potassium nitrite
1489	140	Potassium perchlorate
1490	140	Potassium permanganate
1491	144	Potassium peroxide
1492	140	Potassium persulfate
1492	140	Potassium persulphate
1493	140	Silver nitrate
1494	141	Sodium bromate
1495	140	Sodium chlorate
1496	143	Sodium chlorite
1498	140	Sodium nitrate
1499	140	Potassium nitrate and Sodium nitrate mixture

**ID Guide Name of Material  
No. No.**

1499	140	Sodium nitrate and Potassium nitrate mixture
1500	140	Sodium nitrite
1502	140	Sodium perchlorate
1503	140	Sodium permanganate
1504	144	Sodium peroxide
1505	140	Sodium persulfate
1505	140	Sodium persulphate
1506	143	Strontium chlorate
1506	143	Strontium chlorate, solid
1506	143	Strontium chlorate, solution
1507	140	Strontium nitrate
1508	140	Strontium perchlorate
1509	143	Strontium peroxide
1510	143	Tetranitromethane
1511	140	Urea hydrogen peroxide
1512	140	Zinc ammonium nitrite
1513	140	Zinc chlorate
1514	140	Zinc nitrate
1515	140	Zinc permanganate
1516	143	Zinc peroxide
1517	113	Zirconium picramate, wetted with not less than 20% water
1541	155	Acetone cyanohydrin, stabilized
1544	151	Alkaloids, solid, n.o.s. (poisonous)
1544	151	Alkaloid salts, solid, n.o.s. (poisonous)
1545	155	Allyl isothiocyanate, stabilized
1546	151	Ammonium arsenate
1547	153	Aniline
1548	153	Aniline hydrochloride
1549	157	Antimony compound, inorganic, n.o.s.

**ID Guide Name of Material  
No. No.**

1549	157	Antimony compound, inorganic, solid, n.o.s.
1550	151	Antimony lactate
1551	151	Antimony potassium tartrate
1553	154	Arsenic acid, liquid
1554	154	Arsenic acid, solid
1555	151	Arsenic bromide
1556	152	Arsenic compound, liquid, n.o.s.
1556	152	Arsenic compound, liquid, n.o.s., inorganic
1556	152	MD
1556	152	Methyldichloroarsine
1556	152	PD
1557	152	Arsenic compound, solid, n.o.s.
1557	152	Arsenic compound, solid, n.o.s., inorganic
1558	152	Arsenic
1559	151	Arsenic pentoxide
1560	157	Arsenic chloride
1560	157	Arsenic trichloride
1561	151	Arsenic trioxide
1562	152	Arsenical dust
1564	154	Barium compound, n.o.s.
1565	157	Barium cyanide
1566	154	Beryllium compound, n.o.s.
1567	134	Beryllium powder
1569	131	Bromoacetone
1570	152	Brucine
1571	113	Barium azide, wetted with not less than 50% water
1572	151	Cacodylic acid
1573	151	Calcium arsenate

**ID Guide Name of Material**  
**No. No.**

1574 151 Calcium arsenate and Calcium arsenite mixture, solid  
1574 151 Calcium arsenite and Calcium arsenate mixture, solid  
1575 157 Calcium cyanide  
1577 153 Chlorodinitrobenzenes  
1577 153 Chlorodinitrobenzenes, liquid  
1577 153 Chlorodinitrobenzenes, solid  
1577 153 Dinitrochlorobenzenes  
1578 152 Chloronitrobenzenes  
1578 152 Chloronitrobenzenes, liquid  
1578 152 Chloronitrobenzenes, solid  
1579 153 4-Chloro-o-toluidine hydrochloride  
1579 153 4-Chloro-o-toluidine hydrochloride, solid  
1580 154 Chloropicrin  
1581 123 Chloropicrin and Methyl bromide mixture  
1581 123 Methyl bromide and Chloropicrin mixture  
1582 119 Chloropicrin and Methyl chloride mixture  
1582 119 Methyl chloride and Chloropicrin mixture  
1583 154 Chloropicrin mixture, n.o.s.  
1585 151 Copper acetoarsenite  
1586 151 Copper arsenite  
1587 151 Copper cyanide  
1588 157 Cyanides, inorganic, n.o.s.  
1588 157 Cyanides, inorganic, solid, n.o.s.  
1589 125 CK  
1589 125 Cyanogen chloride, stabilized  
1590 153 Dichloroanilines

**ID Guide Name of Material**  
**No. No.**

1590 153 Dichloroanilines, liquid  
1590 153 Dichloroanilines, solid  
1591 152 o-Dichlorobenzene  
1593 160 Dichloromethane  
1593 160 Methylene chloride  
1594 152 Diethyl sulfate  
1594 152 Diethyl sulphate  
1595 156 Dimethyl sulfate  
1595 156 Dimethyl sulphate  
1596 153 Dinitroanilines  
1597 152 Dinitrobenzenes  
1597 152 Dinitrobenzenes, liquid  
1597 152 Dinitrobenzenes, solid  
1598 153 Dinitro-o-cresol  
1599 153 Dinitrophenol, solution  
1600 152 Dinitrotoluenes, molten  
1601 151 Disinfectant, solid, poisonous, n.o.s.  
1601 151 Disinfectant, solid, toxic, n.o.s.  
1601 151 Disinfectants, solid, n.o.s. (poisonous)  
1602 151 Dye, liquid, poisonous, n.o.s.  
1602 151 Dye, liquid, toxic, n.o.s.  
1602 151 Dye intermediate, liquid, poisonous, n.o.s.  
1602 151 Dye intermediate, liquid, toxic, n.o.s.  
1603 155 Ethyl bromoacetate  
1604 132 Ethylenediamine  
1605 154 Ethylene dibromide  
1606 151 Ferric arsenate  
1607 151 Ferric arsenite  
1608 151 Ferrous arsenate

**ID Guide Name of Material**  
**No. No.**

1611	151	Hexaethyl tetraphosphate
1611	151	Hexaethyl tetraphosphate, liquid
1611	151	Hexaethyl tetraphosphate, solid
1612	123	Hexaethyl tetraphosphate and compressed gas mixture
1613	154	Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide
1613	154	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide
1613	154	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide
1614	152	Hydrogen cyanide, stabilized (absorbed)
1616	151	Lead acetate
1617	151	Lead arsenates
1618	151	Lead arsenites
1620	151	Lead cyanide
1621	151	London purple
1622	151	Magnesium arsenate
1623	151	Mercuric arsenate
1624	154	Mercuric chloride
1625	141	Mercuric nitrate
1626	157	Mercuric potassium cyanide
1627	141	Mercurous nitrate
1629	151	Mercury acetate
1630	151	Mercury ammonium chloride
1631	154	Mercury benzoate
1634	154	Mercuric bromide
1634	154	Mercurous bromide
1634	154	Mercury bromides
1636	154	Mercuric cyanide

**ID Guide Name of Material**  
**No. No.**

1636	154	Mercury cyanide
1637	151	Mercury gluconate
1638	151	Mercury iodide
1639	151	Mercury nucleate
1640	151	Mercury oleate
1641	151	Mercury oxide
1642	151	Mercuric oxycyanide
1642	151	Mercury oxycyanide, desensitized
1643	151	Mercury potassium iodide
1644	151	Mercury salicylate
1645	151	Mercuric sulfate
1645	151	Mercuric sulphate
1645	151	Mercury sulfate
1645	151	Mercury sulphate
1646	151	Mercury thiocyanate
1647	151	Ethylene dibromide and Methyl bromide mixture, liquid
1647	151	Methyl bromide and Ethylene dibromide mixture, liquid
1648	127	Acetonitrile
1648	127	Methyl cyanide
1649	131	Motor fuel anti-knock mixture
1650	153	beta-Naphthylamine
1650	153	beta-Naphthylamine, solid
1650	153	Naphthylamine (beta)
1650	153	Naphthylamine (beta), solid
1651	153	Naphthylthiourea
1652	153	Naphthylurea
1653	151	Nickel cyanide
1654	151	Nicotine
1655	151	Nicotine compound, solid, n.o.s.

**ID Guide Name of Material**  
**No. No.**

1655	151	Nicotine preparation, solid, n.o.s.
1656	151	Nicotine hydrochloride
1656	151	Nicotine hydrochloride, liquid
1656	151	Nicotine hydrochloride, solid
1656	151	Nicotine hydrochloride, solution
1657	151	Nicotine salicylate
1658	151	Nicotine sulfate, solid
1658	151	Nicotine sulfate, solution
1658	151	Nicotine sulphate, solid
1658	151	Nicotine sulphate, solution
1659	151	Nicotine tartrate
1660	124	Nitric oxide
1660	124	Nitric oxide, compressed
1661	153	Nitroanilines
1662	152	Nitrobenzene
1663	153	Nitrophenols
1664	152	Nitrotoluenes
1664	152	Nitrotoluenes, liquid
1664	152	Nitrotoluenes, solid
1665	152	Nitroxylenes
1665	152	Nitroxylenes, liquid
1665	152	Nitroxylenes, solid
1669	151	Pentachloroethane
1670	157	Perchloromethyl mercaptan
1671	153	Phenol, solid
1672	151	Phenylcarbylamine chloride
1673	153	Phenylenediamines
1674	151	Phenylmercuric acetate
1677	151	Potassium arsenate
1678	154	Potassium arsenite
1679	157	Potassium cuprocyanide

**ID Guide Name of Material**  
**No. No.**

1680	157	Potassium cyanide
1680	157	Potassium cyanide, solid
1683	151	Silver arsenite
1684	151	Silver cyanide
1685	151	Sodium arsenate
1686	154	Sodium arsenite, aqueous solution
1687	153	Sodium azide
1688	152	Sodium cacodylate
1689	157	Sodium cyanide
1689	157	Sodium cyanide, solid
1690	154	Sodium fluoride
1690	154	Sodium fluoride, solid
1691	151	Strontium arsenite
1692	151	Strychnine
1692	151	Strychnine salts
1693	159	Tear gas devices
1693	159	Tear gas substance, liquid, n.o.s.
1693	159	Tear gas substance, solid, n.o.s.
1694	159	Bromobenzyl cyanides
1694	159	Bromobenzyl cyanides, liquid
1694	159	Bromobenzyl cyanides, solid
1694	159	CA
1695	131	Chloroacetone, stabilized
1697	153	Chloroacetophenone
1697	153	Chloroacetophenone, liquid
1697	153	Chloroacetophenone, solid
1697	153	CN
1698	154	Adamsite
1698	154	Diphenylamine chloroarsine

**ID Guide Name of Material**  
**No. No.**

1698	154	DM
1699	151	DA
1699	151	Diphenylchloroarsine
1699	151	Diphenylchloroarsine, liquid
1699	151	Diphenylchloroarsine, solid
1700	159	Tear gas candles
1700	159	Tear gas grenades
1701	152	Xylyl bromide
1701	152	Xylyl bromide, liquid
1702	151	1,1,2,2-Tetrachloroethane
1702	151	Tetrachloroethane
1704	153	Tetraethyl dithiopyrophosphate
1704	153	Tetraethyl dithiopyrophosphate, mixture, dry or liquid
1707	151	Thallium compound, n.o.s.
1708	153	Toluidines
1708	153	Toluidines, liquid
1708	153	Toluidines, solid
1709	151	2,4-Toluediamine
1709	151	2,4-Toluylenediamine
1709	151	2,4-Toluylenediamine, solid
1710	160	Trichloroethylene
1711	153	Xylidines
1711	153	Xylidines, liquid
1711	153	Xylidines, solid
1712	151	Zinc arsenate
1712	151	Zinc arsenate and Zinc arsenite mixture
1712	151	Zinc arsenite
1712	151	Zinc arsenite and Zinc arsenate mixture
1713	151	Zinc cyanide
1714	139	Zinc phosphide

**ID Guide Name of Material**  
**No. No.**

1715	137	Acetic anhydride
1716	156	Acetyl bromide
1717	155	Acetyl chloride
1718	153	Acid butyl phosphate
1718	153	Butyl acid phosphate
1719	154	Caustic alkali liquid, n.o.s.
1722	155	Allyl chlorocarbonate
1722	155	Allyl chloroformate
1723	132	Allyl iodide
1724	155	Allyltrichlorosilane, stabilized
1725	137	Aluminum bromide, anhydrous
1726	137	Aluminum chloride, anhydrous
1727	154	Ammonium bifluoride, solid
1727	154	Ammonium hydrogendifluoride, solid
1727	154	Ammonium hydrogen fluoride, solid
1728	155	Amyltrichlorosilane
1729	156	Anisoyl chloride
1730	157	Antimony pentachloride, liquid
1731	157	Antimony pentachloride, solution
1732	157	Antimony pentafluoride
1733	157	Antimony trichloride
1733	157	Antimony trichloride, liquid
1733	157	Antimony trichloride, solid
1733	157	Antimony trichloride, solution
1736	137	Benzoyl chloride
1737	156	Benzyl bromide
1738	156	Benzyl chloride
1739	137	Benzyl chloroformate
1740	154	Hydrogendifluorides, n.o.s.

**ID Guide Name of Material**  
**No. No.**

1740	154	Hydrogendifluorides, solid, n.o.s.
1741	125	Boron trichloride
1742	157	Boron trifluoride acetic acid complex
1742	157	Boron trifluoride acetic acid complex, liquid
1743	157	Boron trifluoride propionic acid complex
1743	157	Boron trifluoride propionic acid complex, liquid
1744	154	Bromine
1744	154	Bromine, solution
1744	154	Bromine, solution (Inhalation Hazard Zone A)
1744	154	Bromine, solution (Inhalation Hazard Zone B)
1745	144	Bromine pentafluoride
1746	144	Bromine trifluoride
1747	155	Butyltrichlorosilane
1748	140	Calcium hypochlorite, dry
1748	140	Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)
1749	124	Chlorine trifluoride
1750	153	Chloroacetic acid, liquid
1750	153	Chloroacetic acid, solution
1751	153	Chloroacetic acid, solid
1752	156	Chloroacetyl chloride
1753	156	Chlorophenyltrichlorosilane
1754	137	Chlorosulfonic acid
1754	137	Chlorosulfonic acid and Sulfur trioxide mixture
1754	137	Chlorosulphonic acid

**ID Guide Name of Material**  
**No. No.**

1754	137	Chlorosulphonic acid and Sulphur trioxide mixture
1754	137	Sulfur trioxide and Chlorosulfonic acid mixture
1754	137	Sulphur trioxide and Chlorosulphonic acid mixture
1755	154	Chromic acid, solution
1756	154	Chromic fluoride, solid
1757	154	Chromic fluoride, solution
1758	137	Chromium oxychloride
1759	154	Corrosive solid, n.o.s.
1759	154	Ferrous chloride, solid
1760	154	Chemical kit
1760	154	Compound, cleaning liquid (corrosive)
1760	154	Compound, tree or weed killing, liquid (corrosive)
1760	154	Corrosive liquid, n.o.s.
1760	154	Ferrous chloride, solution
1761	154	Cupriethylenediamine, solution
1762	156	Cyclohexenyltrichlorosilane
1763	156	Cyclohexyltrichlorosilane
1764	153	Dichloroacetic acid
1765	156	Dichloroacetyl chloride
1766	156	Dichlorophenyltrichlorosilane
1767	155	Diethyldichlorosilane
1768	154	Difluorophosphoric acid, anhydrous
1769	156	Diphenyldichlorosilane
1770	153	Diphenylmethyl bromide
1771	156	Dodecyltrichlorosilane
1773	157	Ferric chloride
1773	157	Ferric chloride, anhydrous

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No. No.**

1774	154	Fire extinguisher charges, corrosive liquid
1775	154	Fluoboric acid
1775	154	Fluoroboric acid
1776	154	Fluorophosphoric acid, anhydrous
1777	137	Fluorosulfonic acid
1777	137	Fluorosulphonic acid
1778	154	Fluorosilicic acid
1778	154	Fluosilicic acid
1778	154	Hydrofluorosilicic acid
1779	153	Formic acid
1779	153	Formic acid, with more than 85% acid
1780	156	Fumaryl chloride
1781	156	Hexadecyltrichlorosilane
1782	154	Hexafluorophosphoric acid
1783	153	Hexamethylenediamine, solution
1784	156	Hexyltrichlorosilane
1786	157	Hydrofluoric acid and Sulfuric acid mixture
1786	157	Hydrofluoric acid and Sulphuric acid mixture
1786	157	Sulfuric acid and Hydrofluoric acid mixture
1786	157	Sulphuric acid and Hydrofluoric acid mixture
1787	154	Hydriodic acid
1787	154	Hydriodic acid, solution
1788	154	Hydrobromic acid
1788	154	Hydrobromic acid, solution
1789	157	Hydrochloric acid
1789	157	Hydrochloric acid, solution
1789	157	Muriatic acid

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No. No.**

1790	157	Hydrofluoric acid
1790	157	Hydrofluoric acid, solution
1791	154	Hypochlorite solution
1791	154	Hypochlorite solution, with more than 5% available Chlorine
1792	157	Iodine monochloride, solid
1793	153	Isopropyl acid phosphate
1794	154	Lead sulfate, with more than 3% free acid
1794	154	Lead sulphate, with more than 3% free acid
1796	157	Nitrating acid mixture with more than 50% nitric acid
1796	157	Nitrating acid mixture with not more than 50% nitric acid
1798	157	Aqua regia
1798	157	Nitrohydrochloric acid
1799	156	Nonyltrichlorosilane
1800	156	Octadecyltrichlorosilane
1801	156	Octyltrichlorosilane
1802	140	Perchloric acid, with not more than 50% acid
1803	153	Phenolsulfonic acid, liquid
1803	153	Phenolsulphonic acid, liquid
1804	156	Phenyltrichlorosilane
1805	154	Phosphoric acid
1805	154	Phosphoric acid, liquid
1805	154	Phosphoric acid, solid
1805	154	Phosphoric acid, solution
1806	137	Phosphorus pentachloride
1807	137	Phosphorus pentoxide
1808	137	Phosphorus tribromide
1809	137	Phosphorus trichloride



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**No. No.**

1810 137 Phosphorus oxychloride  
1811 154 Potassium hydrogendifluoride  
1811 154 Potassium hydrogen difluoride, solid  
1812 154 Potassium fluoride  
1812 154 Potassium fluoride, solid  
1813 154 Caustic potash, dry, solid  
1813 154 Potassium hydroxide, dry, solid  
1813 154 Potassium hydroxide, flake  
1813 154 Potassium hydroxide, solid  
1814 154 Caustic potash, liquid  
1814 154 Caustic potash, solution  
1814 154 Potassium hydroxide, solution  
1815 132 Propionyl chloride  
1816 155 Propyltrichlorosilane  
1817 137 Pyrosulfuryl chloride  
1817 137 Pyrosulphuryl chloride  
1818 157 Silicon tetrachloride  
1819 154 Sodium aluminate, solution  
1823 154 Caustic soda, bead  
1823 154 Caustic soda, flake  
1823 154 Caustic soda, granular  
1823 154 Caustic soda, solid  
1823 154 Sodium hydroxide, bead  
1823 154 Sodium hydroxide, dry  
1823 154 Sodium hydroxide, flake  
1823 154 Sodium hydroxide, granular  
1823 154 Sodium hydroxide, solid  
1824 154 Caustic soda, solution  
1824 154 Sodium hydroxide, solution  
1825 157 Sodium monoxide

**ID Guide Name of Material**  
**No. No.**

1826 157 Nitrating acid mixture, spent, with more than 50% nitric acid  
1826 157 Nitrating acid mixture, spent, with not more than 50% nitric acid  
1827 137 Stannic chloride, anhydrous  
1827 137 Tin tetrachloride  
1828 137 Sulfur chlorides  
1828 137 Sulphur chlorides  
1829 137 Sulfur trioxide, stabilized  
1829 137 Sulphur trioxide, stabilized  
1830 137 Sulfuric acid  
1830 137 Sulfuric acid, with more than 51% acid  
1830 137 Sulphuric acid  
1830 137 Sulphuric acid, with more than 51% acid  
1831 137 Sulfuric acid, fuming  
1831 137 Sulfuric acid, fuming, with less than 30% free Sulfur trioxide  
1831 137 Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide  
1831 137 Sulphuric acid, fuming  
1831 137 Sulphuric acid, fuming, with less than 30% free Sulphur trioxide  
1831 137 Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide  
1832 137 Sulfuric acid, spent  
1832 137 Sulphuric acid, spent  
1833 154 Sulfurous acid  
1833 154 Sulphurous acid  
1834 137 Sulfuryl chloride  
1834 137 Sulphuryl chloride

**ID Guide Name of Material**  
**No. No.**

1835	<b>153</b>	Tetramethylammonium hydroxide
1835	<b>153</b>	Tetramethylammonium hydroxide, solution
1836	<b>137</b>	Thionyl chloride
1837	<b>157</b>	Thiophosphoryl chloride
1838	<b>137</b>	Titanium tetrachloride
1839	<b>153</b>	Trichloroacetic acid
1840	<b>154</b>	Zinc chloride, solution
1841	<b>171</b>	Acetaldehyde ammonia
1843	<b>141</b>	Ammonium dinitro-o-cresolate
1843	<b>141</b>	Ammonium dinitro-o-cresolate, solid
1845	<b>120</b>	Carbon dioxide, solid
1845	<b>120</b>	Dry ice
1846	<b>151</b>	Carbon tetrachloride
1847	<b>153</b>	Potassium sulfide, hydrated, with not less than 30% water of crystallization
1847	<b>153</b>	Potassium sulfide, hydrated, with not less than 30% water of hydration
1847	<b>153</b>	Potassium sulphide, hydrated, with not less than 30% water of crystallization
1847	<b>153</b>	Potassium sulphide, hydrated, with not less than 30% water of hydration
1848	<b>132</b>	Propionic acid
1848	<b>132</b>	Propionic acid, with not less than 10% and less than 90% acid
1849	<b>153</b>	Sodium sulfide, hydrated, with not less than 30% water
1849	<b>153</b>	Sodium sulphide, hydrated, with not less than 30% water
1851	<b>151</b>	Medicine, liquid, poisonous, n.o.s.

**ID Guide Name of Material**  
**No. No.**

1851	<b>151</b>	Medicine, liquid, toxic, n.o.s.
1854	<b>135</b>	Barium alloys, pyrophoric
1855	<b>135</b>	Calcium, metal and alloys, pyrophoric
1855	<b>135</b>	Calcium, pyrophoric
1855	<b>135</b>	Calcium alloys, pyrophoric
1856	<b>133</b>	Rags, oily
1857	<b>133</b>	Textile waste, wet
1858	<b>126</b>	Hexafluoropropylene
1858	<b>126</b>	Hexafluoropropylene, compressed
1858	<b>126</b>	Refrigerant gas R-1216
1859	<b>125</b>	Silicon tetrafluoride
1859	<b>125</b>	Silicon tetrafluoride, compressed
1860	<b>116P</b>	Vinyl fluoride, stabilized
1862	<b>130</b>	Ethyl crotonate
1863	<b>128</b>	Fuel, aviation, turbine engine
1865	<b>131</b>	n-Propyl nitrate
1866	<b>127</b>	Resin solution
1868	<b>134</b>	Decaborane
1869	<b>138</b>	Magnesium
1869	<b>138</b>	Magnesium, in pellets, turnings or ribbons
1869	<b>138</b>	Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons
1870	<b>138</b>	Potassium borohydride
1871	<b>170</b>	Titanium hydride
1872	<b>141</b>	Lead dioxide
1873	<b>143</b>	Perchloric acid, with more than 50% but not more than 72% acid
1884	<b>157</b>	Barium oxide
1885	<b>153</b>	Benzidine

**ID Guide Name of Material**  
**No. No.**

1886 **156** Benzylidene chloride  
1887 **160** Bromochloromethane  
1888 **151** Chloroform  
1889 **157** Cyanogen bromide  
1891 **131** Ethyl bromide  
**1892 151 ED**  
**1892 151 Ethyldichloroarsine**  
1894 **151** Phenylmercuric hydroxide  
1895 **151** Phenylmercuric nitrate  
1897 **160** Perchloroethylene  
1897 **160** Tetrachloroethylene  
**1898 156 Acetyl iodide**  
1902 **153** Diisooctyl acid phosphate  
1903 **153** Disinfectant, liquid, corrosive, n.o.s.  
1903 **153** Disinfectants, corrosive, liquid, n.o.s.  
1905 **154** Selenic acid  
1906 **153** Acid, sludge  
1906 **153** Sludge acid  
1907 **154** Soda lime, with more than 4% Sodium hydroxide  
1908 **154** Chlorite solution  
1908 **154** Chlorite solution, with more than 5% available Chlorine  
1908 **154** Sodium chlorite, solution, with more than 5% available Chlorine  
1910 **157** Calcium oxide  
**1911 119 Diborane**  
**1911 119 Diborane, compressed**  
1911 **119** Diborane mixtures  
1912 **115** Methyl chloride and Methylene chloride mixture

**ID Guide Name of Material**  
**No. No.**

1912 **115** Methylene chloride and Methyl chloride mixture  
1913 **120** Neon, refrigerated liquid (cryogenic liquid)  
1914 **130** Butyl propionates  
1915 **127** Cyclohexanone  
1916 **152** 2,2'-Dichlorodiethyl ether  
1916 **152** Dichloroethyl ether  
1917 **129P** Ethyl acrylate, stabilized  
1918 **130** Cumene  
1918 **130** Isopropylbenzene  
1919 **129P** Methyl acrylate, stabilized  
1920 **128** Nonanes  
1921 **131P** Propyleneimine, stabilized  
1922 **132** Pyrrolidine  
**1923 135 Calcium dithionite**  
**1923 135 Calcium hydrosulfite**  
**1923 135 Calcium hydrosulphite**  
1928 **135** Methyl magnesium bromide in Ethyl ether  
**1929 135 Potassium dithionite**  
**1929 135 Potassium hydrosulfite**  
**1929 135 Potassium hydrosulphite**  
**1931 171 Zinc dithionite**  
**1931 171 Zinc hydrosulfite**  
**1931 171 Zinc hydrosulphite**  
1932 **135** Zirconium scrap  
1935 **157** Cyanide solution, n.o.s.  
1938 **156** Bromoacetic acid  
1938 **156** Bromoacetic acid, solution  
1939 **137** Phosphorus oxybromide  
1939 **137** Phosphorus oxybromide, solid

**ID Guide No. No. Name of Material**

1940	153	Thioglycolic acid
1941	171	Dibromodifluoromethane
1942	140	Ammonium nitrate, with not more than 0.2% combustible substances
1944	133	Matches, safety
1945	133	Matches, wax "vesta"
1950	126	Aerosol dispensers
1950	126	Aerosols
1951	120	Argon, refrigerated liquid (cryogenic liquid)
1952	126	Carbon dioxide and Ethylene oxide mixtures, with not more than 6% Ethylene oxide
1952	126	Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide
1952	126	Ethylene oxide and Carbon dioxide mixtures, with not more than 6% Ethylene oxide
1952	126	Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone B)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone D)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone B)

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1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone D)
1953	119	Compressed gas, poisonous, flammable, n.o.s.
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
1953	119	Compressed gas, toxic, flammable, n.o.s.
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
1954	115	Compressed gas, flammable, n.o.s.
1954	115	Dispersant gas, n.o.s. (flammable)
1954	115	Refrigerant gas, n.o.s. (flammable)

ID No.	Guide No.	Name of Material
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1955	123	Compressed gas, poisonous, n.o.s.
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
1955	123	Compressed gas, toxic, n.o.s.
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)
1955	123	Organic phosphate compound mixed with compressed gas
1955	123	Organic phosphate mixed with compressed gas
1955	123	Organic phosphorus compound mixed with compressed gas
1956	126	Compressed gas, n.o.s.
1957	115	Deuterium
1957	115	Deuterium, compressed
1958	126	1,2-Dichloro-1,1,2,2-tetrafluoroethane
1958	126	Dichlorotetrafluoroethane
1958	126	Refrigerant gas R-114
1959	116P	1,1-Difluoroethylene
1959	116P	Refrigerant gas R-1132a

ID No.	Guide No.	Name of Material
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1961	115	Ethane, refrigerated liquid
1961	115	Ethane-Propane mixture, refrigerated liquid
1961	115	Propane-Ethane mixture, refrigerated liquid
1962	116P	Ethylene
1962	116P	Ethylene, compressed
1963	120	Helium, refrigerated liquid (cryogenic liquid)
1964	115	Hydrocarbon gas, compressed, n.o.s.
1964	115	Hydrocarbon gas mixture, compressed, n.o.s.
1965	115	Hydrocarbon gas, liquefied, n.o.s.
1965	115	Hydrocarbon gas mixture, liquefied, n.o.s.
1966	115	Hydrogen, refrigerated liquid (cryogenic liquid)
1967	123	Insecticide gas, poisonous, n.o.s.
1967	123	Insecticide gas, toxic, n.o.s.
1967	123	Parathion and compressed gas mixture
1968	126	Insecticide gas, n.o.s.
1969	115	Isobutane
1969	115	Isobutane mixture
1970	120	Krypton, refrigerated liquid (cryogenic liquid)
1971	115	Methane
1971	115	Methane, compressed
1971	115	Natural gas, compressed
1972	115	Liquefied natural gas (cryogenic liquid)
1972	115	LNG (cryogenic liquid)
1972	115	Methane, refrigerated liquid (cryogenic liquid)

**ID Guide Name of Material  
No. No.**

1972	115	Natural gas, refrigerated liquid (cryogenic liquid)
1973	126	Chlorodifluoromethane and Chloropentafluoroethane mixture
1973	126	Chloropentafluoroethane and Chlorodifluoromethane mixture
1973	126	Refrigerant gas R-502
1974	126	Bromochlorodifluoromethane
1974	126	Chlorodifluorobromomethane
1974	126	Refrigerant gas R-12B1
1975	124	Dinitrogen tetroxide and Nitric oxide mixture
1975	124	Nitric oxide and Dinitrogen tetroxide mixture
1975	124	Nitric oxide and Nitrogen dioxide mixture
1975	124	Nitric oxide and Nitrogen tetroxide mixture
1975	124	Nitrogen dioxide and Nitric oxide mixture
1975	124	Nitrogen tetroxide and Nitric oxide mixture
1976	126	Octafluorocyclobutane
1976	126	Refrigerant gas RC-318
1977	120	Nitrogen, refrigerated liquid (cryogenic liquid)
1978	115	Propane
1978	115	Propane mixture
1979	121	Rare gases mixture, compressed
1980	121	Oxygen and Rare gases mixture, compressed
1980	121	Rare gases and Oxygen mixture, compressed
1981	121	Nitrogen and Rare gases mixture, compressed

**ID Guide Name of Material  
No. No.**

1981	121	Rare gases and Nitrogen mixture, compressed
1982	126	Refrigerant gas R-14
1982	126	Refrigerant gas R-14, compressed
1982	126	Tetrafluoromethane
1982	126	Tetrafluoromethane, compressed
1983	126	1-Chloro-2,2,2-trifluoroethane
1983	126	Chlorotrifluoroethane
1983	126	Refrigerant gas R-133a
1984	126	Refrigerant gas R-23
1984	126	Trifluoromethane
1986	131	Alcohols, flammable, poisonous, n.o.s.
1986	131	Alcohols, flammable, toxic, n.o.s.
1986	131	Alcohols, poisonous, n.o.s.
1986	131	Alcohols, toxic, n.o.s.
1987	127	Alcohols, n.o.s.
1988	131	Aldehydes, flammable, poisonous, n.o.s.
1988	131	Aldehydes, flammable, toxic, n.o.s.
1988	131	Aldehydes, poisonous, n.o.s.
1988	131	Aldehydes, toxic, n.o.s.
1989	129	Aldehydes, n.o.s.
1990	129	Benzaldehyde
1991	131P	Chloroprene, stabilized
1992	131	Flammable liquid, poisonous, n.o.s.
1992	131	Flammable liquid, toxic, n.o.s.
1993	128	Combustible liquid, n.o.s.
1993	128	Compound, cleaning liquid (flammable)

ID No.	Guide No.	Name of Material
1993	128	Compound, tree or weed killing, liquid (flammable)
1993	128	Diesel fuel
1993	128	Flammable liquid, n.o.s.
1993	128	Fuel oil
1994	131	Iron pentacarbonyl
1999	130	Asphalt
1999	130	Tars, liquid
2000	133	Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap
2001	133	Cobalt naphthenates, powder
2002	135	Celluloid, scrap
2003	135	Metal alkyls, water-reactive, n.o.s.
2003	135	Metal aryls, water-reactive, n.o.s.
2004	135	Magnesium diamide
2005	135	Magnesium diphenyl
2006	135	Plastic, nitrocellulose-based, spontaneously combustible, n.o.s.
2006	135	Plastics, nitrocellulose-based, self-heating, n.o.s.
2008	135	Zirconium powder, dry
2009	135	Zirconium, dry, finished sheets, strips or coiled wire
2010	138	Magnesium hydride
2011	139	Magnesium phosphide
2012	139	Potassium phosphide
2013	139	Strontium phosphide
2014	140	Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)

ID No.	Guide No.	Name of Material
2015	143	Hydrogen peroxide, aqueous solution, stabilized, with more than 60% Hydrogen peroxide
2015	143	Hydrogen peroxide, stabilized
2016	151	Ammunition, poisonous, non-explosive
2016	151	Ammunition, toxic, non-explosive
2017	159	Ammunition, tear-producing, non-explosive
2018	152	Chloroanilines, solid
2019	152	Chloroanilines, liquid
2020	153	Chlorophenols, solid
2021	153	Chlorophenols, liquid
2022	153	Cresylic acid
2023	131P	1-Chloro-2,3-epoxypropane
2023	131P	Epichlorohydrin
2024	151	Mercury compound, liquid, n.o.s.
2025	151	Mercury compound, solid, n.o.s.
2026	151	Phenylmercuric compound, n.o.s.
2027	151	Sodium arsenite, solid
2028	153	Bombs, smoke, non-explosive, with corrosive liquid, without initiating device
2029	132	Hydrazine, anhydrous
2029	132	Hydrazine, aqueous solutions, with more than 64% Hydrazine
2030	153	Hydrazine, aqueous solution, with more than 37% Hydrazine
2030	153	Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine
2030	153	Hydrazine hydrate

**ID Guide Name of Material**  
**No. No.**

2031	157	Nitric acid, other than red fuming, with more than 70% nitric acid
2031	157	Nitric acid, other than red fuming, with not more than 70% nitric acid
2032	157	Nitric acid, fuming
2032	157	Nitric acid, red fuming
2033	154	Potassium monoxide
2034	115	Hydrogen and Methane mixture, compressed
2034	115	Methane and Hydrogen mixture, compressed
2035	115	Refrigerant gas R-143a
2035	115	1,1,1-Trifluoroethane
2035	115	Trifluoroethane, compressed
2036	121	Xenon
2036	121	Xenon, compressed
2037	115	Gas cartridges
2037	115	Receptacles, small, containing gas
2038	152	Dinitrotoluenes
2038	152	Dinitrotoluenes, liquid
2038	152	Dinitrotoluenes, solid
2044	115	2,2-Dimethylpropane
2045	130	Isobutyl aldehyde
2045	130	Isobutyraldehyde
2046	130	Cymenes
2047	129	Dichloropropenes
2048	130	Dicyclopentadiene
2049	130	Diethylbenzene
2050	128	Diisobutylene, isomeric compounds
2051	132	2-Dimethylaminoethanol
2051	132	Dimethylethanolamine
2052	128	Dipentene

**ID Guide Name of Material**  
**No. No.**

2053	129	Methylamyl alcohol
2053	129	Methyl isobutyl carbinol
2053	129	M.I.B.C.
2054	132	Morpholine
2055	128P	Styrene monomer, stabilized
2056	127	Tetrahydrofuran
2057	128	Tripropylene
2058	129	Valeraldehyde
2059	127	Nitrocellulose, solution, flammable
2059	127	Nitrocellulose, solution, in a flammable liquid
2067	140	Ammonium nitrate fertilizers
2068	140	Ammonium nitrate fertilizers, with Calcium carbonate
2069	140	Ammonium nitrate fertilizers, with Ammonium sulfate
2069	140	Ammonium nitrate fertilizers, with Ammonium sulphate
2069	140	Ammonium nitrate mixed fertilizers
2070	143	Ammonium nitrate fertilizers, with Phosphate or Potash
2071	140	Ammonium nitrate fertilizer, with not more than 0.4% combustible material
2071	140	Ammonium nitrate fertilizers
2072	140	Ammonium nitrate fertilizer, n.o.s.
2072	140	Ammonium nitrate fertilizers
2073	125	Ammonia, solution, with more than 35% but not more than 50% Ammonia
2074	153P	Acrylamide
2074	153P	Acrylamide, solid
2075	153	Chloral, anhydrous, stabilized
2076	153	Cresols



ID No.	Guide No.	Name of Material
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2076	153	Cresols, liquid
2076	153	Cresols, solid
2077	153	alpha-Naphthylamine
2077	153	Naphthylamine (alpha)
2078	156	Toluene diisocyanate
2079	154	Diethylenetriamine
2186	125	Hydrogen chloride, refrigerated liquid
2187	120	Carbon dioxide, refrigerated liquid
2188	119	Arsine
2188	119	SA
2189	119	Dichlorosilane
2190	124	Oxygen difluoride
2190	124	Oxygen difluoride, compressed
2191	123	Sulfuryl fluoride
2191	123	Sulphuryl fluoride
2192	119	Germane
2193	126	Hexafluoroethane
2193	126	Hexafluoroethane, compressed
2193	126	Refrigerant gas R-116
2193	126	Refrigerant gas R-116, compressed
2194	125	Selenium hexafluoride
2195	125	Tellurium hexafluoride
2196	125	Tungsten hexafluoride
2197	125	Hydrogen iodide, anhydrous
2198	125	Phosphorus pentafluoride
2198	125	Phosphorus pentafluoride, compressed
2199	119	Phosphine
2200	116P	Propadiene, stabilized

ID No.	Guide No.	Name of Material
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2201	122	Nitrous oxide, refrigerated liquid
2202	117	Hydrogen selenide, anhydrous
2203	116	Silane
2203	116	Silane, compressed
2204	119	Carbonyl sulfide
2204	119	Carbonyl sulphide
2205	153	Adiponitrile
2206	155	Isocyanate solution, poisonous, n.o.s.
2206	155	Isocyanate solution, toxic, n.o.s.
2206	155	Isocyanate solutions, n.o.s.
2206	155	Isocyanates, n.o.s.
2206	155	Isocyanates, poisonous, n.o.s.
2206	155	Isocyanates, toxic, n.o.s.
2208	140	Bleaching powder
2208	140	Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine
2209	132	Formaldehyde, solutions (Formalin) (corrosive)
2210	135	Maneb
2210	135	Maneb preparation, with not less than 60% Maneb
2211	133	Polymeric beads, expandable
2211	133	Polystyrene beads, expandable
2212	171	Asbestos
2212	171	Asbestos, blue
2212	171	Asbestos, brown
2212	171	Blue asbestos
2212	171	Brown asbestos
2213	133	Paraformaldehyde
2214	156	Phthalic anhydride

**ID Guide Name of Material  
No. No.**

2215	156	Maleic anhydride
2215	156	Maleic anhydride, molten
2216	171	Fish meal, stabilized
2216	171	Fish scrap, stabilized
2217	135	Seed cake, with not more than 1.5% oil and not more than 11% moisture
2218	132P	Acrylic acid, stabilized
2219	129	Allyl glycidyl ether
2222	128	Anisole
2224	152	Benzonitrile
2225	156	Benzenesulfonyl chloride
2225	156	Benzenesulphonyl chloride
2226	156	Benzotrichloride
2227	130P	n-Butyl methacrylate, stabilized
2232	153	Chloroacetaldehyde
2232	153	2-Chloroethanal
2233	152	Chloroanisidines
2234	130	Chlorobenzotrifluorides
2235	153	Chlorobenzyl chlorides
2235	153	Chlorobenzyl chlorides, liquid
2236	156	3-Chloro-4-methylphenyl isocyanate
2236	156	3-Chloro-4-methylphenyl isocyanate, liquid
2237	153	Chloronitroanilines
2238	129	Chlorotoluenes
2239	153	Chlorotoluidines
2239	153	Chlorotoluidines, liquid
2239	153	Chlorotoluidines, solid
2240	154	Chromosulfuric acid
2240	154	Chromosulphuric acid
2241	128	Cycloheptane

**ID Guide Name of Material  
No. No.**

2242	128	Cycloheptene
2243	130	Cyclohexyl acetate
2244	129	Cyclopentanol
2245	128	Cyclopentanone
2246	128	Cyclopentene
2247	128	n-Decane
2248	132	Di-n-butylamine
2249	131	Dichlorodimethyl ether, symmetrical
2250	156	Dichlorophenyl isocyanates
2251	128P	Bicyclo[2.2.1]hepta-2,5-diene, stabilized
2251	128P	2,5-Norbornadiene, stabilized
2252	127	1,2-Dimethoxyethane
2253	153	N,N-Dimethylaniline
2254	133	Matches, fusee
2256	130	Cyclohexene
2257	138	Potassium
2257	138	Potassium, metal
2258	132	1,2-Propylenediamine
2258	132	1,3-Propylenediamine
2259	153	Triethylenetetramine
2260	132	Tripropylamine
2261	153	Xylenols
2261	153	Xylenols, solid
2262	156	Dimethylcarbamoyl chloride
2263	128	Dimethylcyclohexanes
2264	132	N,N-Dimethylcyclohexylamine
2264	132	Dimethylcyclohexylamine
2265	129	N,N-Dimethylformamide
2266	132	Dimethyl-N-propylamine
2267	156	Dimethyl thiophosphoryl chloride

**ID Guide Name of Material**  
**No. No.**

2269 **153** 3,3'-Iminodipropylamine  
2270 **132** Ethylamine, aqueous solution,  
with not less than 50% but not  
more than 70% Ethylamine  
2271 **128** Ethyl amyl ketone  
2272 **153** N-Ethylaniline  
2273 **153** 2-Ethylaniline  
2274 **153** N-Ethyl-N-benzylaniline  
2275 **129** 2-Ethylbutanol  
2276 **132** 2-Ethylhexylamine  
2277 **130P** Ethyl methacrylate  
2277 **130P** Ethyl methacrylate, stabilized  
2278 **128** n-Heptene  
2279 **151** Hexachlorobutadiene  
2280 **153** Hexamethylenediamine, solid  
2281 **156** Hexamethylene diisocyanate  
2282 **129** Hexanols  
2283 **130P** Isobutyl methacrylate,  
stabilized  
2284 **131** Isobutyronitrile  
2285 **156** Isocyanatobenzotrifluorides  
2286 **128** Pentamethylheptane  
2287 **128** Isoheptenes  
2288 **128** Isohexenes  
2289 **153** Isophoronediamine  
2290 **156** IPDI  
2290 **156** Isophorone diisocyanate  
2291 **151** Lead compound, soluble, n.o.s.  
2293 **128** 4-Methoxy-4-methylpentan-  
2-one  
2294 **153** N-Methylaniline  
2295 **155** Methyl chloroacetate  
2296 **128** Methylcyclohexane

**ID Guide Name of Material**  
**No. No.**

2297 **128** Methylcyclohexanone  
2298 **128** Methylcyclopentane  
2299 **155** Methyl dichloroacetate  
2300 **153** 2-Methyl-5-ethylpyridine  
2301 **128** 2-Methylfuran  
2302 **127** 5-Methylhexan-2-one  
2303 **128** Isopropenylbenzene  
2304 **133** Naphthalene, molten  
2305 **153** Nitrobenzenesulfonic acid  
2305 **153** Nitrobenzenesulphonic acid  
2306 **152** Nitrobenzotrifluorides  
2306 **152** Nitrobenzotrifluorides, liquid  
2307 **152** 3-Nitro-4-chlorobenzotrifluoride  
2308 **157** Nitrosylsulfuric acid  
2308 **157** Nitrosylsulfuric acid, liquid  
2308 **157** Nitrosylsulfuric acid, solid  
2308 **157** Nitrosylsulphuric acid  
2308 **157** Nitrosylsulphuric acid, liquid  
2308 **157** Nitrosylsulphuric acid, solid  
2309 **128P** Octadiene  
2310 **131** Pentan-2,4-dione  
2310 **131** 2,4-Pentanedione  
2310 **131** Pentane-2,4-dione  
2311 **153** Phenetidines  
2312 **153** Phenol, molten  
2313 **129** Picolines  
2315 **171** Articles containing  
Polychlorinated biphenyls  
(PCB)  
2315 **171** PCB  
2315 **171** Polychlorinated biphenyls  
2315 **171** Polychlorinated biphenyls,  
liquid

**ID Guide Name of Material  
No. No.**

2315	171	Polychlorinated biphenyls, solid
2316	157	Sodium cuprocyanide, solid
2317	157	Sodium cuprocyanide, solution
2318	135	Sodium hydrosulfide, solid, with less than 25% water of crystallization
2318	135	Sodium hydrosulfide, with less than 25% water of crystallization
2318	135	Sodium hydrosulphide, solid, with less than 25% water of crystallization
2318	135	Sodium hydrosulphide, with less than 25% water of crystallization
2319	128	Terpene hydrocarbons, n.o.s.
2320	153	Tetraethylenepentamine
2321	153	Trichlorobenzenes, liquid
2322	152	Trichlorobutene
2323	130	Triethyl phosphite
2324	128	Triisobutylene
2325	129	1,3,5-Trimethylbenzene
2326	153	Trimethylcyclohexylamine
2327	153	Trimethylhexamethylenediamines
2328	156	Trimethylhexamethylene diisocyanate
2329	130	Trimethyl phosphite
2330	128	Undecane
2331	154	Zinc chloride, anhydrous
2332	129	Acetaldehyde oxime
2333	131	Allyl acetate
2334	131	Allylamine
2335	131	Allyl ethyl ether
2336	131	Allyl formate
2337	131	Phenyl mercaptan

**ID Guide Name of Material  
No. No.**

2338	127	Benzotrifluoride
2339	130	2-Bromobutane
2340	130	2-Bromoethyl ethyl ether
2341	130	1-Bromo-3-methylbutane
2342	130	Bromomethylpropanes
2343	130	2-Bromopentane
2344	129	2-Bromopropane
2344	129	Bromopropanes
2345	130	3-Bromopropyne
2346	127	Butanedione
2346	127	Diacetyl
2347	130	Butyl mercaptan
2348	129P	Butyl acrylates, stabilized
2350	127	Butyl methyl ether
2351	129	Butyl nitrites
2352	127P	Butyl vinyl ether, stabilized
2353	132	Butyryl chloride
2354	131	Chloromethyl ethyl ether
2356	129	2-Chloropropane
2357	132	Cyclohexylamine
2358	128P	Cyclooctatetraene
2359	132	Diallylamine
2360	131P	Diallyl ether
2361	132	Diisobutylamine
2362	130	1,1-Dichloroethane
2363	129	Ethyl mercaptan
2364	128	n-Propyl benzene
2366	128	Diethyl carbonate
2367	130	alpha-Methylvaleraldehyde
2367	130	Methyl valeraldehyde (alpha)
2368	128	alpha-Pinene

**ID Guide Name of Material**  
**No. No.**

2368	<b>128</b>	Pinene (alpha)
2370	<b>128</b>	1-Hexene
2371	<b>128</b>	Isopentenes
2372	<b>129</b>	1,2-Di-(dimethylamino)ethane
2373	<b>127</b>	Diethoxymethane
2374	<b>127</b>	3,3-Diethoxypropene
2375	<b>129</b>	Diethyl sulfide
2375	<b>129</b>	Diethyl sulphide
2376	<b>127</b>	2,3-Dihydropyran
2377	<b>127</b>	1,1-Dimethoxyethane
2378	<b>131</b>	2-Dimethylaminoacetonitrile
2379	<b>132</b>	1,3-Dimethylbutylamine
2380	<b>127</b>	Dimethyldiethoxysilane
2381	<b>130</b>	Dimethyl disulfide
2381	<b>130</b>	Dimethyl disulphide
<b>2382</b>	<b>131</b>	1,2-Dimethylhydrazine
<b>2382</b>	<b>131</b>	Dimethylhydrazine, symmetrical
2383	<b>132</b>	Dipropylamine
2384	<b>127</b>	Di-n-propyl ether
2384	<b>127</b>	Dipropyl ether
2385	<b>129</b>	Ethyl isobutyrate
2386	<b>132</b>	1-Ethylpiperidine
2387	<b>130</b>	Fluorobenzene
2388	<b>130</b>	Fluorotoluenes
2389	<b>128</b>	Furan
2390	<b>129</b>	2-Iodobutane
2391	<b>129</b>	Iodomethylpropanes
2392	<b>129</b>	Iodopropanes
2393	<b>129</b>	Isobutyl formate
2394	<b>129</b>	Isobutyl propionate
<b>2395</b>	<b>132</b>	Isobutyryl chloride

**ID Guide Name of Material**  
**No. No.**

2396	<b>131P</b>	Methacrylaldehyde, stabilized
2397	<b>127</b>	3-Methylbutan-2-one
2398	<b>127</b>	Methyl tert-butyl ether
2399	<b>132</b>	1-Methylpiperidine
2400	<b>130</b>	Methyl isovalerate
2401	<b>132</b>	Piperidine
2402	<b>130</b>	Propanethiols
2403	<b>129P</b>	Isopropenyl acetate
2404	<b>131</b>	Propionitrile
2405	<b>129</b>	Isopropyl butyrate
2406	<b>127</b>	Isopropyl isobutyrate
<b>2407</b>	<b>155</b>	Isopropyl chloroformate
2409	<b>129</b>	Isopropyl propionate
2410	<b>129</b>	1,2,3,6-Tetrahydropyridine
2410	<b>129</b>	1,2,5,6-Tetrahydropyridine
2411	<b>131</b>	Butyronitrile
2412	<b>130</b>	Tetrahydrothiophene
2413	<b>128</b>	Tetrapropyl orthotitanate
2414	<b>130</b>	Thiophene
2416	<b>129</b>	Trimethyl borate
<b>2417</b>	<b>125</b>	Carbonyl fluoride
<b>2417</b>	<b>125</b>	Carbonyl fluoride, compressed
<b>2418</b>	<b>125</b>	Sulfur tetrafluoride
<b>2418</b>	<b>125</b>	Sulphur tetrafluoride
2419	<b>116</b>	Bromotrifluoroethylene
<b>2420</b>	<b>125</b>	Hexafluoroacetone
<b>2421</b>	<b>124</b>	Nitrogen trioxide
2422	<b>126</b>	Octafluorobut-2-ene
2422	<b>126</b>	Refrigerant gas R-1318
2424	<b>126</b>	Octafluoropropane
2424	<b>126</b>	Refrigerant gas R-218

**ID Guide Name of Material  
No. No.**

2426	140	Ammonium nitrate, liquid (hot concentrated solution)
2427	140	Potassium chlorate, aqueous solution
2427	140	Potassium chlorate, solution
2428	140	Sodium chlorate, aqueous solution
2429	140	Calcium chlorate, aqueous solution
2429	140	Calcium chlorate, solution
2430	153	Alkyl phenols, solid, n.o.s. (including C2-C12 homologues)
2431	153	Anisidines
2431	153	Anisidines, liquid
2431	153	Anisidines, solid
2432	153	N,N-Diethylaniline
2433	152	Chloronitrotoluenes
2433	152	Chloronitrotoluenes, liquid
2433	152	Chloronitrotoluenes, solid
2434	156	Dibenzylidichlorosilane
2435	156	Ethylphenyldichlorosilane
2436	129	Thioacetic acid
2437	156	Methylphenyldichlorosilane
2438	132	Trimethylacetyl chloride
2439	154	Sodium hydrogendifluoride
2440	154	Stannic chloride, pentahydrate
2440	154	Tin tetrachloride, pentahydrate
2441	135	Titanium trichloride, pyrophoric
2441	135	Titanium trichloride mixture, pyrophoric
2442	156	Trichloroacetyl chloride
2443	137	Vanadium oxytrichloride
2444	137	Vanadium tetrachloride

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No. No.**

2445	135	Lithium alkyls
2445	135	Lithium alkyls, liquid
2446	153	Nitrocresols
2446	153	Nitrocresols, solid
2447	136	Phosphorus, white, molten
2447	136	White phosphorus, molten
2447	136	Yellow phosphorus, molten
2448	133	Sulfur, molten
2448	133	Sulphur, molten
2451	122	Nitrogen trifluoride
2451	122	Nitrogen trifluoride, compressed
2452	116P	Ethylacetylene, stabilized
2453	115	Ethyl fluoride
2453	115	Refrigerant gas R-161
2454	115	Methyl fluoride
2454	115	Refrigerant gas R-41
2455	116	Methyl nitrite
2456	130P	2-Chloropropene
2457	128	2,3-Dimethylbutane
2458	130	Hexadiene
2459	128	2-Methyl-1-butene
2460	128	2-Methyl-2-butene
2461	128	Methylpentadiene
2463	138	Aluminum hydride
2464	141	Beryllium nitrate
2465	140	Dichloroisocyanuric acid, dry
2465	140	Dichloroisocyanuric acid salts
2465	140	Sodium dichloroisocyanurate
2465	140	Sodium dichloro-s-triazinetriene
2466	143	Potassium superoxide
2468	140	Trichloroisocyanuric acid, dry

ID No.	Guide No.	Name of Material
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2469	140	Zinc bromate
2470	152	Phenylacetoneitrile, liquid
2471	154	Osmium tetroxide
2473	154	Sodium arsanilate
2474	157	Thiophosgene
2475	157	Vanadium trichloride
2477	131	Methyl isothiocyanate
2478	155	Isocyanate solution, flammable, poisonous, n.o.s.
2478	155	Isocyanate solution, flammable, toxic, n.o.s.
2478	155	Isocyanate solutions, n.o.s.
2478	155	Isocyanates, flammable, poisonous, n.o.s.
2478	155	Isocyanates, flammable, toxic, n.o.s.
2478	155	Isocyanates, n.o.s.
2480	155	Methyl isocyanate
2481	155	Ethyl isocyanate
2482	155	n-Propyl isocyanate
2483	155	Isopropyl isocyanate
2484	155	tert-Butyl isocyanate
2485	155	n-Butyl isocyanate
2486	155	Isobutyl isocyanate
2487	155	Phenyl isocyanate
2488	155	Cyclohexyl isocyanate
2490	153	Dichloroisopropyl ether
2491	153	Ethanolamine
2491	153	Ethanolamine, solution
2491	153	Monoethanolamine
2493	132	Hexamethyleimine
2495	144	Iodine pentafluoride

ID No.	Guide No.	Name of Material
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2496	156	Propionic anhydride
2498	129	1,2,3,6-Tetrahydrobenzaldehyde
2501	152	1-Aziridinyl phosphine oxide (Tris)
2501	152	Tri-(1-aziridinyl)phosphine oxide, solution
2501	152	Tris-(1-aziridinyl)phosphine oxide, solution
2502	132	Valeryl chloride
2503	137	Zirconium tetrachloride
2504	159	Acetylene tetrabromide
2504	159	Tetrabromoethane
2505	154	Ammonium fluoride
2506	154	Ammonium hydrogen sulfate
2506	154	Ammonium hydrogen sulphate
2507	154	Chloroplatinic acid, solid
2508	156	Molybdenum pentachloride
2509	154	Potassium hydrogen sulfate
2509	154	Potassium hydrogen sulphate
2511	153	2-Chloropropionic acid
2511	153	2-Chloropropionic acid, solid
2511	153	2-Chloropropionic acid, solution
2512	152	Aminophenols
2513	156	Bromoacetyl bromide
2514	130	Bromobenzene
2515	159	Bromoform
2516	151	Carbon tetrabromide
2517	115	1-Chloro-1,1-difluoroethane
2517	115	Chlorodifluoroethanes
2517	115	Difluorochloroethanes
2517	115	Refrigerant gas R-142b
2518	153	1,5,9-Cyclododecatriene
2520	130P	Cyclooctadienes

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**No. No.**

2521	131P	Diketene, stabilized
2522	153P	2-Dimethylaminoethyl methacrylate
2522	153P	Dimethylaminoethyl methacrylate
2524	129	Ethyl orthoformate
2525	156	Ethyl oxalate
2526	132	Furfurylamine
2527	129P	Isobutyl acrylate, stabilized
2528	130	Isobutyl isobutyrate
2529	132	Isobutyric acid
2531	153P	Methacrylic acid, stabilized
2533	156	Methyl trichloroacetate
2534	119	Methylchlorosilane
2535	132	4-Methylmorpholine
2535	132	N-Methylmorpholine
2535	132	Methylmorpholine
2536	127	Methyltetrahydrofuran
2538	133	Nitronaphthalene
2541	128	Terpinolene
2542	153	Tributylamine
2545	135	Hafnium powder, dry
2546	135	Titanium powder, dry
2547	143	Sodium superoxide
2548	124	Chlorine pentafluoride
2552	151	Hexafluoroacetone hydrate
2552	151	Hexafluoroacetone hydrate, liquid
2554	130P	Methylallyl chloride
2555	113	Nitrocellulose with water, not less than 25% water
2556	113	Nitrocellulose with alcohol

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**No. No.**

2556	113	Nitrocellulose with not less than 25% alcohol
2557	133	Nitrocellulose
2557	133	Nitrocellulose mixture, without pigment
2557	133	Nitrocellulose mixture, without plasticizer
2557	133	Nitrocellulose mixture, with pigment
2557	133	Nitrocellulose mixture, with pigment and plasticizer
2557	133	Nitrocellulose mixture, with plasticizer
2558	131	Epibromohydrin
2560	129	2-Methylpentan-2-ol
2561	128	3-Methyl-1-butene
2564	153	Trichloroacetic acid, solution
2565	153	Dicyclohexylamine
2567	154	Sodium pentachlorophenate
2570	154	Cadmium compound
2571	156	Alkylsulfuric acids
2571	156	Alkylsulphuric acids
2571	156	Ethylsulfuric acid
2571	156	Ethylsulphuric acid
2572	153	Phenylhydrazine
2573	141	Thallium chlorate
2574	151	Tricresyl phosphate
2576	137	Phosphorus oxybromide, molten
2577	156	Phenylacetyl chloride
2578	157	Phosphorus trioxide
2579	153	Piperazine
2580	154	Aluminum bromide, solution
2581	154	Aluminum chloride, solution
2582	154	Ferric chloride, solution



**ID Guide**  
**No. No.**

2583 153 Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid

2583 153 Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid

2583 153 Aryl sulfonic acids, solid, with more than 5% free Sulfuric acid

2583 153 Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid

2584 153 Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid

2584 153 Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid

2584 153 Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid

2584 153 Aryl sulphonic acids, liquid, with more than 5% free Sulphuric acid

2585 153 Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid

2585 153 Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid

2585 153 Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid

2585 153 Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid

2586 153 Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid

2586 153 Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid

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2586 153 Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid

2586 153 Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid

2587 153 Benzoquinone

2588 151 Pesticide, solid, poisonous

2588 151 Pesticide, solid, poisonous, n.o.s.

2588 151 Pesticide, solid, toxic, n.o.s.

2589 155 Vinyl chloroacetate

2590 171 Asbestos, white

2590 171 White asbestos

2591 120 Xenon, refrigerated liquid (cryogenic liquid)

2599 126 Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane

2599 126 Refrigerant gas R-13 and Refrigerant gas R-23 azeotropic mixture with 60% Refrigerant gas R-13

2599 126 Refrigerant gas R-23 and Refrigerant gas R-13 azeotropic mixture with 60% Refrigerant gas R-13

2599 126 Refrigerant gas R-503 (azeotropic mixture of Refrigerant gas R-13 and Refrigerant gas R-23 with approximately 60% Refrigerant gas R-13)

2599 126 Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane

2600 119 Carbon monoxide and Hydrogen mixture, compressed

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2600	119	Hydrogen and Carbon monoxide mixture, compressed
2601	115	Cyclobutane
2602	126	Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane
2602	126	Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane
2602	126	Refrigerant gas R-12 and Refrigerant gas R-152a azeotropic mixture with 74% Refrigerant gas R-12
2602	126	Refrigerant gas R-152a and Refrigerant gas R-12 azeotropic mixture with 74% Refrigerant gas R-12
2602	126	Refrigerant gas R-500 (azeotropic mixture of Refrigerant gas R-12 and Refrigerant gas R-152a with approximately 74% Refrigerant gas R-12)
2603	131	Cycloheptatriene
2604	132	Boron trifluoride diethyl etherate
2605	155	Methoxymethyl isocyanate
2606	155	Methyl orthosilicate
2607	129P	Acrolein dimer, stabilized
2608	129	Nitropropanes
2609	156	Triallyl borate
2610	132	Triallylamine
2611	131	Propylene chlorohydrin
2612	127	Methyl propyl ether
2614	129	Methallyl alcohol
2615	127	Ethyl propyl ether

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2616	129	Triisopropyl borate
2617	129	Methylcyclohexanols
2618	130P	Vinyltoluenes, stabilized
2619	132	Benzyl dimethylamine
2620	130	Amyl butyrates
2621	127	Acetyl methyl carbinol
2622	131P	Glycidaldehyde
2623	133	Firelighters, solid, with flammable liquid
2624	138	Magnesium silicide
2626	140	Chloric acid, aqueous solution, with not more than 10% Chloric acid
2627	140	Nitrites, inorganic, n.o.s.
2628	151	Potassium fluoroacetate
2629	151	Sodium fluoroacetate
2630	151	Selenates
2630	151	Selenites
2642	154	Fluoroacetic acid
2643	155	Methyl bromoacetate
2644	151	Methyl iodide
2645	153	Phenacyl bromide
2646	151	Hexachlorocyclopentadiene
2647	153	Malononitrile
2648	154	1,2-Dibromobutan-3-one
2649	153	1,3-Dichloroacetone
2650	153	1,1-Dichloro-1-nitroethane
2651	153	4,4'-Diaminodiphenylmethane
2653	156	Benzyl iodide
2655	151	Potassium fluorosilicate
2655	151	Potassium silicofluoride
2656	154	Quinoline
2657	153	Selenium disulfide

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**No. No.**

2657 **153** Selenium disulphide  
2659 **151** Sodium chloroacetate  
2660 **153** Mononitrotoluidines  
2660 **153** Nitrotoluidines (mono)  
2661 **153** Hexachloroacetone  
2662 **153** Hydroquinone  
2662 **153** Hydroquinone, solid  
2664 **160** Dibromomethane  
2667 **152** Butyltoluenes  
2668 **131** Chloroacetonitrile  
2669 **152** Chlorocresols  
2669 **152** Chlorocresols, liquid  
2669 **152** Chlorocresols, solid  
2669 **152** Chlorocresols, solution  
2670 **157** Cyanuric chloride  
2671 **153** Aminopyridines  
2672 **154** Ammonia, solution, with more than 10% but not more than 35% Ammonia  
2672 **154** Ammonium hydroxide  
2672 **154** Ammonium hydroxide, with more than 10% but not more than 35% Ammonia  
2673 **151** 2-Amino-4-chlorophenol  
2674 **154** Sodium fluorosilicate  
2674 **154** Sodium silicofluoride  
2676 **119** Stibine  
2677 **154** Rubidium hydroxide, solution  
2678 **154** Rubidium hydroxide  
2678 **154** Rubidium hydroxide, solid  
2679 **154** Lithium hydroxide, solution  
2680 **154** Lithium hydroxide  
2680 **154** Lithium hydroxide, monohydrate

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**No. No.**

2680 **154** Lithium hydroxide, solid  
2681 **154** Caesium hydroxide, solution  
2681 **154** Cesium hydroxide, solution  
2682 **157** Caesium hydroxide  
2682 **157** Cesium hydroxide  
2683 **132** Ammonium sulfide, solution  
2683 **132** Ammonium sulphide, solution  
2684 **132** 3-Diethylaminopropylamine  
2684 **132** Diethylaminopropylamine  
2685 **132** N,N-Diethylethylenediamine  
2686 **132** 2-Diethylaminoethanol  
2686 **132** Diethylaminoethanol  
2687 **133** Dicyclohexylammonium nitrite  
2688 **159** 1-Bromo-3-chloropropane  
2688 **159** 1-Chloro-3-bromopropane  
2689 **153** Glycerol alpha-monochlorohydrin  
2690 **152** N,n-Butylimidazole  
2691 **137** Phosphorus pentabromide  
2692 **157** Boron tribromide  
2693 **154** Bisulfites, aqueous solution, n.o.s.  
2693 **154** Bisulfites, inorganic, aqueous solution, n.o.s.  
2693 **154** Bisulphites, aqueous solution, n.o.s.  
2693 **154** Bisulphites, inorganic, aqueous solution, n.o.s.  
2698 **156** Tetrahydrophthalic anhydrides  
2699 **154** Trifluoroacetic acid  
2705 **153P** 1-Pentol  
2707 **127** Dimethyldioxanes  
2709 **128** Butylbenzenes  
2710 **128** Dipropyl ketone

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**No. No.**

2713	153	Acridine
2714	133	Zinc resinate
2715	133	Aluminum resinate
2716	153	1,4-Butynediol
2717	133	Camphor
2717	133	Camphor, synthetic
2719	141	Barium bromate
2720	141	Chromium nitrate
2721	141	Copper chlorate
2722	140	Lithium nitrate
2723	140	Magnesium chlorate
2724	140	Manganese nitrate
2725	140	Nickel nitrate
2726	140	Nickel nitrite
2727	141	Thallium nitrate
2728	140	Zirconium nitrate
2729	152	Hexachlorobenzene
2730	152	Nitroanisoles
2730	152	Nitroanisoles, liquid
2730	152	Nitroanisoles, solid
2732	152	Nitrobromobenzenes
2732	152	Nitrobromobenzenes, liquid
2732	152	Nitrobromobenzenes, solid
2733	132	Alkylamines, n.o.s.
2733	132	Amines, flammable, corrosive, n.o.s.
2733	132	Polyalkylamines, n.o.s.
2733	132	Polyamines, flammable, corrosive, n.o.s.
2734	132	Alkylamines, n.o.s.
2734	132	Amines, liquid, corrosive, flammable, n.o.s.
2734	132	Polyalkylamines, n.o.s.

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**No. No.**

2734	132	Polyamines, liquid, corrosive, flammable, n.o.s.
2735	153	Alkylamines, n.o.s.
2735	153	Amines, liquid, corrosive, n.o.s.
2735	153	Polyalkylamines, n.o.s.
2735	153	Polyamines, liquid, corrosive, n.o.s.
2738	153	N-Butylaniline
2739	156	Butyric anhydride
2740	155	n-Propyl chloroformate
2741	141	Barium hypochlorite, with more than 22% available Chlorine
2742	155	sec-Butyl chloroformate
2742	155	Chloroformates, n.o.s.
2742	155	Chloroformates, poisonous, corrosive, flammable, n.o.s.
2742	155	Chloroformates, toxic, corrosive, flammable, n.o.s.
2742	155	Isobutyl chloroformate
2743	155	n-Butyl chloroformate
2744	155	Cyclobutyl chloroformate
2745	157	Chloromethyl chloroformate
2746	156	Phenyl chloroformate
2747	156	tert-Butylcyclohexyl chloroformate
2748	156	2-Ethylhexyl chloroformate
2749	130	Tetramethylsilane
2750	153	1,3-Dichloropropanol-2
2751	155	Diethylthiophosphoryl chloride
2752	127	1,2-Epoxy-3-ethoxypropane
2753	153	N-Ethylbenzyltoluidines
2753	153	N-Ethylbenzyltoluidines, liquid
2753	153	N-Ethylbenzyltoluidines, solid
2754	153	N-Ethyltoluidines

ID No.	Guide No.	Name of Material
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2757	151	Carbamate pesticide, solid, poisonous
2757	151	Carbamate pesticide, solid, toxic
2758	131	Carbamate pesticide, liquid, flammable, poisonous
2758	131	Carbamate pesticide, liquid, flammable, toxic
2759	151	Arsenical pesticide, solid, poisonous
2759	151	Arsenical pesticide, solid, toxic
2760	131	Arsenical pesticide, liquid, flammable, poisonous
2760	131	Arsenical pesticide, liquid, flammable, toxic
2761	151	Organochlorine pesticide, solid, poisonous
2761	151	Organochlorine pesticide, solid, toxic
2762	131	Organochlorine pesticide, liquid, flammable, poisonous
2762	131	Organochlorine pesticide, liquid, flammable, toxic
2763	151	Triazine pesticide, solid, poisonous
2763	151	Triazine pesticide, solid, toxic
2764	131	Triazine pesticide, liquid, flammable, poisonous
2764	131	Triazine pesticide, liquid, flammable, toxic
2771	151	Dithiocarbamate pesticide, solid, poisonous
2771	151	Dithiocarbamate pesticide, solid, toxic
2771	151	Thiocarbamate pesticide, solid, poisonous
2771	151	Thiocarbamate pesticide, solid, toxic

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2772	131	Dithiocarbamate pesticide, liquid, flammable, poisonous
2772	131	Dithiocarbamate pesticide, liquid, flammable, toxic
2772	131	Thiocarbamate pesticide, liquid, flammable, poisonous
2772	131	Thiocarbamate pesticide, liquid, flammable, toxic
2775	151	Copper based pesticide, solid, poisonous
2775	151	Copper based pesticide, solid, toxic
2776	131	Copper based pesticide, liquid, flammable, poisonous
2776	131	Copper based pesticide, liquid, flammable, toxic
2777	151	Mercury based pesticide, solid, poisonous
2777	151	Mercury based pesticide, solid, toxic
2778	131	Mercury based pesticide, liquid, flammable, poisonous
2778	131	Mercury based pesticide, liquid, flammable, toxic
2779	153	Substituted nitrophenol pesticide, solid, poisonous
2779	153	Substituted nitrophenol pesticide, solid, toxic
2780	131	Substituted nitrophenol pesticide, liquid, flammable, poisonous
2780	131	Substituted nitrophenol pesticide, liquid, flammable, toxic
2781	151	Bipyridilium pesticide, solid, poisonous
2781	151	Bipyridilium pesticide, solid, toxic
2782	131	Bipyridilium pesticide, liquid, flammable, poisonous

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2782	131	Bipyridilium pesticide, liquid, flammable, toxic
2783	152	Organophosphorus pesticide, solid, poisonous
2783	152	Organophosphorus pesticide, solid, toxic
2784	131	Organophosphorus pesticide, liquid, flammable, poisonous
2784	131	Organophosphorus pesticide, liquid, flammable, toxic
2785	152	4-Thiapentanal
2785	152	Thia-4-pentanal
2786	153	Organotin pesticide, solid, poisonous
2786	153	Organotin pesticide, solid, toxic
2787	131	Organotin pesticide, liquid, flammable, poisonous
2787	131	Organotin pesticide, liquid, flammable, toxic
2788	153	Organotin compound, liquid, n.o.s.
2789	132	Acetic acid, glacial
2789	132	Acetic acid, solution, more than 80% acid
2790	153	Acetic acid, solution, more than 10% but not more than 80% acid
2793	170	Ferrous metal borings, shavings, turnings or cuttings
2794	154	Batteries, wet, filled with acid
2795	154	Batteries, wet, filled with alkali
2796	157	Battery fluid, acid
2796	157	Sulfuric acid, with not more than 51% acid
2796	157	Sulphuric acid, with not more than 51% acid
2797	154	Battery fluid, alkali
2797	154	Battery fluid, alkali, with battery

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2797	154	Battery fluid, alkali, with electronic equipment or actuating device
2798	137	Benzene phosphorus dichloride
2798	137	Phenylphosphorus dichloride
2799	137	Benzene phosphorus thiodichloride
2799	137	Phenylphosphorus thiodichloride
2800	154	Batteries, wet, non-spillable
2801	154	Dye, liquid, corrosive, n.o.s.
2801	154	Dye intermediate, liquid, corrosive, n.o.s.
2802	154	Copper chloride
2803	172	Gallium
2805	138	Lithium hydride, fused solid
2806	138	Lithium nitride
2807	171	Magnetized material
2809	172	Mercury
2809	172	Mercury metal
2810	153	Buzz
2810	153	BZ
2810	153	Compound, tree or weed killing, liquid (toxic)
2810	153	CS
2810	153	DC
2810	153	GA
2810	153	GB
2810	153	GD
2810	153	GF
2810	153	H
2810	153	HD
2810	153	HL

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2810	153	HN-1
2810	153	HN-2
2810	153	HN-3
2810	153	L (Lewisite)
2810	153	Lewisite
2810	153	Mustard
2810	153	Mustard Lewisite
2810	153	Poisonous liquid, n.o.s.
2810	153	Poisonous liquid, n.o.s. (Inhalation Hazard Zone A)
2810	153	Poisonous liquid, n.o.s. (Inhalation Hazard Zone B)
2810	153	Poisonous liquid, organic, n.o.s.
2810	153	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone A)
2810	153	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone B)
2810	153	Sarin
2810	153	Soman
2810	153	Tabun
2810	153	Thickened GD
2810	153	Toxic liquid, n.o.s.
2810	153	Toxic liquid, n.o.s. (Inhalation Hazard Zone A)
2810	153	Toxic liquid, n.o.s. (Inhalation Hazard Zone B)
2810	153	Toxic liquid, organic, n.o.s.
2810	153	Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)
2810	153	Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)

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2810	153	VX
2811	154	CX
2811	154	Poisonous solid, organic, n.o.s.
2811	154	Toxic solid, organic, n.o.s.
2812	154	Sodium aluminate, solid
2813	138	Water-reactive solid, n.o.s.
2814	158	Infectious substance, affecting humans
2815	153	N-Aminoethylpiperazine
2817	154	Ammonium bifluoride, solution
2817	154	Ammonium hydrogendifluoride, solution
2817	154	Ammonium hydrogen fluoride, solution
2818	154	Ammonium polysulfide, solution
2818	154	Ammonium polysulphide, solution
2819	153	Amyl acid phosphate
2820	153	Butyric acid
2821	153	Phenol solution
2822	153	2-Chloropyridine
2823	153	Crotonic acid
2823	153	Crotonic acid, liquid
2823	153	Crotonic acid, solid
2826	155	Ethyl chlorothioformate
2829	153	Caproic acid
2829	153	Hexanoic acid
2830	139	Lithium ferrosilicon
2831	160	1,1,1-Trichloroethane
2834	154	Phosphorous acid
2834	154	Phosphorous acid, ortho
2835	138	Sodium aluminum hydride
2837	154	Bisulfates, aqueous solution

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2837	154	Bisulphates, aqueous solution
2837	154	Sodium bisulfate, solution
2837	154	Sodium bisulphate, solution
2837	154	Sodium hydrogen sulfate, solution
2837	154	Sodium hydrogen sulphate, solution
2838	129P	Vinyl butyrate, stabilized
2839	153	Aldol
2840	129	Butyraldoxime
2841	131	Di-n-amylamine
2842	129	Nitroethane
2844	138	Calcium manganese silicon
2845	135	Ethyl phosphonous dichloride, anhydrous
2845	135	Methyl phosphonous dichloride
2845	135	Pyrophoric liquid, n.o.s.
2845	135	Pyrophoric liquid, organic, n.o.s.
2846	135	Pyrophoric solid, n.o.s.
2846	135	Pyrophoric solid, organic, n.o.s.
2849	153	3-Chloropropanol-1
2850	128	Propylene tetramer
2851	157	Boron trifluoride, dihydrate
2852	113	Dipicryl sulfide, wetted with not less than 10% water
2852	113	Dipicryl sulphide, wetted with not less than 10% water
2853	151	Magnesium fluorosilicate
2853	151	Magnesium silicofluoride
2854	151	Ammonium fluorosilicate
2854	151	Ammonium silicofluoride
2855	151	Zinc fluorosilicate
2855	151	Zinc silicofluoride

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2856	151	Fluorosilicates, n.o.s.
2856	151	Silicofluorides, n.o.s.
2857	126	Refrigerating machines, containing Ammonia solutions (UN2672)
2857	126	Refrigerating machines, containing non-flammable, non-poisonous gases
2857	126	Refrigerating machines, containing non-flammable, non-toxic gases
2858	170	Zirconium, dry, coiled wire, finished metal sheets or strips
2859	154	Ammonium metavanadate
2861	151	Ammonium polyvanadate
2862	151	Vanadium pentoxide
2863	154	Sodium ammonium vanadate
2864	151	Potassium metavanadate
2865	154	Hydroxylamine sulfate
2865	154	Hydroxylamine sulphate
2869	157	Titanium trichloride mixture
2870	135	Aluminum borohydride
2870	135	Aluminum borohydride in devices
2871	170	Antimony powder
2872	159	Dibromochloropropanes
2873	153	Dibutylaminoethanol
2874	153	Furfuryl alcohol
2875	151	Hexachlorophene
2876	153	Resorcinol
2878	170	Titanium sponge granules
2878	170	Titanium sponge powders
2879	157	Selenium oxychloride



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2880	140	Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water
2880	140	Calcium hypochlorite, hydrated mixture, with not less than 5.5% but not more than 16% water
2881	135	Metal catalyst, dry
2881	135	Nickel catalyst, dry
2900	158	Infectious substance, affecting animals only
2901	124	Bromine chloride
2902	151	Pesticide, liquid, poisonous, n.o.s.
2902	151	Pesticide, liquid, toxic, n.o.s.
2903	131	Pesticide, liquid, poisonous, flammable, n.o.s.
2903	131	Pesticide, liquid, toxic, flammable, n.o.s.
2904	154	Chlorophenates, liquid
2904	154	Chlorophenolates, liquid
2904	154	Phenolates, liquid
2905	154	Chlorophenates, solid
2905	154	Chlorophenolates, solid
2905	154	Phenolates, solid
2907	133	Isosorbide dinitrate mixture
2908	161	Radioactive material, excepted package, empty packaging
2909	161	Radioactive material, excepted package, articles manufactured from depleted Uranium
2909	161	Radioactive material, excepted package, articles manufactured from natural Thorium

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2909	161	Radioactive material, excepted package, articles manufactured from natural Uranium
2910	161	Radioactive material, excepted package, empty packaging
2910	161	Radioactive material, excepted package, instruments or articles
2910	161	Radioactive material, excepted package, limited quantity of material
2911	161	Radioactive material, excepted package, instruments or articles
2912	162	Radioactive material, low specific activity (LSA), n.o.s.
2912	162	Radioactive material, low specific activity (LSA-I), non fissile or fissile-excepted
2913	162	Radioactive material, surface contaminated objects (SCO)
2913	162	Radioactive material, surface contaminated objects (SCO-I), non fissile or fissile-excepted
2913	162	Radioactive material, surface contaminated objects (SCO-II), non fissile or fissile-excepted
2915	163	Radioactive material, Type A package non-special form, non fissile or fissile-excepted
2916	163	Radioactive material, Type B(U) package, non fissile or fissile-excepted
2917	163	Radioactive material, Type B(M) package, non fissile or fissile-excepted
2918	165	Radioactive material, fissile, n.o.s.
2919	163	Radioactive material, transported under special arrangement, non fissile or fissile-excepted

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2920	132	Corrosive liquid, flammable, n.o.s.
2921	134	Corrosive solid, flammable, n.o.s.
2922	154	Corrosive liquid, poisonous, n.o.s.
2922	154	Corrosive liquid, toxic, n.o.s.
2923	154	Corrosive solid, poisonous, n.o.s.
2923	154	Corrosive solid, toxic, n.o.s.
2924	132	Flammable liquid, corrosive, n.o.s.
2925	134	Flammable solid, corrosive, n.o.s.
2925	134	Flammable solid, corrosive, organic, n.o.s.
2926	134	Flammable solid, poisonous, n.o.s.
2926	134	Flammable solid, poisonous, organic, n.o.s.
2926	134	Flammable solid, toxic, organic, n.o.s.
2927	154	Ethyl phosphonothioic dichloride, anhydrous
2927	154	Ethyl phosphorodichloridate
2927	154	Poisonous liquid, corrosive, n.o.s.
2927	154	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
2927	154	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
2927	154	Poisonous liquid, corrosive, organic, n.o.s.
2927	154	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)

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2927	154	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)
2927	154	Toxic liquid, corrosive, n.o.s.
2927	154	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
2927	154	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
2927	154	Toxic liquid, corrosive, organic, n.o.s.
2927	154	Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)
2927	154	Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)
2928	154	Poisonous solid, corrosive, n.o.s.
2928	154	Toxic solid, corrosive, organic, n.o.s.
2929	131	Poisonous liquid, flammable, n.o.s.
2929	131	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
2929	131	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
2929	131	Poisonous liquid, flammable, organic, n.o.s.
2929	131	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)
2929	131	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)
2929	131	Toxic liquid, flammable, n.o.s.
2929	131	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone A)

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2929	131	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
2929	131	Toxic liquid, flammable, organic, n.o.s.
2929	131	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)
2929	131	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)
2930	134	Poisonous solid, flammable, n.o.s.
2930	134	Poisonous solid, flammable, organic, n.o.s.
2930	134	Toxic solid, flammable, n.o.s.
2930	134	Toxic solid, flammable, organic, n.o.s.
2931	151	Vanadyl sulfate
2931	151	Vanadyl sulphate
2933	129	Methyl 2-chloropropionate
2934	129	Isopropyl 2-chloropropionate
2935	129	Ethyl 2-chloropropionate
2936	153	Thiolactic acid
2937	153	alpha-Methylbenzyl alcohol
2937	153	alpha-Methylbenzyl alcohol, liquid
2937	153	Methylbenzyl alcohol (alpha)
2940	135	Cyclooctadiene phosphines
2940	135	9-Phosphabicyclononanes
2941	153	Fluoroanilines
2942	153	2-Trifluoromethylaniline
2943	129	Tetrahydrofurfurylamine
2945	132	N-Methylbutylamine
2946	153	2-Amino-5-diethylaminopentane
2947	155	Isopropyl chloroacetate

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2948	153	3-Trifluoromethylaniline
2949	154	Sodium hydrosulfide, with not less than 25% water of crystallization
2949	154	Sodium hydrosulphide, with not less than 25% water of crystallization
2950	138	Magnesium granules, coated
2956	149	5-tert-Butyl-2,4,6-trinitro-m-xylene
2956	149	Musk xylene
2965	139	Boron trifluoride dimethyl etherate
2966	153	Thioglycol
2967	154	Sulfamic acid
2967	154	Sulphamic acid
2968	135	Maneb, stabilized
2968	135	Maneb preparation, stabilized
2969	171	Castor beans, meal, pomace or flake
2974	164	Radioactive material, special form, n.o.s.
2975	162	Thorium metal, pyrophoric
2976	162	Thorium nitrate, solid
2977	166	Radioactive material, Uranium hexafluoride, fissile
2977	166	Uranium hexafluoride, fissile containing more than 1% Uranium-235
2978	166	Radioactive material, Uranium hexafluoride
2978	166	Uranium hexafluoride
2978	166	Uranium hexafluoride, non fissile or fissile-excepted
2979	162	Uranium metal, pyrophoric
2980	162	Uranyl nitrate, hexahydrate, solution

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2981	162	Uranyl nitrate, solid
2982	163	Radioactive material, n.o.s.
2983	129P	Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide
2983	129P	Propylene oxide and Ethylene oxide mixture, with not more than 30% Ethylene oxide
2984	140	Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide
2985	155	Chlorosilanes, flammable, corrosive, n.o.s.
2985	155	Chlorosilanes, n.o.s.
2986	155	Chlorosilanes, corrosive, flammable, n.o.s.
2986	155	Chlorosilanes, n.o.s.
2987	156	Chlorosilanes, corrosive, n.o.s.
2987	156	Chlorosilanes, n.o.s.
2988	139	Chlorosilanes, n.o.s.
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.
2989	133	Lead phosphite, dibasic
2990	171	Life-saving appliances, self-inflating
2991	131	Carbamate pesticide, liquid, poisonous, flammable
2991	131	Carbamate pesticide, liquid, toxic, flammable
2992	151	Carbamate pesticide, liquid, poisonous
2992	151	Carbamate pesticide, liquid, toxic
2993	131	Arsenical pesticide, liquid, poisonous, flammable
2993	131	Arsenical pesticide, liquid, toxic, flammable

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2994	151	Arsenical pesticide, liquid, poisonous
2994	151	Arsenical pesticide, liquid, toxic
2995	131	Organochlorine pesticide, liquid, poisonous, flammable
2995	131	Organochlorine pesticide, liquid, toxic, flammable
2996	151	Organochlorine pesticide, liquid, poisonous
2996	151	Organochlorine pesticide, liquid, toxic
2997	131	Triazine pesticide, liquid, poisonous, flammable
2997	131	Triazine pesticide, liquid, toxic, flammable
2998	151	Triazine pesticide, liquid, poisonous
2998	151	Triazine pesticide, liquid, toxic
3002	151	Phenyl urea pesticide, liquid, poisonous
3002	151	Phenyl urea pesticide, liquid, toxic
3005	131	Dithiocarbamate pesticide, liquid, poisonous, flammable
3005	131	Dithiocarbamate pesticide, liquid, toxic, flammable
3005	131	Thiocarbamate pesticide, liquid, poisonous, flammable
3005	131	Thiocarbamate pesticide, liquid, toxic, flammable
3006	151	Dithiocarbamate pesticide, liquid, poisonous
3006	151	Dithiocarbamate pesticide, liquid, toxic
3006	151	Thiocarbamate pesticide, liquid, poisonous
3006	151	Thiocarbamate pesticide, liquid, toxic

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3009	131	Copper based pesticide, liquid, poisonous, flammable
3009	131	Copper based pesticide, liquid, toxic, flammable
3010	151	Copper based pesticide, liquid, poisonous
3010	151	Copper based pesticide, liquid, toxic
3011	131	Mercury based pesticide, liquid, poisonous, flammable
3011	131	Mercury based pesticide, liquid, toxic, flammable
3012	151	Mercury based pesticide, liquid, poisonous
3012	151	Mercury based pesticide, liquid, toxic
3013	131	Substituted nitrophenol pesticide, liquid, poisonous, flammable
3013	131	Substituted nitrophenol pesticide, liquid, toxic, flammable
3014	153	Substituted nitrophenol pesticide, liquid, poisonous
3014	153	Substituted nitrophenol pesticide, liquid, toxic
3015	131	Bipyridilium pesticide, liquid, poisonous, flammable
3015	131	Bipyridilium pesticide, liquid, toxic, flammable
3016	151	Bipyridilium pesticide, liquid, poisonous
3016	151	Bipyridilium pesticide, liquid, toxic
3017	131	Organophosphorus pesticide, liquid, poisonous, flammable
3017	131	Organophosphorus pesticide, liquid, toxic, flammable
3018	152	Organophosphorus pesticide, liquid, poisonous

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3018	152	Organophosphorus pesticide, liquid, toxic
3019	131	Organotin pesticide, liquid, poisonous, flammable
3019	131	Organotin pesticide, liquid, toxic, flammable
3020	153	Organotin pesticide, liquid, poisonous
3020	153	Organotin pesticide, liquid, toxic
3021	131	Pesticide, liquid, flammable, poisonous, n.o.s.
3021	131	Pesticide, liquid, flammable, toxic, n.o.s.
3022	127P	1,2-Butylene oxide, stabilized
3023	131	2-Methyl-2-heptanethiol
3023	131	tert-Octyl mercaptan
3024	131	Coumarin derivative pesticide, liquid, flammable, poisonous
3024	131	Coumarin derivative pesticide, liquid, flammable, toxic
3025	131	Coumarin derivative pesticide, liquid, poisonous, flammable
3025	131	Coumarin derivative pesticide, liquid, toxic, flammable
3026	151	Coumarin derivative pesticide, liquid, poisonous
3026	151	Coumarin derivative pesticide, liquid, toxic
3027	151	Coumarin derivative pesticide, solid, poisonous
3027	151	Coumarin derivative pesticide, solid, toxic
3028	154	Batteries, dry, containing Potassium hydroxide solid
3048	157	Aluminum phosphide pesticide
3049	138	Metal alkyl halides, water-reactive, n.o.s.

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3049	138	Metal aryl halides, water-reactive, n.o.s.
3050	138	Metal alkyl hydrides, water-reactive, n.o.s.
3050	138	Metal aryl hydrides, water-reactive, n.o.s.
3051	135	Aluminum alkyls
3052	135	Aluminum alkyl halides
3052	135	Aluminum alkyl halides, liquid
3052	135	Aluminum alkyl halides, solid
3053	135	Magnesium alkyls
3054	129	Cyclohexanethiol
3054	129	Cyclohexyl mercaptan
3055	154	2-(2-Aminoethoxy)ethanol
3056	129	n-Heptaldehyde
3057	125	Trifluoroacetyl chloride
3064	127	Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin
3065	127	Alcoholic beverages
3066	153	Paint (corrosive)
3066	153	Paint related material (corrosive)
3070	126	Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide
3070	126	Dichlorodifluoromethane and Ethylene oxide mixtures, with not more than 12% Ethylene oxide
3070	126	Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide

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3070	126	Ethylene oxide and Dichlorodifluoromethane mixtures, with not more than 12% Ethylene oxide
3071	131	Mercaptan mixture, liquid, poisonous, flammable, n.o.s.
3071	131	Mercaptan mixture, liquid, toxic, flammable, n.o.s.
3071	131	Mercaptans, liquid, poisonous, flammable, n.o.s.
3071	131	Mercaptans, liquid, toxic, flammable, n.o.s.
3072	171	Life-saving appliances, not self-inflating
3073	131P	Vinylpyridines, stabilized
3076	138	Aluminum alkyl hydrides
3077	171	Environmentally hazardous substances, solid, n.o.s.
3077	171	Hazardous waste, solid, n.o.s.
3077	171	Other regulated substances, solid, n.o.s.
3078	138	Cerium, turnings or gritty powder
3079	131P	Methacrylonitrile, stabilized
3080	155	Isocyanate solution, poisonous, flammable, n.o.s.
3080	155	Isocyanate solution, toxic, flammable, n.o.s.
3080	155	Isocyanate solutions, n.o.s.
3080	155	Isocyanates, n.o.s.
3080	155	Isocyanates, poisonous, flammable, n.o.s.
3080	155	Isocyanates, toxic, flammable, n.o.s.
3082	171	Environmentally hazardous substances, liquid, n.o.s.
3082	171	Hazardous waste, liquid, n.o.s.

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3082	171	Other regulated substances, liquid, n.o.s.
3083	124	Perchloryl fluoride
3084	140	Corrosive solid, oxidizing, n.o.s.
3085	140	Oxidizing solid, corrosive, n.o.s.
3086	141	Poisonous solid, oxidizing, n.o.s.
3086	141	Toxic solid, oxidizing, n.o.s.
3087	141	Oxidizing solid, poisonous, n.o.s.
3087	141	Oxidizing solid, toxic, n.o.s.
3088	135	Self-heating solid, organic, n.o.s.
3089	170	Metal powder, flammable, n.o.s.
3090	138	Lithium batteries
3090	138	Lithium batteries, liquid or solid cathode
3090	138	Lithium metal batteries (including lithium alloy batteries)
3091	138	Lithium batteries contained in equipment
3091	138	Lithium batteries packed with equipment
3091	138	Lithium metal batteries contained in equipment (including lithium alloy batteries)
3091	138	Lithium metal batteries packed with equipment (including lithium alloy batteries)
3092	129	1-Methoxy-2-propanol
3093	140	Corrosive liquid, oxidizing, n.o.s.
3094	138	Corrosive liquid, water-reactive, n.o.s.

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3094	138	Corrosive liquid, which in contact with water emits flammable gases, n.o.s.
3095	136	Corrosive solid, self-heating, n.o.s.
3096	138	Corrosive solid, water-reactive, n.o.s.
3096	138	Corrosive solid, which in contact with water emits flammable gases, n.o.s.
3097	140	Flammable solid, oxidizing, n.o.s.
3098	140	Oxidizing liquid, corrosive, n.o.s.
3099	142	Oxidizing liquid, poisonous, n.o.s.
3099	142	Oxidizing liquid, toxic, n.o.s.
3100	135	Oxidizing solid, self-heating, n.o.s.
3101	146	Organic peroxide type B, liquid
3102	146	Organic peroxide type B, solid
3103	146	Organic peroxide type C, liquid
3104	146	Organic peroxide type C, solid
3105	145	Organic peroxide type D, liquid
3106	145	Organic peroxide type D, solid
3107	145	Organic peroxide type E, liquid
3108	145	Organic peroxide type E, solid
3109	145	Organic peroxide type F, liquid
3110	145	Organic peroxide type F, solid
3111	148	Organic peroxide type B, liquid, temperature controlled
3112	148	Organic peroxide type B, solid, temperature controlled
3113	148	Organic peroxide type C, liquid, temperature controlled
3114	148	Organic peroxide type C, solid, temperature controlled

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3115	148	Organic peroxide type D, liquid, temperature controlled
3116	148	Organic peroxide type D, solid, temperature controlled
3117	148	Organic peroxide type E, liquid, temperature controlled
3118	148	Organic peroxide type E, solid, temperature controlled
3119	148	Organic peroxide type F, liquid, temperature controlled
3120	148	Organic peroxide type F, solid, temperature controlled
3121	144	Oxidizing solid, water-reactive, n.o.s.
3122	142	Poisonous liquid, oxidizing, n.o.s.
3122	142	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3122	142	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3122	142	Toxic liquid, oxidizing, n.o.s.
3122	142	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3122	142	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3123	139	Poisonous liquid, water-reactive, n.o.s.
3123	139	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3123	139	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s.

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3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)
3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)
3123	139	Toxic liquid, water-reactive, n.o.s.
3123	139	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3123	139	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3123	139	Toxic liquid, which in contact with water emits flammable gases, n.o.s.
3123	139	Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)
3123	139	Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)
3124	136	Poisonous solid, self-heating, n.o.s.
3124	136	Toxic solid, self-heating, n.o.s.
3125	139	Poisonous solid, water-reactive, n.o.s.
3125	139	Poisonous solid, which in contact with water emits flammable gases, n.o.s.
3125	139	Toxic solid, water-reactive, n.o.s.
3125	139	Toxic solid, which in contact with water emits flammable gases, n.o.s.
3126	136	Self-heating solid, corrosive, organic, n.o.s.



<b>ID No.</b>	<b>Guide No.</b>	<b>Name of Material</b>
3127	135	Self-heating solid, oxidizing, n.o.s.
3128	136	Self-heating solid, poisonous, organic, n.o.s.
3128	136	Self-heating solid, toxic, organic, n.o.s.
3129	138	Water-reactive liquid, corrosive, n.o.s.
3130	139	Water-reactive liquid, poisonous, n.o.s.
3130	139	Water-reactive liquid, toxic, n.o.s.
3131	138	Water-reactive solid, corrosive, n.o.s.
3132	138	Water-reactive solid, flammable, n.o.s.
3133	138	Water-reactive solid, oxidizing, n.o.s.
3134	139	Water-reactive solid, poisonous, n.o.s.
3134	139	Water-reactive solid, toxic, n.o.s.
3135	138	Water-reactive solid, self-heating, n.o.s.
3136	120	Trifluoromethane, refrigerated liquid
3137	140	Oxidizing solid, flammable, n.o.s.
3138	115	Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene
3138	115	Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene

<b>ID No.</b>	<b>Guide No.</b>	<b>Name of Material</b>
3138	115	Propylene, Ethylene and Acetylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene
3139	140	Oxidizing liquid, n.o.s.
3140	151	Alkaloids, liquid, n.o.s. (poisonous)
3140	151	Alkaloid salts, liquid, n.o.s. (poisonous)
3141	157	Antimony compound, inorganic, liquid, n.o.s.
3142	151	Disinfectant, liquid, poisonous, n.o.s.
3142	151	Disinfectant, liquid, toxic, n.o.s.
3142	151	Disinfectants, liquid, n.o.s. (poisonous)
3143	151	Dye, solid, poisonous, n.o.s.
3143	151	Dye, solid, toxic, n.o.s.
3143	151	Dye intermediate, solid, poisonous, n.o.s.
3143	151	Dye intermediate, solid, toxic, n.o.s.
3144	151	Nicotine compound, liquid, n.o.s.
3144	151	Nicotine preparation, liquid, n.o.s.
3145	153	Alkyl phenols, liquid, n.o.s. (including C2-C12 homologues)
3146	153	Organotin compound, solid, n.o.s.
3147	154	Dye, solid, corrosive, n.o.s.
3147	154	Dye intermediate, solid, corrosive, n.o.s.
3148	138	Water-reactive liquid, n.o.s.

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3149	140	Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized
3150	115	Devices, small, hydrocarbon gas powered, with release device
3150	115	Hydrocarbon gas refills for small devices, with release device
3151	171	Polyhalogenated biphenyls, liquid
3151	171	Polyhalogenated terphenyls, liquid
3152	171	Polyhalogenated biphenyls, solid
3152	171	Polyhalogenated terphenyls, solid
3153	115	Perfluoromethyl vinyl ether
3153	115	Perfluoro(methyl vinyl ether)
3154	115	Perfluoroethyl vinyl ether
3154	115	Perfluoro(ethyl vinyl ether)
3155	154	Pentachlorophenol
3156	122	Compressed gas, oxidizing, n.o.s.
3157	122	Liquefied gas, oxidizing, n.o.s.
3158	120	Gas, refrigerated liquid, n.o.s.
3159	126	Refrigerant gas R-134a
3159	126	1,1,1,2-Tetrafluoroethane
3160	119	Liquefied gas, poisonous, flammable, n.o.s.
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)

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3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3160	119	Liquefied gas, toxic, flammable, n.o.s.
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3161	115	Liquefied gas, flammable, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s.
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)
3162	123	Liquefied gas, toxic, n.o.s.
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)

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3163	126	Liquefied gas, n.o.s.
3164	126	Articles, pressurized, hydraulic (containing non-flammable gas)
3164	126	Articles, pressurized, pneumatic (containing non-flammable gas)
3165	131	Aircraft hydraulic power unit fuel tank
3166	128	Engine, fuel cell, flammable gas powered
3166	128	Engine, fuel cell, flammable liquid powered
3166	128	Engine, internal combustion
3166	128	Engines, internal combustion, flammable gas powered
3166	128	Engines, internal combustion, flammable liquid powered
3166	128	Vehicle, flammable gas powered
3166	128	Vehicle, flammable liquid powered
3166	128	Vehicle, fuel cell, flammable gas powered
3166	128	Vehicle, fuel cell, flammable liquid powered
3167	115	Gas sample, non-pressurized, flammable, n.o.s., not refrigerated liquid
3168	119	Gas sample, non-pressurized, poisonous, flammable, n.o.s., not refrigerated liquid
3168	119	Gas sample, non-pressurized, toxic, flammable, n.o.s., not refrigerated liquid
3169	123	Gas sample, non-pressurized, poisonous, n.o.s., not refrigerated liquid
3169	123	Gas sample, non-pressurized, toxic, n.o.s., not refrigerated liquid

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3170	138	Aluminum dross
3170	138	Aluminum processing by-products
3170	138	Aluminum remelting by-products
3170	138	Aluminum smelting by-products
3171	154	Battery-powered equipment (wet battery)
3171	154	Battery-powered vehicle (wet battery)
3171	154	Wheelchair, electric, with batteries
3172	153	Toxins, extracted from living sources, liquid, n.o.s.
3172	153	Toxins, extracted from living sources, n.o.s.
3172	153	Toxins, extracted from living sources, solid, n.o.s.
3174	135	Titanium disulfide
3174	135	Titanium disulphide
3175	133	Solids containing flammable liquid, n.o.s.
3176	133	Flammable solid, organic, molten, n.o.s.
3178	133	Flammable solid, inorganic, n.o.s.
3178	133	Smokeless powder for small arms
3179	134	Flammable solid, poisonous, inorganic, n.o.s.
3179	134	Flammable solid, toxic, inorganic, n.o.s.
3180	134	Flammable solid, corrosive, inorganic, n.o.s.
3180	134	Flammable solid, inorganic, corrosive, n.o.s.
3181	133	Metal salts of organic compounds, flammable, n.o.s.

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3182	170	Metal hydrides, flammable, n.o.s.
3183	135	Self-heating liquid, organic, n.o.s.
3184	136	Self-heating liquid, poisonous, organic, n.o.s.
3184	136	Self-heating liquid, toxic, organic, n.o.s.
3185	136	Self-heating liquid, corrosive, organic, n.o.s.
3186	135	Self-heating liquid, inorganic, n.o.s.
3187	136	Self-heating liquid, poisonous, inorganic, n.o.s.
3187	136	Self-heating liquid, toxic, inorganic, n.o.s.
3188	136	Self-heating liquid, corrosive, inorganic, n.o.s.
3189	135	Metal powder, self-heating, n.o.s.
3189	135	Self-heating metal powders, n.o.s.
3190	135	Self-heating solid, inorganic, n.o.s.
3191	136	Self-heating solid, inorganic, poisonous, n.o.s.
3191	136	Self-heating solid, inorganic, toxic, n.o.s.
3191	136	Self-heating solid, poisonous, inorganic, n.o.s.
3191	136	Self-heating solid, toxic, inorganic, n.o.s.
3192	136	Self-heating solid, corrosive, inorganic, n.o.s.
3194	135	Pyrophoric liquid, inorganic, n.o.s.
3200	135	Pyrophoric solid, inorganic, n.o.s.

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3203	135	Pyrophoric organometallic compound, water-reactive, n.o.s.
3205	135	Alkaline earth metal alcoholates, n.o.s.
3206	136	Alkali metal alcoholates, self-heating, corrosive, n.o.s.
3207	138	Organometallic compound, water-reactive, flammable, n.o.s.
3207	138	Organometallic compound dispersion, water-reactive, flammable, n.o.s.
3207	138	Organometallic compound solution, water-reactive, flammable, n.o.s.
3208	138	Metallic substance, water-reactive, n.o.s.
3209	138	Metallic substance, water-reactive, self-heating, n.o.s.
3210	140	Chlorates, inorganic, aqueous solution, n.o.s.
3211	140	Perchlorates, inorganic, aqueous solution, n.o.s.
3212	140	Hypochlorites, inorganic, n.o.s.
3213	140	Bromates, inorganic, aqueous solution, n.o.s.
3214	140	Permanganates, inorganic, aqueous solution, n.o.s.
3215	140	Persulfates, inorganic, n.o.s.
3215	140	Persulphates, inorganic, n.o.s.
3216	140	Persulfates, inorganic, aqueous solution, n.o.s.
3216	140	Persulphates, inorganic, aqueous solution, n.o.s.
3218	140	Nitrates, inorganic, aqueous solution, n.o.s.
3219	140	Nitrites, inorganic, aqueous solution, n.o.s.
3220	126	Pentafluoroethane

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3220	126	Refrigerant gas R-125
3221	149	Self-reactive liquid type B
3222	149	Self-reactive solid type B
3223	149	Self-reactive liquid type C
3224	149	Self-reactive solid type C
3225	149	Self-reactive liquid type D
3226	149	Self-reactive solid type D
3227	149	Self-reactive liquid type E
3228	149	Self-reactive solid type E
3229	149	Self-reactive liquid type F
3230	149	Self-reactive solid type F
3231	150	Self-reactive liquid type B, temperature controlled
3232	150	Self-reactive solid type B, temperature controlled
3233	150	Self-reactive liquid type C, temperature controlled
3234	150	Self-reactive solid type C, temperature controlled
3235	150	Self-reactive liquid type D, temperature controlled
3236	150	Self-reactive solid type D, temperature controlled
3237	150	Self-reactive liquid type E, temperature controlled
3238	150	Self-reactive solid type E, temperature controlled
3239	150	Self-reactive liquid type F, temperature controlled
3240	150	Self-reactive solid type F, temperature controlled
3241	133	2-Bromo-2-nitropropane-1, 3-diol
3242	149	Azodicarbonamide
3243	151	Solids containing poisonous liquid, n.o.s.

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3243	151	Solids containing toxic liquid, n.o.s.
3244	154	Solids containing corrosive liquid, n.o.s.
3245	171	Genetically modified micro-organisms
3245	171	Genetically modified organisms
3246	156	Methanesulfonyl chloride
3246	156	Methanesulphonyl chloride
3247	140	Sodium peroxoborate, anhydrous
3248	131	Medicine, liquid, flammable, poisonous, n.o.s.
3248	131	Medicine, liquid, flammable, toxic, n.o.s.
3249	151	Medicine, solid, poisonous, n.o.s.
3249	151	Medicine, solid, toxic, n.o.s.
3250	153	Chloroacetic acid, molten
3251	133	Isosorbide-5-mononitrate
3252	115	Difluoromethane
3252	115	Refrigerant gas R-32
3253	154	Disodium trioxosilicate
3253	154	Disodium trioxosilicate, pentahydrate
3254	135	Tributylphosphane
3254	135	Tributylphosphine
3255	135	tert-Butyl hypochlorite
3256	128	Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point
3256	128	Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point

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3257	128	Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point
3258	171	Elevated temperature solid, n.o.s., at or above 240°C (464°F)
3259	154	Amines, solid, corrosive, n.o.s.
3259	154	Polyamines, solid, corrosive, n.o.s.
3260	154	Corrosive solid, acidic, inorganic, n.o.s.
3261	154	Corrosive solid, acidic, organic, n.o.s.
3262	154	Corrosive solid, basic, inorganic, n.o.s.
3263	154	Corrosive solid, basic, organic, n.o.s.
3264	154	Corrosive liquid, acidic, inorganic, n.o.s.
3265	153	Corrosive liquid, acidic, organic, n.o.s.
3266	154	Corrosive liquid, basic, inorganic, n.o.s.
3267	153	Corrosive liquid, basic, organic, n.o.s.
3268	171	Air bag inflators
3268	171	Air bag inflators, pyrotechnic
3268	171	Air bag modules
3268	171	Air bag modules, pyrotechnic
3268	171	Seat-belt modules
3268	171	Seat-belt pre-tensioners
3268	171	Seat-belt pre-tensioners, pyrotechnic
3269	128	Polyester resin kit
3270	133	Nitrocellulose membrane filters
3271	127	Ethers, n.o.s.
3272	127	Esters, n.o.s.

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3273	131	Nitriles, flammable, poisonous, n.o.s.
3273	131	Nitriles, flammable, toxic, n.o.s.
3274	132	Alcoholates solution, n.o.s., in alcohol
3275	131	Nitriles, poisonous, flammable, n.o.s.
3275	131	Nitriles, toxic, flammable, n.o.s.
3276	151	Nitriles, liquid, poisonous, n.o.s.
3276	151	Nitriles, liquid, toxic, n.o.s.
3276	151	Nitriles, poisonous, liquid, n.o.s.
3276	151	Nitriles, poisonous, n.o.s.
3276	151	Nitriles, toxic, liquid, n.o.s.
3276	151	Nitriles, toxic, n.o.s.
3277	154	Chloroformates, poisonous, corrosive, n.o.s.
3277	154	Chloroformates, toxic, corrosive, n.o.s.
3278	151	Organophosphorus compound, liquid, poisonous, n.o.s.
3278	151	Organophosphorus compound, liquid, toxic, n.o.s.
3278	151	Organophosphorus compound, poisonous, liquid, n.o.s.
3278	151	Organophosphorus compound, poisonous, n.o.s.
3278	151	Organophosphorus compound, toxic, liquid, n.o.s.
3278	151	Organophosphorus compound, toxic, n.o.s.
3279	131	Organophosphorus compound, poisonous, flammable, n.o.s.
3279	131	Organophosphorus compound, toxic, flammable, n.o.s.

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3280	151	Organoarsenic compound, liquid, n.o.s.
3280	151	Organoarsenic compound, n.o.s.
3281	151	Metal carbonyls, liquid, n.o.s.
3281	151	Metal carbonyls, n.o.s.
3282	151	Organometallic compound, liquid, poisonous, n.o.s.
3282	151	Organometallic compound, liquid, toxic, n.o.s.
3282	151	Organometallic compound, poisonous, liquid, n.o.s.
3282	151	Organometallic compound, poisonous, n.o.s.
3282	151	Organometallic compound, toxic, liquid, n.o.s.
3282	151	Organometallic compound, toxic, n.o.s.
3283	151	Selenium compound, n.o.s.
3283	151	Selenium compound, solid, n.o.s.
3284	151	Tellurium compound, n.o.s.
3285	151	Vanadium compound, n.o.s.
3286	131	Flammable liquid, poisonous, corrosive, n.o.s.
3286	131	Flammable liquid, toxic, corrosive, n.o.s.
3287	151	Poisonous liquid, inorganic, n.o.s.
3287	151	Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)
3287	151	Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)
3287	151	Toxic liquid, inorganic, n.o.s.
3287	151	Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)

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3287	151	Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)
3288	151	Poisonous solid, inorganic, n.o.s.
3288	151	Toxic solid, inorganic, n.o.s.
3289	154	Poisonous liquid, corrosive, inorganic, n.o.s.
3289	154	Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)
3289	154	Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)
3289	154	Toxic liquid, corrosive, inorganic, n.o.s.
3289	154	Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)
3289	154	Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)
3290	154	Poisonous solid, corrosive, inorganic, n.o.s.
3290	154	Toxic solid, corrosive, inorganic, n.o.s.
3291	158	(Bio)Medical waste, n.o.s.
3291	158	Clinical waste, unspecified, n.o.s.
3291	158	Medical waste, n.o.s.
3291	158	Regulated medical waste, n.o.s.
3292	138	Batteries, containing Sodium
3292	138	Cells, containing Sodium
3293	152	Hydrazine, aqueous solution, with not more than 37% Hydrazine
3294	131	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide
3295	128	Hydrocarbons, liquid, n.o.s.

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3296	126	Heptafluoropropane
3296	126	Refrigerant gas R-227
3297	126	Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide
3297	126	Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide
3298	126	Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide
3298	126	Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide
3299	126	Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide
3299	126	Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide
3300	119P	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide
3300	119P	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide
3301	136	Corrosive liquid, self-heating, n.o.s.
3302	152	2-Dimethylaminoethyl acrylate
3303	124	Compressed gas, poisonous, oxidizing, n.o.s.
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)

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3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3303	124	Compressed gas, toxic, oxidizing, n.o.s.
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)
3304	123	Compressed gas, poisonous, corrosive, n.o.s.
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)
3304	123	Compressed gas, toxic, corrosive, n.o.s.
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)



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3304 123 Compressed gas, toxic,  
corrosive, n.o.s. (Inhalation  
Hazard Zone B)

3304 123 Compressed gas, toxic,  
corrosive, n.o.s. (Inhalation  
Hazard Zone C)

3304 123 Compressed gas, toxic,  
corrosive, n.o.s. (Inhalation  
Hazard Zone D)

3305 119 Compressed gas, poisonous,  
flammable, corrosive, n.o.s.

3305 119 Compressed gas, poisonous,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

3305 119 Compressed gas, poisonous,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone B)

3305 119 Compressed gas, poisonous,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone C)

3305 119 Compressed gas, poisonous,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone D)

3305 119 Compressed gas, toxic,  
flammable, corrosive, n.o.s.

3305 119 Compressed gas, toxic,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

3305 119 Compressed gas, toxic,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone B)

3305 119 Compressed gas, toxic,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone C)

3305 119 Compressed gas, toxic,  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone D)

3306 124 Compressed gas, poisonous,  
oxidizing, corrosive, n.o.s.

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3306 124 Compressed gas, poisonous,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

3306 124 Compressed gas, poisonous,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone B)

3306 124 Compressed gas, poisonous,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone C)

3306 124 Compressed gas, poisonous,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone D)

3306 124 Compressed gas, toxic,  
oxidizing, corrosive, n.o.s.

3306 124 Compressed gas, toxic,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

3306 124 Compressed gas, toxic,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone B)

3306 124 Compressed gas, toxic,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone C)

3306 124 Compressed gas, toxic,  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone D)

3307 124 Liquefied gas, poisonous,  
oxidizing, n.o.s.

3307 124 Liquefied gas, poisonous,  
oxidizing, n.o.s. (Inhalation  
Hazard Zone A)

3307 124 Liquefied gas, poisonous,  
oxidizing, n.o.s. (Inhalation  
Hazard Zone B)

3307 124 Liquefied gas, poisonous,  
oxidizing, n.o.s. (Inhalation  
Hazard Zone C)

3307 124 Liquefied gas, poisonous,  
oxidizing, n.o.s. (Inhalation  
Hazard Zone D)

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3307 124 Liquefied gas, toxic, oxidizing, n.o.s.

3307 124 Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)

3307 124 Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)

3307 124 Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)

3307 124 Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)

3308 123 Liquefied gas, poisonous, corrosive, n.o.s.

3308 123 Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)

3308 123 Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)

3308 123 Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)

3308 123 Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)

3308 123 Liquefied gas, toxic, corrosive, n.o.s.

3308 123 Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)

3308 123 Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)

3308 123 Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)

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3308 123 Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)

3309 119 Liquefied gas, poisonous, flammable, corrosive, n.o.s.

3309 119 Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)

3309 119 Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)

3309 119 Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

3309 119 Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)

3309 119 Liquefied gas, toxic, flammable, corrosive, n.o.s.

3309 119 Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)

3309 119 Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)

3309 119 Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)

3309 119 Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)

3310 124 Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.

3310 124 Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)

3310 124 Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)

ID No.	Guide No.	Name of Material
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3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)
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3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
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3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.
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3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)
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3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)
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3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)
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3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
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3311	122	Gas, refrigerated liquid, oxidizing, n.o.s.
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3312	115	Gas, refrigerated liquid, flammable, n.o.s.
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3313	135	Organic pigments, self-heating
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3314	171	Plastic molding compound
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3314	171	Plastics moulding compound
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3315	151	Chemical sample, poisonous
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3315	151	Chemical sample, poisonous liquid
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3315	151	Chemical sample, poisonous solid
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3315	151	Chemical sample, toxic
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3315	151	Chemical sample, toxic liquid
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3315	151	Chemical sample, toxic solid
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3316	171	Chemical kit
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3316	171	First aid kit
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3317	113	2-Amino-4,6-dinitrophenol, wetted with not less than 20% water
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3318	125	Ammonia solution, with more than 50% Ammonia
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3319	113	Nitroglycerin mixture, desensitized, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin
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3319	113	Nitroglycerin mixture with more than 2% but not more than 10% Nitroglycerin, desensitized
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3320	157	Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide
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3321	162	Radioactive material, low specific activity (LSA-II), non fissile or fissile-excepted
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3322	162	Radioactive material, low specific activity (LSA-III), non fissile or fissile-excepted
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3323	163	Radioactive material, Type C package, non-fissile or fissile excepted
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3324	165	Radioactive material, low specific activity (LSA-II), fissile
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3325	165	Radioactive material, low specific activity (LSA-III), fissile
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3326	165	Radioactive material, surface contaminated objects (SCO-I), fissile
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3326	165	Radioactive material, surface contaminated objects (SCO-II), fissile
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3327	165	Radioactive material, Type A package, fissile, non-special form
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3328	165	Radioactive material, Type B(U) package, fissile
3329	165	Radioactive material, Type B(M) package, fissile
3330	165	Radioactive material, Type C package, fissile
3331	165	Radioactive material, transported under special arrangement, fissile
3332	164	Radioactive material, Type A package, special form, non fissile or fissile-excepted
3333	165	Radioactive material, Type A package, special form, fissile
3334	171	Aviation regulated liquid, n.o.s.
3334	171	Self-defense spray, non-pressurized
3335	171	Aviation regulated solid, n.o.s.
3336	130	Mercaptan mixture, liquid, flammable, n.o.s.
3336	130	Mercaptans, liquid, flammable, n.o.s.
3337	126	Refrigerant gas R-404A
3338	126	Refrigerant gas R-407A
3339	126	Refrigerant gas R-407B
3340	126	Refrigerant gas R-407C
3341	135	Thiourea dioxide
3342	135	Xanthates
3343	113	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin
3344	113	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN
3344	113	Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN

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3344	113	PETN mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN
3345	153	Phenoxyacetic acid derivative pesticide, solid, poisonous
3345	153	Phenoxyacetic acid derivative pesticide, solid, toxic
3346	131	Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous
3346	131	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic
3347	131	Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable
3347	131	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable
3348	153	Phenoxyacetic acid derivative pesticide, liquid, poisonous
3348	153	Phenoxyacetic acid derivative pesticide, liquid, toxic
3349	151	Pyrethroid pesticide, solid, poisonous
3349	151	Pyrethroid pesticide, solid, toxic
3350	131	Pyrethroid pesticide, liquid, flammable, poisonous
3350	131	Pyrethroid pesticide, liquid, flammable, toxic
3351	131	Pyrethroid pesticide, liquid, poisonous, flammable
3351	131	Pyrethroid pesticide, liquid, toxic, flammable
3352	151	Pyrethroid pesticide, liquid, poisonous
3352	151	Pyrethroid pesticide, liquid, toxic

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3353	126	Air bag inflators, compressed gas
3353	126	Air bag modules, compressed gas
3353	126	Seat-belt pre-tensioners, compressed gas
3354	115	Insecticide gas, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s.
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)
3355	119	Insecticide gas, toxic, flammable, n.o.s.
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)
3356	140	Oxygen generator, chemical
3356	140	Oxygen generator, chemical, spent

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3357	113	Nitroglycerin mixture, desensitized, liquid, n.o.s., with not more than 30% Nitroglycerin
3358	115	Refrigerating machines, containing flammable, non-poisonous, liquefied gases
3358	115	Refrigerating machines, containing flammable, non-toxic, liquefied gases
3359	171	Fumigated cargo transport unit
3359	171	Fumigated unit
3360	133	Fibers, vegetable, dry
3360	133	Fibres, vegetable, dry
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.
3363	171	Dangerous goods in apparatus
3363	171	Dangerous goods in machinery
3364	113	Picric acid, wetted with not less than 10% water
3364	113	Trinitrophenol, wetted with not less than 10% water
3365	113	Picryl chloride, wetted with not less than 10% water
3365	113	Trinitrochlorobenzene, wetted with not less than 10% water
3366	113	TNT, wetted with not less than 10% water
3366	113	Trinitrotoluene, wetted with not less than 10% water
3367	113	Trinitrobenzene, wetted with not less than 10% water

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3368	113	Trinitrobenzoic acid, wetted with not less than 10% water
3369	113	Sodium dinitro-o-cresolate, wetted with not less than 10% water
3370	113	Urea nitrate, wetted with not less than 10% water
3371	129	2-Methylbutanal
3372	138	Organometallic compound, solid, water-reactive, flammable, n.o.s.
3373	158	Biological substance, category B
3373	158	Clinical specimens
3373	158	Diagnostic specimens
3374	116	Acetylene, solvent free
3375	140	Ammonium nitrate emulsion
3375	140	Ammonium nitrate gel
3375	140	Ammonium nitrate suspension
3376	113	4-Nitrophenylhydrazine, with not less than 30% water
3377	140	Sodium perborate monohydrate
3378	140	Sodium carbonate peroxyhydrate
3379	128	Desensitized explosive, liquid, n.o.s.
3380	133	Desensitized explosive, solid, n.o.s.
3381	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3381	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)
3382	151	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)
3382	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)

**ID Guide Name of Material**  
**No. No.**

3383	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
3383	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)
3384	131	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
3384	131	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)
3385	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3385	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)
3386	139	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3386	139	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)
3387	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3387	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)
3388	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3388	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)
3389	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)
3389	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)

**ID Guide Name of Material**  
**No. No.**

3390	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
3390	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)
3391	135	Organometallic substance, solid, pyrophoric
3392	135	Organometallic substance, liquid, pyrophoric
3393	135	Organometallic substance, solid, pyrophoric, water-reactive
3394	135	Organometallic substance, liquid, pyrophoric, water-reactive
3395	135	Organometallic substance, solid, water-reactive
3396	138	Organometallic substance, solid, water-reactive, flammable
3397	138	Organometallic substance, solid, water-reactive, self-heating
3398	135	Organometallic substance, liquid, water-reactive
3399	138	Organometallic substance, liquid, water-reactive, flammable
3400	138	Organometallic substance, solid, self-heating
3401	138	Alkali metal amalgam, solid
3402	138	Alkaline earth metal amalgam, solid
3403	138	Potassium, metal alloys, solid
3404	138	Potassium sodium alloys, solid
3404	138	Sodium potassium alloys, solid
3405	141	Barium chlorate, solution
3406	141	Barium perchlorate, solution

**ID Guide Name of Material**  
**No. No.**

3407	140	Chlorate and Magnesium chloride mixture, solution
3407	140	Magnesium chloride and Chlorate mixture, solution
3408	141	Lead perchlorate, solution
3409	152	Chloronitrobenzenes, liquid
3410	153	4-Chloro-o-toluidine hydrochloride, solution
3411	153	beta-Naphthylamine, solution
3411	153	Naphthylamine (beta), solution
3412	153	Formic acid, with not less than 5% but less than 10% acid
3412	153	Formic acid, with not less than 10% but not more than 85% acid
3413	157	Potassium cyanide, solution
3414	157	Sodium cyanide, solution
3415	154	Sodium fluoride, solution
3416	153	Chloroacetophenone, liquid
3417	152	Xylyl bromide, solid
3418	151	2,4-Toluylenediamine, solution
3419	157	Boron trifluoride acetic acid complex, solid
3420	157	Boron trifluoride propionic acid complex, solid
3421	154	Potassium hydrogen difluoride, solution
3422	154	Potassium fluoride, solution
3423	153	Tetramethylammonium hydroxide, solid
3424	141	Ammonium dinitro-o-cresolate, solution
3425	156	Bromoacetic acid, solid
3426	153P	Acrylamide, solution
3427	153	Chlorobenzyl chlorides, solid
3428	156	3-Chloro-4-methylphenyl isocyanate, solid

**ID Guide Name of Material**  
**No. No.**

3429	<b>153</b>	Chlorotoluidines, liquid
3430	<b>153</b>	Xylenols, liquid
3431	<b>152</b>	Nitrobenzotrifluorides, solid
3432	<b>171</b>	Polychlorinated biphenyls, solid
3433	<b>135</b>	Lithium alkyls, solid
3434	<b>153</b>	Nitrocresols, liquid
3435	<b>153</b>	Hydroquinone, solution
3436	<b>151</b>	Hexafluoroacetone hydrate, solid
3437	<b>152</b>	Chlorocresols, solid
3438	<b>153</b>	alpha-Methylbenzyl alcohol, solid
3439	<b>151</b>	Nitriles, poisonous, solid, n.o.s.
3439	<b>151</b>	Nitriles, solid, poisonous, n.o.s.
3439	<b>151</b>	Nitriles, solid, toxic, n.o.s.
3439	<b>151</b>	Nitriles, toxic, solid, n.o.s.
3440	<b>151</b>	Selenium compound, liquid, n.o.s.
3441	<b>153</b>	Chlorodinitrobenzenes, solid
3442	<b>153</b>	Dichloroanilines, solid
3443	<b>152</b>	Dinitrobenzenes, solid
3444	<b>151</b>	Nicotine hydrochloride, solid
3445	<b>151</b>	Nicotine sulfate, solid
3445	<b>151</b>	Nicotine sulphate, solid
3446	<b>152</b>	Nitrotoluenes, solid
3447	<b>152</b>	Nitroxylenes, solid
3448	<b>159</b>	Tear gas substance, solid, n.o.s.
3449	<b>159</b>	Bromobenzyl cyanides, solid
3450	<b>151</b>	Diphenylchloroarsine, solid
3451	<b>153</b>	Toluidines, solid
3452	<b>153</b>	Xylidines, solid
3453	<b>154</b>	Phosphoric acid, solid

**ID Guide Name of Material**  
**No. No.**

3454	<b>152</b>	Dinitrotoluenes, solid
3455	<b>153</b>	Cresols, solid
3456	<b>157</b>	Nitrosylsulfuric acid, solid
3456	<b>157</b>	Nitrosylsulphuric acid, solid
3457	<b>152</b>	Chloronitrotoluenes, solid
3458	<b>152</b>	Nitroanisoles, solid
3459	<b>152</b>	Nitrobromobenzenes, solid
3460	<b>153</b>	N-Ethylbenzyltoluidines, solid
3461	<b>135</b>	Aluminum alkyl halides, solid
3462	<b>153</b>	Toxins, extracted from living sources, solid, n.o.s.
3463	<b>132</b>	Propionic acid, with not less than 90% acid
3464	<b>151</b>	Organophosphorus compound, poisonous, solid, n.o.s.
3464	<b>151</b>	Organophosphorus compound, solid, poisonous, n.o.s.
3464	<b>151</b>	Organophosphorus compound, solid, toxic, n.o.s.
3464	<b>151</b>	Organophosphorus compound, toxic, solid, n.o.s.
3465	<b>151</b>	Organoarsenic compound, solid, n.o.s.
3466	<b>151</b>	Metal carbonyls, solid, n.o.s.
3467	<b>151</b>	Organometallic compound, poisonous, solid, n.o.s.
3467	<b>151</b>	Organometallic compound, solid, poisonous, n.o.s.
3467	<b>151</b>	Organometallic compound, solid, toxic, n.o.s.
3467	<b>151</b>	Organometallic compound, toxic, solid, n.o.s.
3468	<b>115</b>	Hydrogen in a metal hydride storage system
3468	<b>115</b>	Hydrogen in a metal hydride storage system contained in equipment



<b>ID No.</b>	<b>Guide No.</b>	<b>Name of Material</b>
3468	115	Hydrogen in a metal hydride storage system packed with equipment
3469	132	Paint, flammable, corrosive
3469	132	Paint related material, flammable, corrosive
3470	132	Paint, corrosive, flammable
3470	132	Paint related material, corrosive, flammable
3471	154	Hydrogendifluorides, solution, n.o.s.
3472	153	Crotonic acid, liquid
3473	128	Fuel cell cartridges contained in equipment, containing flammable liquids
3473	128	Fuel cell cartridges containing flammable liquids
3473	128	Fuel cell cartridges packed with equipment, containing flammable liquids
3474	113	1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water
3474	113	1-Hydroxybenzotriazole, monohydrate
3475	127	Ethanol and gasoline mixture, with more than 10% ethanol
3475	127	Ethanol and motor spirit mixture, with more than 10% ethanol
3475	127	Ethanol and petrol mixture, with more than 10% ethanol
3475	127	Gasoline and ethanol mixture, with more than 10% ethanol
3475	127	Motor spirit and ethanol mixture, with more than 10% ethanol
3475	127	Petrol and ethanol mixture, with more than 10% ethanol

<b>ID No.</b>	<b>Guide No.</b>	<b>Name of Material</b>
3476	138	Fuel cell cartridges contained in equipment, containing water-reactive substances
3476	138	Fuel cell cartridges, containing water-reactive substances
3476	138	Fuel cell cartridges packed with equipment, containing water-reactive substances
3477	153	Fuel cell cartridges contained in equipment, containing corrosive substances
3477	153	Fuel cell cartridges, containing corrosive substances
3477	153	Fuel cell cartridges packed with equipment, containing corrosive substances
3478	115	Fuel cell cartridges contained in equipment, containing liquefied flammable gas
3478	115	Fuel cell cartridges, containing liquefied flammable gas
3478	115	Fuel cell cartridges packed with equipment, containing liquefied flammable gas
3479	115	Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride
3479	115	Fuel cell cartridges, containing hydrogen in metal hydride
3479	115	Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride
3480	147	Lithium ion batteries (including lithium ion polymer batteries)
3481	147	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)
3481	147	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)
3482	138	Alkali metal dispersion, flammable

**ID Guide No. No. Name of Material**

3482	138	Alkaline earth metal dispersion, flammable
3483	131	Motor fuel anti-knock mixture, flammable
3484	132	Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass
3485	140	Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3485	140	Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)
3486	140	Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine
3487	140	Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water
3487	140	Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water
3488	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3488	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)
3489	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3489	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)
3490	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)
3490	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)

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3491	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)
3491	155	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)
3492	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3492	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)
3493	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3493	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)
3494	131	Petroleum sour crude oil, flammable, toxic
3495	154	Iodine
3496	171	Batteries, nickel-metal hydride
3497	133	Krill meal
3498	157	Iodine monochloride, liquid
3499	171	Capacitor, electric double layer
3500	126	Chemical under pressure, n.o.s.
3501	115	Chemical under pressure, flammable, n.o.s.
3502	123	Chemical under pressure, poisonous, n.o.s.
3502	123	Chemical under pressure, toxic, n.o.s.
3503	125	Chemical under pressure, corrosive, n.o.s.
3504	119	Chemical under pressure, flammable, poisonous, n.o.s.
3504	119	Chemical under pressure, flammable, toxic, n.o.s.

**ID Guide Name of Material**  
**No. No.**

3505 118 Chemical under pressure,  
flammable, corrosive, n.o.s.

3506 172 Mercury contained in manufactured  
articles

8000 171 Consumer commodity

9035 123 Gas identification set

9191 143 Chlorine dioxide, hydrate,  
frozen

9202 168 Carbon monoxide, refrigerated  
liquid (cryogenic liquid)

9206 137 Methyl phosphonic dichloride

9260 169 Aluminum, molten

9263 156 Chloropivaloyl chloride

9264 151 3,5-Dichloro-2,4,6-  
trifluoropyridine

9269 132 Trimethoxysilane

9279 115 Hydrogen absorbed in metal  
hydride

**ID Guide Name of Material**  
**No. No.**

## GREEN HIGHLIGHTED ENTRIES IN BLUE PAGES

For entries highlighted in green follow these steps:

- **IF THERE IS NO FIRE:**
  - Go directly to **Table 1** (green bordered pages)
  - Look up the ID number and name of material
  - Identify initial isolation and protective action distances
- **IF THERE IS A FIRE or A FIRE IS INVOLVED:**
  - Also consult the assigned orange guide
  - If applicable, apply the evacuation information shown under PUBLIC SAFETY

**Note:** If the name in **Table 1** is shown with “*When Spilled In Water*”, these materials produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material is **NOT** a TIH and this material is **NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange guide.

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
AC	117	1051	Acrolein dimer, stabilized	129P	2607
Acetal	127	1088	Acrylamide	153P	2074
Acetaldehyde	129	1089	Acrylamide, solid	153P	2074
Acetaldehyde ammonia	171	1841	Acrylamide, solution	153P	3426
Acetaldehyde oxime	129	2332	Acrylic acid, stabilized	132P	2218
Acetic acid, glacial	132	2789	Acrylonitrile, stabilized	131P	1093
Acetic acid, solution, more than 10% but not more than 80% acid	153	2790	Adamsite	154	1698
Acetic acid, solution, more than 80% acid	132	2789	Adhesives (flammable)	128	1133
Acetic anhydride	137	1715	Adiponitrile	153	2205
Acetone	127	1090	Aerosol dispensers	126	1950
Acetone cyanohydrin, stabilized	155	1541	Aerosols	126	1950
Acetone oils	127	1091	Air, compressed	122	1002
Acetonitrile	127	1648	Air, refrigerated liquid (cryogenic liquid)	122	1003
Acetyl bromide	156	1716	Air, refrigerated liquid (cryogenic liquid), non-pressurized	122	1003
Acetyl chloride	155	1717	Air bag inflators	171	3268
Acetylene	116	1001	Air bag inflators, compressed gas	126	3353
Acetylene, dissolved	116	1001	Air bag inflators, pyrotechnic	171	3268
Acetylene, solvent free	116	3374	Air bag modules	171	3268
Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138	Air bag modules, compressed gas	126	3353
Acetylene tetrabromide	159	2504	Air bag modules, pyrotechnic	171	3268
Acetyl iodide	156	1898	Aircraft hydraulic power unit fuel tank	131	3165
Acetyl methyl carbinol	127	2621	Alcoholates solution, n.o.s., in alcohol	132	3274
Acid, sludge	153	1906	Alcoholic beverages	127	3065
Acid butyl phosphate	153	1718	Alcohols, flammable, poisonous, n.o.s.	131	1986
Acridine	153	2713	Alcohols, flammable, toxic, n.o.s.	131	1986
Acrolein, stabilized	131P	1092	Alcohols, n.o.s.	127	1987
			Alcohols, poisonous, n.o.s.	131	1986

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Alcohols, toxic, n.o.s.	131	1986	Alkaloid salts, liquid, n.o.s. (poisonous)	151	3140
Aldehydes, flammable, poisonous, n.o.s.	131	1988	Alkaloid salts, solid, n.o.s. (poisonous)	151	1544
Aldehydes, flammable, toxic, n.o.s.	131	1988	Alkylamines, n.o.s.	132	2733
Aldehydes, n.o.s.	129	1989	Alkylamines, n.o.s.	132	2734
Aldehydes, poisonous, n.o.s.	131	1988	Alkylamines, n.o.s.	153	2735
Aldehydes, toxic, n.o.s.	131	1988	Alkyl phenols, liquid, n.o.s. (including C2-C12 homologues)	153	3145
Aldol	153	2839	Alkyl phenols, solid, n.o.s. (including C2-C12 homologues)	153	2430
Alkali metal alcoholates, self-heating, corrosive, n.o.s.	136	3206	Alkyl sulfonic acids, liquid, with more than 5% free Sulfuric acid	153	2584
Alkali metal alloy, liquid, n.o.s.	138	1421	Alkyl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	153	2586
Alkali metal amalgam	138	1389	Alkyl sulfonic acids, solid, with more than 5% free Sulfuric acid	153	2583
Alkali metal amalgam, liquid	138	1389	Alkyl sulfonic acids, solid, with not more than 5% free Sulfuric acid	153	2585
Alkali metal amalgam, solid	138	1389	Alkylsulfuric acids	156	2571
Alkali metal amalgam, solid	138	3401	Alkyl sulphonic acids, liquid, with more than 5% free Sulphuric acid	153	2584
Alkali metal amides	139	1390	Alkyl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	153	2586
Alkali metal dispersion	138	1391	Alkyl sulphonic acids, solid, with more than 5% free Sulphuric acid	153	2583
Alkali metal dispersion, flammable	138	3482	Alkyl sulphonic acids, solid, with not more than 5% free Sulphuric acid	153	2585
Alkaline earth metal alcoholates, n.o.s.	135	3205	Alkylsulphuric acids	156	2571
Alkaline earth metal alloy, n.o.s.	138	1393	Allyl acetate	131	2333
Alkaline earth metal amalgam	138	1392	Allyl alcohol	131	1098
Alkaline earth metal amalgam, liquid	138	1392	Allylamine	131	2334
Alkaline earth metal amalgam, solid	138	3402			
Alkaline earth metal dispersion	138	1391			
Alkaline earth metal dispersion, flammable	138	3482			
Alkaloids, liquid, n.o.s. (poisonous)	151	3140			
Alkaloids, solid, n.o.s. (poisonous)	151	1544			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Allyl bromide	131	1099	Aluminum remelting by-products	138	3170
Allyl chloride	131	1100	Aluminum resinate	133	2715
Allyl chlorocarbonate	155	1722	Aluminum silicon powder, uncoated	138	1398
Allyl chloroformate	155	1722	Aluminum smelting by-products	138	3170
Allyl ethyl ether	131	2335	Amines, flammable, corrosive, n.o.s.	132	2733
Allyl formate	131	2336	Amines, liquid, corrosive, flammable, n.o.s.	132	2734
Allyl glycidyl ether	129	2219	Amines, liquid, corrosive, n.o.s.	153	2735
Allyl iodide	132	1723	Amines, solid, corrosive, n.o.s.	154	3259
Allyl isothiocyanate, stabilized	155	1545	2-Amino-4-chlorophenol	151	2673
Allyltrichlorosilane, stabilized	155	1724	2-Amino-5-diethylaminopentane	153	2946
Aluminum, molten	169	9260	2-Amino-4,6-dinitrophenol, wetted with not less than 20% water	113	3317
Aluminum alkyl halides	135	3052	2-(2-Aminoethoxy)ethanol	154	3055
Aluminum alkyl halides, liquid	135	3052	N-Aminoethylpiperazine	153	2815
Aluminum alkyl halides, solid	135	3052	Aminophenols	152	2512
Aluminum alkyl halides, solid	135	3461	Aminopyridines	153	2671
Aluminum alkyl hydrides	138	3076	Ammonia, anhydrous	125	1005
Aluminum alkyls	135	3051	Ammonia, solution, with more than 10% but not more than 35% Ammonia	154	2672
Aluminum borohydride	135	2870	Ammonia, solution, with more than 35% but not more than 50% Ammonia	125	2073
Aluminum borohydride in devices	135	2870	Ammonia solution, with more than 50% Ammonia	125	3318
Aluminum bromide, anhydrous	137	1725	Ammonium arsenate	151	1546
Aluminum bromide, solution	154	2580	Ammonium bifluoride, solid	154	1727
Aluminum carbide	138	1394	Ammonium bifluoride, solution	154	2817
Aluminum chloride, anhydrous	137	1726	Ammonium dichromate	141	1439
Aluminum chloride, solution	154	2581	Ammonium dinitro-o-cresolate	141	1843
Aluminum dross	138	3170			
Aluminum ferrosilicon powder	139	1395			
Aluminum hydride	138	2463			
Aluminum nitrate	140	1438			
Aluminum phosphide	139	1397			
Aluminum phosphide pesticide	157	3048			
Aluminum powder, coated	170	1309			
Aluminum powder, pyrophoric	135	1383			
Aluminum powder, uncoated	138	1396			
Aluminum processing by-products	138	3170			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Ammonium dinitro- oresolate, solid	141	1843	Ammonium nitrate fertilizers, with Calcium carbonate	140	2068
Ammonium dinitro- oresolate, solution	141	3424	Ammonium nitrate fertilizers, with Phosphate or Potash	143	2070
Ammonium fluoride	154	2505	Ammonium nitrate-fuel oil mixtures	112	—
Ammonium fluorosilicate	151	2854	Ammonium nitrate gel	140	3375
Ammonium hydrogendifluoride, solid	154	1727	Ammonium nitrate mixed fertilizers	140	2069
Ammonium hydrogendifluoride, solution	154	2817	Ammonium nitrate suspension	140	3375
Ammonium hydrogen fluoride, solid	154	1727	Ammonium perchlorate	143	1442
Ammonium hydrogen fluoride, solution	154	2817	Ammonium persulfate	140	1444
Ammonium hydrogen sulfate	154	2506	Ammonium persulphate	140	1444
Ammonium hydrogen sulphate	154	2506	Ammonium picrate, wetted with not less than 10% water	113	1310
Ammonium hydroxide	154	2672	Ammonium polysulfide, solution	154	2818
Ammonium hydroxide, with more than 10% but not more than 35% Ammonia	154	2672	Ammonium polysulphide, solution	154	2818
Ammonium metavanadate	154	2859	Ammonium polyvanadate	151	2861
Ammonium nitrate, liquid (hot concentrated solution)	140	2426	Ammonium silicofluoride	151	2854
Ammonium nitrate, with not more than 0.2% combustible substances	140	1942	Ammonium sulfide, solution	132	2683
Ammonium nitrate emulsion	140	3375	Ammonium sulphide, solution	132	2683
Ammonium nitrate fertilizer, n.o.s.	140	2072	Ammunition, poisonous, non- explosive	151	2016
Ammonium nitrate fertilizer, with not more than 0.4% combustible material	140	2071	Ammunition, tear-producing, non-explosive	159	2017
Ammonium nitrate fertilizers	140	2067	Ammunition, toxic, non- explosive	151	2016
Ammonium nitrate fertilizers	140	2071	Amyl acetates	129	1104
Ammonium nitrate fertilizers	140	2072	Amyl acid phosphate	153	2819
Ammonium nitrate fertilizers, with Ammonium sulfate	140	2069	Amyl alcohols	129	1105
Ammonium nitrate fertilizers, with Ammonium sulphate	140	2069	Amylamines	132	1106
			Amyl butyrates	130	2620
			Amyl chloride	129	1107
			n-Amylene	128	1108
			Amyl formates	129	1109



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Amyl mercaptan	130	1111	Argon, compressed	121	1006
n-Amyl methyl ketone	127	1110	Argon, refrigerated liquid (cryogenic liquid)	120	1951
Amyl methyl ketone	127	1110	Arsenic	152	1558
Amyl nitrate	140	1112	Arsenic acid, liquid	154	1553
Amyl nitrite	129	1113	Arsenic acid, solid	154	1554
<b>Amyltrichlorosilane</b>	<b>155</b>	<b>1728</b>	Arsenical dust	152	1562
<b>Anhydrous ammonia</b>	<b>125</b>	<b>1005</b>	Arsenical pesticide, liquid, flammable, poisonous	131	2760
Aniline	153	1547	Arsenical pesticide, liquid, flammable, toxic	131	2760
Aniline hydrochloride	153	1548	Arsenical pesticide, liquid, poisonous	151	2994
Anisidines	153	2431	Arsenical pesticide, liquid, poisonous, flammable	131	2993
Anisidines, liquid	153	2431	Arsenical pesticide, liquid, toxic	151	2994
Anisidines, solid	153	2431	Arsenical pesticide, liquid, toxic, flammable	131	2993
Anisole	128	2222	Arsenical pesticide, solid, poisonous	151	2759
Anisoyl chloride	156	1729	Arsenical pesticide, solid, toxic	151	2759
Antimony compound, inorganic, liquid, n.o.s.	157	3141	Arsenic bromide	151	1555
Antimony compound, inorganic, n.o.s.	157	1549	<b>Arsenic chloride</b>	<b>157</b>	<b>1560</b>
Antimony compound, inorganic, solid, n.o.s.	157	1549	Arsenic compound, liquid, n.o.s.	152	1556
Antimony lactate	151	1550	Arsenic compound, liquid, n.o.s., inorganic	152	1556
Antimony pentachloride, liquid	157	1730	Arsenic compound, solid, n.o.s.	152	1557
Antimony pentachloride, solution	157	1731	Arsenic compound, solid, n.o.s., inorganic	152	1557
<b>Antimony pentafluoride</b>	<b>157</b>	<b>1732</b>	Arsenic pentoxide	151	1559
Antimony potassium tartrate	151	1551	<b>Arsenic trichloride</b>	<b>157</b>	<b>1560</b>
Antimony powder	170	2871	Arsenic trioxide	151	1561
Antimony trichloride	157	1733	<b>Arsine</b>	<b>119</b>	<b>2188</b>
Antimony trichloride, liquid	157	1733			
Antimony trichloride, solid	157	1733			
Antimony trichloride, solution	157	1733			
Aqua regia	157	1798			
Argon	121	1006			

<b>Name of Material</b>	<b>Guide No.</b>	<b>ID No.</b>	<b>Name of Material</b>	<b>Guide No.</b>	<b>ID No.</b>
Articles containing Polychlorinated biphenyls (PCB)	171	2315	1-Aziridinyl phosphine oxide (Tris)	152	2501
Articles, pressurized, hydraulic (containing non-flammable gas)	126	3164	Azodicarbonamide	149	3242
Articles, pressurized, pneumatic (containing non-flammable gas)	126	3164	Barium	138	1400
Aryl sulfonic acids, liquid, with more than 5% free Sulfuric acid	153	2584	Barium alloys, pyrophoric	135	1854
Aryl sulfonic acids, liquid, with not more than 5% free Sulfuric acid	153	2586	Barium azide, wetted with not less than 50% water	113	1571
Aryl sulfonic acids, solid, with more than 5% free Sulfuric acid	153	2583	Barium bromate	141	2719
Aryl sulfonic acids, solid, with not more than 5% free Sulfuric acid	153	2585	Barium chlorate	141	1445
Aryl sulphonic acids, liquid, with more than 5% free Sulphuric acid	153	2584	Barium chlorate, solid	141	1445
Aryl sulphonic acids, liquid, with not more than 5% free Sulphuric acid	153	2586	Barium chlorate, solution	141	3405
Aryl sulphonic acids, solid, with more than 5% free Sulphuric acid	153	2583	Barium compound, n.o.s.	154	1564
Aryl sulphonic acids, solid, with not more than 5% free Sulphuric acid	153	2585	Barium cyanide	157	1565
Asbestos	171	2212	Barium hypochlorite, with more than 22% available Chlorine	141	2741
Asbestos, blue	171	2212	Barium nitrate	141	1446
Asbestos, brown	171	2212	Barium oxide	157	1884
Asbestos, white	171	2590	Barium perchlorate	141	1447
Asphalt	130	1999	Barium perchlorate, solid	141	1447
Aviation regulated liquid, n.o.s.	171	3334	Barium perchlorate, solution	141	3406
Aviation regulated solid, n.o.s.	171	3335	Barium permanganate	141	1448
			Barium peroxide	141	1449
			Batteries, containing Sodium	138	3292
			Batteries, dry, containing Potassium hydroxide solid	154	3028
			Batteries, nickel-metal hydride	171	3496
			Batteries, wet, filled with acid	154	2794
			Batteries, wet, filled with alkali	154	2795
			Batteries, wet, non-spillable	154	2800
			Battery fluid, acid	157	2796
			Battery fluid, alkali	154	2797
			Battery fluid, alkali, with battery	154	2797

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Battery fluid, alkali, with electronic equipment or actuating device	154	2797	Biological substance, category B	158	3373
Battery-powered equipment (wet battery)	154	3171	(Bio)Medical waste, n.o.s.	158	3291
Battery-powered vehicle (wet battery)	154	3171	Bipyridilium pesticide, liquid, flammable, poisonous	131	2782
Benzaldehyde	129	1990	Bipyridilium pesticide, liquid, flammable, toxic	131	2782
Benzene	130	1114	Bipyridilium pesticide, liquid, poisonous	151	3016
Benzene phosphorus dichloride	137	2798	Bipyridilium pesticide, liquid, poisonous, flammable	131	3015
Benzene phosphorus thiodichloride	137	2799	Bipyridilium pesticide, liquid, toxic	151	3016
Benzenesulfonyl chloride	156	2225	Bipyridilium pesticide, liquid, toxic, flammable	131	3015
Benzenesulphonyl chloride	156	2225	Bipyridilium pesticide, solid, poisonous	151	2781
Benzidine	153	1885	Bipyridilium pesticide, solid, toxic	151	2781
Benzonitrile	152	2224	Bisulfates, aqueous solution	154	2837
Benzoquinone	153	2587	Bisulfites, aqueous solution, n.o.s.	154	2693
Benzotrichloride	156	2226	Bisulfites, inorganic, aqueous solution, n.o.s.	154	2693
Benzotrifluoride	127	2338	Bisulphates, aqueous solution	154	2837
Benzoyl chloride	137	1736	Bisulphites, aqueous solution, n.o.s.	154	2693
Benzyl bromide	156	1737	Bisulphites, inorganic, aqueous solution, n.o.s.	154	2693
Benzyl chloride	156	1738	Blasting agent, n.o.s.	112	—
Benzyl chloroformate	137	1739	Bleaching powder	140	2208
Benzyl dimethylamine	132	2619	Blue asbestos	171	2212
Benzylidene chloride	156	1886	Bombs, smoke, non-explosive, with corrosive liquid, without initiating device	153	2028
Benzyl iodide	156	2653	Borate and Chlorate mixtures	140	1458
Beryllium compound, n.o.s.	154	1566	Borneol	133	1312
Beryllium nitrate	141	2464	Boron tribromide	157	2692
Beryllium powder	134	1567	Boron trichloride	125	1741
Bhusa, wet, damp or contaminated with oil	133	1327			
Bicyclo[2.2.1]hepta-2,5-diene, stabilized	128P	2251			
Biological agents	158	—			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Boron trifluoride	125	1008	Bromobenzyl cyanides, liquid	159	1694
Boron trifluoride, compressed	125	1008	Bromobenzyl cyanides, solid	159	1694
Boron trifluoride, dihydrate	157	2851	Bromobenzyl cyanides, solid	159	3449
Boron trifluoride acetic acid complex	157	1742	1-Bromobutane	130	1126
Boron trifluoride acetic acid complex, liquid	157	1742	2-Bromobutane	130	2339
Boron trifluoride acetic acid complex, solid	157	3419	Bromochlorodifluoromethane	126	1974
Boron trifluoride diethyl etherate	132	2604	Bromochloromethane	160	1887
Boron trifluoride dimethyl etherate	139	2965	1-Bromo-3-chloropropane	159	2688
Boron trifluoride propionic acid complex	157	1743	2-Bromoethyl ethyl ether	130	2340
Boron trifluoride propionic acid complex, liquid	157	1743	Bromoform	159	2515
Boron trifluoride propionic acid complex, solid	157	3420	1-Bromo-3-methylbutane	130	2341
Bromates, inorganic, aqueous solution, n.o.s.	140	3213	Bromomethylpropanes	130	2342
Bromates, inorganic, n.o.s.	141	1450	2-Bromo-2-nitropropane-1,3-diol	133	3241
Bromine	154	1744	2-Bromopentane	130	2343
Bromine, solution	154	1744	2-Bromopropane	129	2344
Bromine, solution (Inhalation Hazard Zone A)	154	1744	Bromopropanes	129	2344
Bromine, solution (Inhalation Hazard Zone B)	154	1744	3-Bromopropyne	130	2345
Bromine chloride	124	2901	Bromotrifluoroethylene	116	2419
Bromine pentafluoride	144	1745	Bromotrifluoromethane	126	1009
Bromine trifluoride	144	1746	Brown asbestos	171	2212
Bromoacetic acid	156	1938	Brucine	152	1570
Bromoacetic acid, solid	156	3425	Butadienes, stabilized	116P	1010
Bromoacetic acid, solution	156	1938	Butadienes and hydrocarbon mixture, stabilized	116P	1010
Bromoacetone	131	1569	Butane	115	1011
Bromoacetyl bromide	156	2513	Butane	115	1075
Bromobenzene	130	2514	Butanedione	127	2346
Bromobenzyl cyanides	159	1694	Butane mixture	115	1011
			Butane mixture	115	1075
			Butanols	129	1120
			Butyl acetates	129	1123
			Butyl acid phosphate	153	1718
			Butyl acrylates, stabilized	129P	2348

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
n-Butylamine	132	1125	Butyric anhydride	156	2739
N-Butylaniline	153	2738	Butyronitrile	131	2411
Butylbenzenes	128	2709	Butyryl chloride	132	2353
n-Butyl bromide	130	1126	Buzz	153	2810
Butyl chloride	130	1127	BZ	153	2810
n-Butyl chloroformate	155	2743	CA	159	1694
sec-Butyl chloroformate	155	2742	Cacodylic acid	151	1572
tert-Butylcyclohexyl chloroformate	156	2747	Cadmium compound	154	2570
Butylene	115	1012	Caesium	138	1407
Butylene	115	1075	Caesium hydroxide	157	2682
1,2-Butylene oxide, stabilized	127P	3022	Caesium hydroxide, solution	154	2681
Butyl ethers	128	1149	Caesium nitrate	140	1451
n-Butyl formate	129	1128	Calcium	138	1401
tert-Butyl hypochlorite	135	3255	Calcium, metal and alloys, pyrophoric	135	1855
N,n-Butylimidazole	152	2690	Calcium, pyrophoric	135	1855
n-Butyl isocyanate	155	2485	Calcium alloys, pyrophoric	135	1855
tert-Butyl isocyanate	155	2484	Calcium arsenate	151	1573
Butyl mercaptan	130	2347	Calcium arsenate and Calcium arsenite mixture, solid	151	1574
n-Butyl methacrylate, stabilized	130P	2227	Calcium arsenite and Calcium arsenate mixture, solid	151	1574
Butyl methyl ether	127	2350	Calcium carbide	138	1402
Butyl nitrites	129	2351	Calcium chlorate	140	1452
Butyl propionates	130	1914	Calcium chlorate, aqueous solution	140	2429
Butyltoluenes	152	2667	Calcium chlorate, solution	140	2429
Butyltrichlorosilane	155	1747	Calcium chlorite	140	1453
5-tert-Butyl-2,4,6-trinitro-m-xylene	149	2956	Calcium chlorite	140	1453
Butyl vinyl ether, stabilized	127P	2352	Calcium cyanamide, with more than 0.1% Calcium carbide	138	1403
1,4-Butynediol	153	2716	Calcium cyanide	157	1575
Butyraldehyde	129	1129	Calcium dithionite	135	1923
Butyraldoxime	129	2840	Calcium hydride	138	1404
Butyric acid	153	2820	Calcium hydrosulfite	135	1923
			Calcium hydrosulphite	135	1923

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Calcium hypochlorite, dry	140	1748	Calcium peroxide	140	1457
Calcium hypochlorite, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	140	3485	Calcium phosphide	139	1360
Calcium hypochlorite, hydrated, corrosive, with not less than 5.5% but not more than 16% water	140	3487	Calcium resinate	133	1313
Calcium hypochlorite, hydrated, with not less than 5.5% but not more than 16% water	140	2880	Calcium resinate, fused	133	1314
Calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water	140	3487	Calcium silicide	138	1405
Calcium hypochlorite mixture, dry, corrosive, with more than 10% but not more than 39% available chlorine	140	3486	Camphor	133	2717
Calcium hypochlorite mixture, dry, corrosive, with more than 39% available chlorine (8.8% available oxygen)	140	3485	Camphor, synthetic	133	2717
Calcium hypochlorite mixture, dry, with more than 10% but not more than 39% available Chlorine	140	2208	Camphor oil	128	1130
Calcium hypochlorite mixture, dry, with more than 39% available Chlorine (8.8% available Oxygen)	140	1748	Capacitor, electric double layer	171	3499
Calcium manganese silicon	138	2844	Caproic acid	153	2829
Calcium nitrate	140	1454	Carbamate pesticide, liquid, flammable, poisonous	131	2758
Calcium oxide	157	1910	Carbamate pesticide, liquid, flammable, toxic	131	2758
Calcium perchlorate	140	1455	Carbamate pesticide, liquid, poisonous	151	2992
Calcium permanganate	140	1456	Carbamate pesticide, liquid, poisonous, flammable	131	2991
			Carbamate pesticide, liquid, toxic	151	2992
			Carbamate pesticide, liquid, toxic, flammable	131	2991
			Carbamate pesticide, solid, poisonous	151	2757
			Carbamate pesticide, solid, toxic	151	2757
			Carbon, activated	133	1362
			Carbon, animal or vegetable origin	133	1361
			Carbon bisulfide	131	1131
			Carbon bisulphide	131	1131
			Carbon dioxide	120	1013
			Carbon dioxide, compressed	120	1013
			Carbon dioxide, refrigerated liquid	120	2187
			Carbon dioxide, solid	120	1845

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide	115	1041	Caustic potash, liquid	154	1814
Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	119P	3300	Caustic potash, solution	154	1814
Carbon dioxide and Ethylene oxide mixtures, with more than 6% Ethylene oxide	115	1041	Caustic soda, bead	154	1823
Carbon dioxide and Ethylene oxide mixtures, with not more than 6% Ethylene oxide	126	1952	Caustic soda, flake	154	1823
Carbon dioxide and Ethylene oxide mixtures, with not more than 9% Ethylene oxide	126	1952	Caustic soda, granular	154	1823
Carbon dioxide and Nitrous oxide mixture	126	1015	Caustic soda, solid	154	1823
Carbon dioxide and Oxygen mixture, compressed	122	1014	Caustic soda, solution	154	1824
Carbon disulfide	131	1131	Cells, containing Sodium	138	3292
Carbon disulphide	131	1131	Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap	133	2000
Carbon monoxide	119	1016	Celluloid, scrap	135	2002
Carbon monoxide, compressed	119	1016	Cerium, slabs, ingots or rods	170	1333
Carbon monoxide, refrigerated liquid (cryogenic liquid)	168	9202	Cerium, turnings or gritty powder	138	3078
Carbon monoxide and Hydrogen mixture, compressed	119	2600	Cesium	138	1407
Carbon tetrabromide	151	2516	Cesium hydroxide	157	2682
Carbon tetrachloride	151	1846	Cesium hydroxide, solution	154	2681
Carbonyl fluoride	125	2417	Cesium nitrate	140	1451
Carbonyl fluoride, compressed	125	2417	CG	125	1076
Carbonyl sulfide	119	2204	Charcoal	133	1361
Carbonyl sulphide	119	2204	Chemical kit	154	1760
Castor beans, meal, pomace or flake	171	2969	Chemical kit	171	3316
Caustic alkali liquid, n.o.s.	154	1719	Chemical sample, poisonous liquid	151	3315
Caustic potash, dry, solid	154	1813	Chemical sample, poisonous solid	151	3315
			Chemical sample, toxic	151	3315
			Chemical sample, toxic liquid	151	3315
			Chemical sample, toxic solid	151	3315
			Chemical under pressure, corrosive, n.o.s.	125	3503
			Chemical under pressure, flammable, corrosive, n.o.s.	118	3505

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Chemical under pressure, flammable, n.o.s.	115	3501	Chloroacetic acid, solid	153	1751
Chemical under pressure, flammable, poisonous, n.o.s.	119	3504	Chloroacetic acid, solution	153	1750
Chemical under pressure, flammable, toxic, n.o.s.	119	3504	Chloroacetone, stabilized	131	1695
Chemical under pressure, n.o.s.	126	3500	Chloroacetonitrile	131	2668
Chemical under pressure, poisonous, n.o.s.	123	3502	Chloroacetophenone	153	1697
Chemical under pressure, toxic, n.o.s.	123	3502	Chloroacetophenone, liquid	153	1697
Chloral, anhydrous, stabilized	153	2075	Chloroacetophenone, liquid	153	3416
Chlorate and Borate mixtures	140	1458	Chloroacetophenone, solid	153	1697
Chlorate and Magnesium chloride mixture	140	1459	Chloroacetyl chloride	156	1752
Chlorate and Magnesium chloride mixture, solid	140	1459	Chloroanilines, liquid	152	2019
Chlorate and Magnesium chloride mixture, solution	140	3407	Chloroanilines, solid	152	2018
Chlorates, inorganic, aqueous solution, n.o.s.	140	3210	Chloroanisidines	152	2233
Chlorates, inorganic, n.o.s.	140	1461	Chlorobenzene	130	1134
Chloric acid, aqueous solution, with not more than 10% Chloric acid	140	2626	Chlorobenzotrifluorides	130	2234
Chlorine	124	1017	Chlorobenzyl chlorides	153	2235
Chlorine dioxide, hydrate, frozen	143	9191	Chlorobenzyl chlorides, liquid	153	2235
Chlorine pentafluoride	124	2548	Chlorobenzyl chlorides, solid	153	3427
Chlorine trifluoride	124	1749	1-Chloro-3-bromopropane	159	2688
Chlorite solution	154	1908	Chlorobutanes	130	1127
Chlorite solution, with more than 5% available Chlorine	154	1908	Chlorocresols	152	2669
Chlorites, inorganic, n.o.s.	143	1462	Chlorocresols, liquid	152	2669
Chloroacetaldehyde	153	2232	Chlorocresols, solid	152	2669
Chloroacetic acid, liquid	153	1750	Chlorocresols, solid	152	3437
Chloroacetic acid, molten	153	3250	Chlorocresols, solution	152	2669
			Chlorodifluorobromomethane	126	1974
			1-Chloro-1,1-difluoroethane	115	2517
			Chlorodifluoroethanes	115	2517
			Chlorodifluoromethane	126	1018
			Chlorodifluoromethane and Chloropentafluoroethane mixture	126	1973
			Chlorodinitrobenzenes	153	1577



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Chlorodinitrobenzenes, liquid	153	1577	Chlorophenates, liquid	154	2904
Chlorodinitrobenzenes, solid	153	1577	Chlorophenates, solid	154	2905
Chlorodinitrobenzenes, solid	153	3441	Chlorophenolates, liquid	154	2904
1-Chloro-2,3-epoxypropane	131P	2023	Chlorophenolates, solid	154	2905
2-Chloroethanal	153	2232	Chlorophenols, liquid	153	2021
Chloroform	151	1888	Chlorophenols, solid	153	2020
Chloroformates, n.o.s.	155	2742	Chlorophenyltrichlorosilane	156	1753
Chloroformates, poisonous, corrosive, flammable, n.o.s.	155	2742	Chloropicrin	154	1580
Chloroformates, poisonous, corrosive, n.o.s.	154	3277	Chloropicrin and Methyl bromide mixture	123	1581
Chloroformates, toxic, corrosive, flammable, n.o.s.	155	2742	Chloropicrin and Methyl chloride mixture	119	1582
Chloroformates, toxic, corrosive, n.o.s.	154	3277	Chloropicrin mixture, n.o.s.	154	1583
Chloromethyl chloroformate	157	2745	Chloropivaloyl chloride	156	9263
Chloromethyl ethyl ether	131	2354	Chloroplatinic acid, solid	154	2507
3-Chloro-4-methylphenyl isocyanate	156	2236	Chloroprene, stabilized	131P	1991
3-Chloro-4-methylphenyl isocyanate, liquid	156	2236	1-Chloropropane	129	1278
3-Chloro-4-methylphenyl isocyanate, solid	156	3428	2-Chloropropane	129	2356
Chloronitroanilines	153	2237	3-Chloropropanol-1	153	2849
Chloronitrobenzenes	152	1578	2-Chloropropene	130P	2456
Chloronitrobenzenes, liquid	152	1578	2-Chloropropionic acid	153	2511
Chloronitrobenzenes, liquid	152	3409	2-Chloropropionic acid, solid	153	2511
Chloronitrobenzenes, solid	152	1578	2-Chloropropionic acid, solution	153	2511
Chloronitrotoluenes	152	2433	2-Chloropyridine	153	2822
Chloronitrotoluenes, liquid	152	2433	Chlorosilanes, corrosive, flammable, n.o.s.	155	2986
Chloronitrotoluenes, solid	152	2433	Chlorosilanes, corrosive, n.o.s.	156	2987
Chloronitrotoluenes, solid	152	3457	Chlorosilanes, flammable, corrosive, n.o.s.	155	2985
Chloropentafluoroethane	126	1020	Chlorosilanes, n.o.s.	155	2985
Chloropentafluoroethane and Chlorodifluoromethane mixture	126	1973	Chlorosilanes, n.o.s.	155	2986
			Chlorosilanes, n.o.s.	156	2987

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Chlorosilanes, n.o.s.	139	2988	Chlorotrifluoromethane and Trifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599
Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	155	3362	Chromic acid, solution	154	1755
Chlorosilanes, poisonous, corrosive, n.o.s.	156	3361	Chromic fluoride, solid	154	1756
Chlorosilanes, toxic, corrosive, flammable, n.o.s.	155	3362	Chromic fluoride, solution	154	1757
Chlorosilanes, toxic, corrosive, n.o.s.	156	3361	Chromium nitrate	141	2720
Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	139	2988	Chromium oxychloride	137	1758
Chlorosulfonic acid	137	1754	Chromium trioxide, anhydrous	141	1463
Chlorosulfonic acid and Sulfur trioxide mixture	137	1754	Chromosulfuric acid	154	2240
Chlorosulphonic acid	137	1754	Chromosulphuric acid	154	2240
Chlorosulphonic acid and Sulphur trioxide mixture	137	1754	CK	125	1589
1-Chloro-1,2,2,2-tetrafluoroethane	126	1021	Clinical specimens	158	3373
Chlorotetrafluoroethane	126	1021	Clinical waste, unspecified, n.o.s.	158	3291
Chlorotetrafluoroethane and Ethylene oxide mixture, with not more than 8.8% Ethylene oxide	126	3297	CN	153	1697
Chlorotoluenes	129	2238	Coal gas	119	1023
4-Chloro-o-toluidine hydrochloride	153	1579	Coal gas, compressed	119	1023
4-Chloro-o-toluidine hydrochloride, solid	153	1579	Coal tar distillates, flammable	128	1136
4-Chloro-o-toluidine hydrochloride, solution	153	3410	Coating solution	127	1139
Chlorotoluidines	153	2239	Cobalt naphthenates, powder	133	2001
Chlorotoluidines, liquid	153	2239	Cobalt resinate, precipitated	133	1318
Chlorotoluidines, liquid	153	3429	Combustible liquid, n.o.s.	128	1993
Chlorotoluidines, solid	153	2239	Compound, cleaning liquid (corrosive)	154	1760
1-Chloro-2,2,2-trifluoroethane	126	1983	Compound, cleaning liquid (flammable)	128	1993
Chlorotrifluoroethane	126	1983	Compound, tree or weed killing, liquid (corrosive)	154	1760
Chlorotrifluoromethane	126	1022	Compound, tree or weed killing, liquid (flammable)	128	1993
			Compound, tree or weed killing, liquid (toxic)	153	2810
			Compressed gas, flammable, n.o.s.	115	1954

**Name of Material**      **Guide ID**  
**No.**      **No.**

**Name of Material**      **Guide ID**  
**No.**      **No.**

Compressed gas, flammable, 119 1953  
poisonous, n.o.s.  
(Inhalation Hazard Zone A)

Compressed gas, flammable, 119 1953  
poisonous, n.o.s.  
(Inhalation Hazard Zone B)

Compressed gas, flammable, 119 1953  
poisonous, n.o.s.  
(Inhalation Hazard Zone C)

Compressed gas, flammable, 119 1953  
poisonous, n.o.s.  
(Inhalation Hazard Zone D)

Compressed gas, flammable, 119 1953  
toxic, n.o.s. (Inhalation  
Hazard Zone A)

Compressed gas, flammable, 119 1953  
toxic, n.o.s. (Inhalation  
Hazard Zone B)

Compressed gas, flammable, 119 1953  
toxic, n.o.s. (Inhalation  
Hazard Zone C)

Compressed gas, flammable, 119 1953  
toxic, n.o.s. (Inhalation  
Hazard Zone D)

Compressed gas, n.o.s.      126 1956

Compressed gas, oxidizing, 122 3156  
n.o.s.

Compressed gas, poisonous, 123 3304  
corrosive, n.o.s.

Compressed gas, poisonous, 123 3304  
corrosive, n.o.s. (Inhalation  
Hazard Zone A)

Compressed gas, poisonous, 123 3304  
corrosive, n.o.s. (Inhalation  
Hazard Zone B)

Compressed gas, poisonous, 123 3304  
corrosive, n.o.s. (Inhalation  
Hazard Zone C)

Compressed gas, poisonous, 123 3304  
corrosive, n.o.s. (Inhalation  
Hazard Zone D)

Compressed gas, poisonous, 119 3305  
flammable, corrosive, n.o.s.

Compressed gas, poisonous, 119 3305  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

Compressed gas, poisonous, 119 3305  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone B)

Compressed gas, poisonous, 119 3305  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone C)

Compressed gas, poisonous, 119 3305  
flammable, corrosive, n.o.s.  
(Inhalation Hazard Zone D)

Compressed gas, poisonous, 119 1953  
flammable, n.o.s.

Compressed gas, poisonous, 119 1953  
flammable, n.o.s.  
(Inhalation Hazard Zone A)

Compressed gas, poisonous, 119 1953  
flammable, n.o.s.  
(Inhalation Hazard Zone B)

Compressed gas, poisonous, 119 1953  
flammable, n.o.s.  
(Inhalation Hazard Zone C)

Compressed gas, poisonous, 119 1953  
flammable, n.o.s.  
(Inhalation Hazard Zone D)

Compressed gas, poisonous, 123 1955  
n.o.s.

Compressed gas, poisonous, 123 1955  
n.o.s. (Inhalation Hazard  
Zone A)

Compressed gas, poisonous, 123 1955  
n.o.s. (Inhalation Hazard  
Zone B)

Compressed gas, poisonous, 123 1955  
n.o.s. (Inhalation Hazard  
Zone C)

Compressed gas, poisonous, 123 1955  
n.o.s. (Inhalation Hazard  
Zone D)

Compressed gas, poisonous, 124 3306  
oxidizing, corrosive, n.o.s.

Compressed gas, poisonous, 124 3306  
oxidizing, corrosive, n.o.s.  
(Inhalation Hazard Zone A)

**Name of Material**      **Guide ID**  
**No.**      **No.**

Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3306
Compressed gas, poisonous, oxidizing, n.o.s.	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	124	3303
Compressed gas, toxic, corrosive, n.o.s.	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	123	3304
Compressed gas, toxic, flammable, corrosive, n.o.s.	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3305

**Name of Material**      **Guide ID**  
**No.**      **No.**

Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3305
Compressed gas, toxic, flammable, n.o.s.	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	1953
Compressed gas, toxic, n.o.s.	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	123	1955
Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	123	1955
Compressed gas, toxic, oxidizing, corrosive, n.o.s.	124	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3306
Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3306

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Compressed gas, toxic, oxidizing, n.o.s.	124	3303	Corrosive liquid, acidic, organic, n.o.s.	153	3265
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	124	3303	Corrosive liquid, basic, inorganic, n.o.s.	154	3266
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	124	3303	Corrosive liquid, basic, organic, n.o.s.	153	3267
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	124	3303	Corrosive liquid, flammable, n.o.s.	132	2920
Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	124	3303	Corrosive liquid, n.o.s.	154	1760
Consumer commodity	171	8000	Corrosive liquid, oxidizing, n.o.s.	140	3093
Copper acetoarsenite	151	1585	Corrosive liquid, poisonous, n.o.s.	154	2922
Copper arsenite	151	1586	Corrosive liquid, self-heating, n.o.s.	136	3301
Copper based pesticide, liquid, flammable, poisonous	131	2776	Corrosive liquid, toxic, n.o.s.	154	2922
Copper based pesticide, liquid, flammable, toxic	131	2776	Corrosive liquid, water-reactive, n.o.s.	138	3094
Copper based pesticide, liquid, poisonous	151	3010	Corrosive liquid, which in contact with water emits flammable gases, n.o.s.	138	3094
Copper based pesticide, liquid, poisonous, flammable	131	3009	Corrosive solid, acidic, inorganic, n.o.s.	154	3260
Copper based pesticide, liquid, toxic	151	3010	Corrosive solid, acidic, organic, n.o.s.	154	3261
Copper based pesticide, liquid, toxic, flammable	131	3009	Corrosive solid, basic, inorganic, n.o.s.	154	3262
Copper based pesticide, solid, poisonous	151	2775	Corrosive solid, basic, organic, n.o.s.	154	3263
Copper based pesticide, solid, toxic	151	2775	Corrosive solid, flammable, n.o.s.	134	2921
Copper chlorate	141	2721	Corrosive solid, n.o.s.	154	1759
Copper chloride	154	2802	Corrosive solid, oxidizing, n.o.s.	140	3084
Copper cyanide	151	1587	Corrosive solid, poisonous, n.o.s.	154	2923
Copra	135	1363	Corrosive solid, self-heating, n.o.s.	136	3095
Corrosive liquid, acidic, inorganic, n.o.s.	154	3264	Corrosive solid, toxic, n.o.s.	154	2923
			Corrosive solid, water-reactive, n.o.s.	138	3096

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Corrosive solid, which in contact with water emits flammable gases, n.o.s.	138	3096	Cumene	130	1918
Cotton	133	1365	Cupriethylenediamine, solution	154	1761
Cotton, wet	133	1365	<b>CX</b>	154	2811
Cotton waste, oily	133	1364	Cyanide solution, n.o.s.	157	1935
Coumarin derivative pesticide, liquid, flammable, poisonous	131	3024	Cyanides, inorganic, n.o.s.	157	1588
Coumarin derivative pesticide, liquid, flammable, toxic	131	3024	Cyanides, inorganic, solid, n.o.s.	157	1588
Coumarin derivative pesticide, liquid, poisonous	151	3026	<b>Cyanogen</b>	119	1026
Coumarin derivative pesticide, liquid, poisonous, flammable	131	3025	Cyanogen bromide	157	1889
Coumarin derivative pesticide, liquid, toxic	151	3026	<b>Cyanogen chloride, stabilized</b>	125	1589
Coumarin derivative pesticide, liquid, toxic, flammable	131	3025	<b>Cyanogen gas</b>	119	1026
Coumarin derivative pesticide, liquid, toxic	151	3026	Cyanuric chloride	157	2670
Coumarin derivative pesticide, liquid, toxic, flammable	131	3025	Cyclobutane	115	2601
Coumarin derivative pesticide, solid, poisonous	151	3027	Cyclobutyl chloroformate	155	2744
Coumarin derivative pesticide, solid, toxic	151	3027	1,5,9-Cyclododecatriene	153	2518
Cresols	153	2076	Cycloheptane	128	2241
Cresols, liquid	153	2076	Cycloheptatriene	131	2603
Cresols, solid	153	2076	Cycloheptene	128	2242
Cresols, solid	153	3455	Cyclohexane	128	1145
Cresylic acid	153	2022	Cyclohexanethiol	129	3054
<b>Crotonaldehyde</b>	<b>131P</b>	<b>1143</b>	Cyclohexanone	127	1915
<b>Crotonaldehyde, stabilized</b>	<b>131P</b>	<b>1143</b>	Cyclohexene	130	2256
Crotonic acid	153	2823	<b>Cyclohexenyltrichlorosilane</b>	156	1762
Crotonic acid, liquid	153	2823	Cyclohexyl acetate	130	2243
Crotonic acid, liquid	153	3472	Cyclohexylamine	132	2357
Crotonic acid, solid	153	2823	<b>Cyclohexyl isocyanate</b>	155	2488
Crotonylene	128	1144	Cyclohexyl mercaptan	129	3054
<b>CS</b>	<b>153</b>	<b>2810</b>	<b>Cyclohexyltrichlorosilane</b>	156	1763
			Cyclooctadiene phosphines	135	2940
			Cyclooctadienes	130P	2520
			Cyclooctatetraene	128P	2358

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Cyclopentane	128	1146	1,2-Dibromobutan-3-one	154	2648
Cyclopentanol	129	2244	Dibromochloropropanes	159	2872
Cyclopentanone	128	2245	Dibromodifluoromethane	171	1941
Cyclopentene	128	2246	Dibromomethane	160	2664
Cyclopropane	115	1027	Di-n-butylamine	132	2248
Cymenes	130	2046	Dibutylaminoethanol	153	2873
DA	151	1699	Dibutyl ethers	128	1149
Dangerous goods in apparatus	171	3363	Dichloroacetic acid	153	1764
Dangerous goods in machinery	171	3363	1,3-Dichloroacetone	153	2649
DC	153	2810	Dichloroacetyl chloride	156	1765
Decaborane	134	1868	Dichloroanilines	153	1590
Decahydronaphthalene	130	1147	Dichloroanilines, liquid	153	1590
n-Decane	128	2247	Dichloroanilines, solid	153	1590
Desensitized explosive, liquid, n.o.s.	128	3379	Dichloroanilines, solid	153	3442
Desensitized explosive, solid, n.o.s.	133	3380	o-Dichlorobenzene	152	1591
Deuterium	115	1957	2,2'-Dichlorodiethyl ether	152	1916
Deuterium, compressed	115	1957	Dichlorodifluoromethane	126	1028
Devices, small, hydrocarbon gas powered, with release device	115	3150	Dichlorodifluoromethane and Difluoroethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	126	2602
Diacetone alcohol	129	1148	Dichlorodifluoromethane and Ethylene oxide mixture, with not more than 12.5% Ethylene oxide	126	3070
Diacetyl	127	2346	Dichlorodifluoromethane and Ethylene oxide mixtures, with not more than 12% Ethylene oxide	126	3070
Diagnostic specimens	158	3373	Dichlorodimethyl ether, symmetrical	131	2249
Diallylamine	132	2359	1,1-Dichloroethane	130	2362
Diallyl ether	131P	2360	1,2-Dichloroethylene	130P	1150
4,4'-Diaminodiphenylmethane	153	2651	Dichloroethylene	130P	1150
Di-n-amylamine	131	2841	Dichloroethyl ether	152	1916
Dibenzylchlorosilane	156	2434			
Diborane	119	1911			
Diborane, compressed	119	1911			
Diborane mixtures	119	1911			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Dichlorofluoromethane	126	1029	Diethylaminopropylamine	132	2684
Dichloroisocyanuric acid, dry	140	2465	N,N-Diethylaniline	153	2432
Dichloroisocyanuric acid salts	140	2465	Diethylbenzene	130	2049
Dichloroisopropyl ether	153	2490	Diethyl carbonate	128	2366
Dichloromethane	160	1593	<b>Diethyldichlorosilane</b>	<b>155</b>	<b>1767</b>
1,1-Dichloro-1-nitroethane	153	2650	Diethylenetriamine	154	2079
Dichloropentanes	130	1152	Diethyl ether	127	1155
Dichlorophenyl isocyanates	156	2250	N,N-Diethylethylenediamine	132	2685
<b>Dichlorophenyltrichlorosilane</b>	<b>156</b>	<b>1766</b>	Diethyl ketone	127	1156
1,2-Dichloropropane	130	1279	Diethyl sulfate	152	1594
Dichloropropane	130	1279	Diethyl sulfide	129	2375
1,3-Dichloropropanol-2	153	2750	Diethyl sulphate	152	1594
Dichloropropenes	129	2047	Diethyl sulphide	129	2375
<b>Dichlorosilane</b>	<b>119</b>	<b>2189</b>	Diethylthiophosphoryl chloride	155	2751
1,2-Dichloro-1,1,2,2-tetrafluoroethane	126	1958	Diethylzinc	135	1366
Dichlorotetrafluoroethane	126	1958	Difluorochloroethanes	115	2517
<b>3,5-Dichloro-2,4,6-trifluoropyridine</b>	<b>151</b>	<b>9264</b>	1,1-Difluoroethane	115	1030
Dicyclohexylamine	153	2565	Difluoroethane	115	1030
Dicyclohexylammonium nitrite	133	2687	Difluoroethane and Dichlorodifluoromethane azeotropic mixture with approximately 74% Dichlorodifluoromethane	126	2602
Dicyclopentadiene	130	2048	1,1-Difluoroethylene	116P	1959
1,2-Di-(dimethylamino)ethane	129	2372	Difluoromethane	115	3252
Didymium nitrate	140	1465	Difluorophosphoric acid, anhydrous	154	1768
Diesel fuel	128	1202	2,3-Dihydropyran	127	2376
Diesel fuel	128	1993	Diisobutylamine	132	2361
Diethoxymethane	127	2373	Diisobutylene, isomeric compounds	128	2050
3,3-Diethoxypropene	127	2374	Diisobutyl ketone	128	1157
Diethylamine	132	1154	Diisooctyl acid phosphate	153	1902
2-Diethylaminoethanol	132	2686	Diisopropylamine	132	1158
Diethylaminoethanol	132	2686			
3-Diethylaminopropylamine	132	2684			



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Diisopropyl ether	127	1159	Dimethylhydrazine, symmetrical	131	2382
Diketene, stabilized	131P	2521	Dimethylhydrazine, unsymmetrical	131	1163
1,1-Dimethoxyethane	127	2377	2,2-Dimethylpropane	115	2044
1,2-Dimethoxyethane	127	2252	Dimethyl-N-propylamine	132	2266
Dimethylamine, anhydrous	118	1032	Dimethyl sulfate	156	1595
Dimethylamine, aqueous solution	132	1160	Dimethyl sulfide	130	1164
Dimethylamine, solution	132	1160	Dimethyl sulphate	156	1595
2-Dimethylaminoacetonitrile	131	2378	Dimethyl sulphide	130	1164
2-Dimethylaminoethanol	132	2051	Dimethyl thiophosphoryl chloride	156	2267
2-Dimethylaminoethyl acrylate	152	3302	Dimethylzinc	135	1370
2-Dimethylaminoethyl methacrylate	153P	2522	Dinitroanilines	153	1596
Dimethylaminoethyl methacrylate	153P	2522	Dinitrobenzenes	152	1597
N,N-Dimethylaniline	153	2253	Dinitrobenzenes, liquid	152	1597
2,3-Dimethylbutane	128	2457	Dinitrobenzenes, solid	152	1597
1,3-Dimethylbutylamine	132	2379	Dinitrobenzenes, solid	152	3443
Dimethylcarbamoyl chloride	156	2262	Dinitrochlorobenzenes	153	1577
Dimethyl carbonate	129	1161	Dinitro-o-cresol	153	1598
Dimethylcyclohexanes	128	2263	Dinitrogen tetroxide	124	1067
N,N-Dimethylcyclohexylamine	132	2264	Dinitrogen tetroxide and Nitric oxide mixture	124	1975
Dimethylcyclohexylamine	132	2264	Dinitrophenol, solution	153	1599
Dimethyldichlorosilane	155	1162	Dinitrophenol, wetted with not less than 15% water	113	1320
Dimethyldiethoxysilane	127	2380	Dinitrophenolates, wetted with not less than 15% water	113	1321
Dimethyldioxanes	127	2707	Dinitroresorcinol, wetted with not less than 15% water	113	1322
Dimethyl disulfide	130	2381	Dinitrotoluenes	152	2038
Dimethyl disulphide	130	2381	Dinitrotoluenes, liquid	152	2038
Dimethylethanolamine	132	2051	Dinitrotoluenes, molten	152	1600
Dimethyl ether	115	1033	Dinitrotoluenes, solid	152	2038
N,N-Dimethylformamide	129	2265	Dinitrotoluenes, solid	152	3454
1,1-Dimethylhydrazine	131	1163			
1,2-Dimethylhydrazine	131	2382			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Dioxane	127	1165	Disodium trioxosilicate, pentahydrate	154	3253
Dioxolane	127	1166	Dispersant gas, n.o.s.	126	1078
Dipentene	128	2052	Dispersant gas, n.o.s. (flammable)	115	1954
Diphenylamine chloroarsine	154	1698	Dithiocarbamate pesticide, liquid, flammable, poisonous	131	2772
Diphenylchloroarsine	151	1699	Dithiocarbamate pesticide, liquid, flammable, toxic	131	2772
Diphenylchloroarsine, liquid	151	1699	Dithiocarbamate pesticide, liquid, poisonous	151	3006
Diphenylchloroarsine, solid	151	1699	Dithiocarbamate pesticide, liquid, poisonous, flammable	131	3005
Diphenylchloroarsine, solid	151	3450	Dithiocarbamate pesticide, liquid, toxic	151	3006
Diphenyldichlorosilane	156	1769	Dithiocarbamate pesticide, liquid, toxic, flammable	131	3005
Diphenylmethyl bromide	153	1770	Dithiocarbamate pesticide, solid, poisonous	151	2771
Diphosgene	125	1076	Dithiocarbamate pesticide, solid, toxic	151	2771
Dipicryl sulfide, wetted with not less than 10% water	113	2852	Divinyl ether, stabilized	128P	1167
Dipicryl sulphide, wetted with not less than 10% water	113	2852	DM	154	1698
Dipropylamine	132	2383	Dodecyltrichlorosilane	156	1771
Di-n-propyl ether	127	2384	DP	125	1076
Dipropyl ether	127	2384	Dry ice	120	1845
Dipropyl ketone	128	2710	Dye, liquid, corrosive, n.o.s.	154	2801
Disinfectant, liquid, corrosive, n.o.s.	153	1903	Dye, liquid, poisonous, n.o.s.	151	1602
Disinfectant, liquid, poisonous, n.o.s.	151	3142	Dye, liquid, toxic, n.o.s.	151	1602
Disinfectant, liquid, toxic, n.o.s.	151	3142	Dye, solid, corrosive, n.o.s.	154	3147
Disinfectant, solid, poisonous, n.o.s.	151	1601	Dye, solid, poisonous, n.o.s.	151	3143
Disinfectant, solid, toxic, n.o.s.	151	1601	Dye, solid, toxic, n.o.s.	151	3143
Disinfectants, corrosive, liquid, n.o.s.	153	1903	Dye intermediate, liquid, corrosive, n.o.s.	154	2801
Disinfectants, liquid, n.o.s. (poisonous)	151	3142	Dye intermediate, liquid, poisonous, n.o.s.	151	1602
Disinfectants, solid, n.o.s. (poisonous)	151	1601			
Disodium trioxosilicate	154	3253			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Dye intermediate, liquid, toxic, n.o.s.	151	1602	Ethane, compressed	115	1035
Dye intermediate, solid, corrosive, n.o.s.	154	3147	Ethane, refrigerated liquid	115	1961
Dye intermediate, solid, poisonous, n.o.s.	151	3143	Ethane-Propane mixture, refrigerated liquid	115	1961
Dye intermediate, solid, toxic, n.o.s.	151	3143	Ethanol	127	1170
<b>ED</b>	<b>151</b>	<b>1892</b>	Ethanol and gasoline mixture, with more than 10% ethanol	127	3475
Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8°C (100°F), at or above its flash point	128	3256	Ethanol and motor spirit mixture, with more than 10% ethanol	127	3475
Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C (140°F), at or above its flash point	128	3256	Ethanol and petrol mixture, with more than 10% ethanol	127	3475
Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point	128	3257	Ethanol, solution	127	1170
Elevated temperature solid, n.o.s., at or above 240°C (464°F)	171	3258	Ethanolamine	153	2491
Engine, fuel cell, flammable gas powered	128	3166	Ethanolamine, solution	153	2491
Engine, fuel cell, flammable liquid powered	128	3166	Ethers, n.o.s.	127	3271
Engine, internal combustion	128	3166	Ethyl acetate	129	1173
Engines, internal combustion, flammable gas powered	128	3166	Ethylacetylene, stabilized	116P	2452
Engines, internal combustion, flammable liquid powered	128	3166	Ethyl acrylate, stabilized	129P	1917
Environmentally hazardous substances, liquid, n.o.s.	171	3082	Ethyl alcohol	127	1170
Environmentally hazardous substances, solid, n.o.s.	171	3077	Ethyl alcohol, solution	127	1170
Epibromohydrin	131	2558	Ethylamine	118	1036
Epichlorohydrin	131P	2023	Ethylamine, aqueous solution, with not less than 50% but not more than 70% Ethylamine	132	2270
1,2-Epoxy-3-ethoxypropane	127	2752	Ethyl amyl ketone	128	2271
Esters, n.o.s.	127	3272	2-Ethylaniline	153	2273
Ethane	115	1035	N-Ethylaniline	153	2272
			Ethylbenzene	130	1175
			N-Ethyl-N-benzylaniline	153	2274
			N-Ethylbenzyltoluidines	153	2753
			N-Ethylbenzyltoluidines, liquid	153	2753
			N-Ethylbenzyltoluidines, solid	153	2753
			N-Ethylbenzyltoluidines, solid	153	3460

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Ethyl borate	129	1176	Ethylene glycol monoethyl ether	127	1171
Ethyl bromide	131	1891	Ethylene glycol monoethyl ether acetate	129	1172
Ethyl bromoacetate	155	1603	Ethylene glycol monomethyl ether	127	1188
2-Ethylbutanol	129	2275	Ethylene glycol monomethyl ether acetate	129	1189
2-Ethylbutyl acetate	130	1177	<b>Ethyleneimine, stabilized</b>	<b>131P</b>	<b>1185</b>
Ethylbutyl acetate	130	1177	<b>Ethylene oxide</b>	<b>119P</b>	<b>1040</b>
Ethyl butyl ether	127	1179	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide	115	1041
2-Ethylbutyraldehyde	130	1178	<b>Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide</b>	<b>119P</b>	<b>3300</b>
Ethyl butyrate	130	1180	Ethylene oxide and Carbon dioxide mixtures, with more than 6 % Ethylene oxide	115	1041
Ethyl chloride	115	1037	Ethylene oxide and Carbon dioxide mixtures, with not more than 6% Ethylene oxide	126	1952
Ethyl chloroacetate	155	1181	Ethylene oxide and Carbon dioxide mixtures, with not more than 9% Ethylene oxide	126	1952
<b>Ethyl chloroformate</b>	<b>155</b>	<b>1182</b>	Ethylene oxide and Chlorotetrafluoroethane mixture, with not more than 8.8% Ethylene oxide	126	3297
Ethyl 2-chloropropionate	129	2935	Ethylene oxide and Dichlorodifluoromethane mixture, with not more than 12.5% Ethylene oxide	126	3070
<b>Ethyl chlorothioformate</b>	<b>155</b>	<b>2826</b>	Ethylene oxide and Dichlorodifluoromethane mixtures, with not more than 12% Ethylene oxide	126	3070
Ethyl crotonate	130	1862	Ethylene oxide and Pentafluoroethane mixture, with not more than 7.9% Ethylene oxide	126	3298
<b>Ethyl dichloroarsine</b>	<b>151</b>	<b>1892</b>			
<b>Ethyl dichlorosilane</b>	<b>139</b>	<b>1183</b>			
Ethylene	116P	1962			
Ethylene, Acetylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138			
Ethylene, compressed	116P	1962			
Ethylene, refrigerated liquid (cryogenic liquid)	115	1038			
<b>Ethylene chlorohydrin</b>	<b>131</b>	<b>1135</b>			
Ethylenediamine	132	1604			
<b>Ethylene dibromide</b>	<b>154</b>	<b>1605</b>			
<b>Ethylene dibromide and Methyl bromide mixture, liquid</b>	<b>151</b>	<b>1647</b>			
Ethylene dichloride	131	1184			
Ethylene glycol diethyl ether	127	1153			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Ethylene oxide and Propylene oxide mixture, with not more than 30% Ethylene oxide	129P	2983	Ethylsulfuric acid	156	2571
Ethylene oxide and Tetrafluoroethane mixture, with not more than 5.6% Ethylene oxide	126	3299	Ethylsulphuric acid	156	2571
Ethylene oxide with Nitrogen	119P	1040	N-Ethyltoluidines	153	2754
Ethyl ether	127	1155	Ethyltrichlorosilane	155	1196
Ethyl fluoride	115	2453	Explosives, division 1.1, 1.2, 1.3 or 1.5	112	—
Ethyl formate	129	1190	Explosives, division 1.4 or 1.6	114	—
Ethylhexaldehydes	129	1191	Extracts, aromatic, liquid	127	1169
2-Ethylhexylamine	132	2276	Extracts, flavoring, liquid	127	1197
2-Ethylhexyl chloroformate	156	2748	Extracts, flavouring, liquid	127	1197
Ethyl isobutyrate	129	2385	Fabrics, animal or vegetable or synthetic, n.o.s. with oil	133	1373
Ethyl isocyanate	155	2481	Fabrics impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353
Ethyl lactate	129	1192	Ferric arsenate	151	1606
Ethyl mercaptan	129	2363	Ferric arsenite	151	1607
Ethyl methacrylate	130P	2277	Ferric chloride	157	1773
Ethyl methacrylate, stabilized	130P	2277	Ferric chloride, anhydrous	157	1773
Ethyl methyl ether	115	1039	Ferric chloride, solution	154	2582
Ethyl methyl ketone	127	1193	Ferric nitrate	140	1466
Ethyl nitrite, solution	131	1194	Ferrocercium	170	1323
Ethyl orthoformate	129	2524	Ferrosilicon	139	1408
Ethyl oxalate	156	2525	Ferrous arsenate	151	1608
Ethylphenyldichlorosilane	156	2435	Ferrous chloride, solid	154	1759
Ethyl phosphonothioic dichloride, anhydrous	154	2927	Ferrous chloride, solution	154	1760
Ethyl phosphonous dichloride, anhydrous	135	2845	Ferrous metal borings, shavings, turnings or cuttings	170	2793
Ethyl phosphorodichloridate	154	2927	Fertilizer, ammoniating solution, with free Ammonia	125	1043
1-Ethylpiperidine	132	2386	Fiber, animal or vegetable, n.o.s., burnt, wet or damp	133	1372
Ethyl propionate	129	1195	Fibers, animal or vegetable or synthetic, n.o.s. with oil	133	1373
Ethyl propyl ether	127	2615			
Ethyl silicate	129	1292			

<b>Name of Material</b>	<b>Guide No.</b>	<b>ID No.</b>	<b>Name of Material</b>	<b>Guide No.</b>	<b>ID No.</b>
Fibers, animal or vegetable, burnt, wet or damp	133	1372	Flammable solid, corrosive, n.o.s.	134	2925
Fibers, vegetable, dry	133	3360	Flammable solid, corrosive, organic, n.o.s.	134	2925
Fibers impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353	Flammable solid, inorganic, corrosive, n.o.s.	134	3180
Fibres, animal or vegetable, burnt, wet or damp	133	1372	Flammable solid, inorganic, n.o.s.	133	3178
Fibres, animal or vegetable or synthetic, n.o.s. with oil	133	1373	Flammable solid, n.o.s.	133	1325
Fibres, vegetable, dry	133	3360	Flammable solid, organic, molten, n.o.s.	133	3176
Fibres impregnated with weakly nitrated Nitrocellulose, n.o.s.	133	1353	Flammable solid, organic, n.o.s.	133	1325
Films, nitrocellulose base	133	1324	Flammable solid, oxidizing, n.o.s.	140	3097
Fire extinguisher charges, corrosive liquid	154	1774	Flammable solid, poisonous, inorganic, n.o.s.	134	3179
Fire extinguishers with compressed gas	126	1044	Flammable solid, poisonous, n.o.s.	134	2926
Fire extinguishers with liquefied gas	126	1044	Flammable solid, poisonous, organic, n.o.s.	134	2926
Firelighters, solid, with flammable liquid	133	2623	Flammable solid, toxic, inorganic, n.o.s.	134	3179
First aid kit	171	3316	Flammable solid, toxic, organic, n.o.s.	134	2926
Fish meal, stabilized	171	2216	Fluoboric acid	154	1775
Fish meal, unstabilized	133	1374	Fluorine	124	1045
Fish scrap, stabilized	171	2216	Fluorine, compressed	124	1045
Fish scrap, unstabilized	133	1374	Fluoroacetic acid	154	2642
Flammable liquid, corrosive, n.o.s.	132	2924	Fluoroanilines	153	2941
Flammable liquid, n.o.s.	128	1993	Fluorobenzene	130	2387
Flammable liquid, poisonous, corrosive, n.o.s.	131	3286	Fluoroboric acid	154	1775
Flammable liquid, poisonous, n.o.s.	131	1992	Fluorophosphoric acid, anhydrous	154	1776
Flammable liquid, toxic, corrosive, n.o.s.	131	3286	Fluorosilicates, n.o.s.	151	2856
Flammable liquid, toxic, n.o.s.	131	1992	Fluorosilicic acid	154	1778
Flammable solid, corrosive, inorganic, n.o.s.	134	3180	Fluorosulfonic acid	137	1777
			Fluorosulphonic acid	137	1777

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Fluorotoluenes	130	2388	Fuel cell cartridges, containing water-reactive substances	138	3476
Fluosilicic acid	154	1778	Fuel cell cartridges packed with equipment, containing corrosive substances	153	3477
Formaldehyde, solution, flammable	132	1198	Fuel cell cartridges packed with equipment, containing flammable liquids	128	3473
Formaldehyde, solutions (Formalin)	132	1198	Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride	115	3479
Formaldehyde, solutions (Formalin) (corrosive)	132	2209	Fuel cell cartridges packed with equipment, containing liquefied flammable gas	115	3478
Formic acid	153	1779	Fuel cell cartridges packed with equipment, containing water-reactive substances	138	3476
Formic acid, with more than 85% acid	153	1779	Fuel oil	128	1202
Formic acid, with not less than 5% but less than 10% acid	153	3412	Fuel oil	128	1993
Formic acid, with not less than 10% but not more than 85% acid	153	3412	Fuel oil, no. 1,2,4,5,6	128	1202
Fuel, aviation, turbine engine	128	1863	Fumaryl chloride	156	1780
Fuel cell cartridges contained in equipment, containing corrosive substances	153	3477	Fumigated cargo transport unit	171	3359
Fuel cell cartridges contained in equipment, containing flammable liquids	128	3473	Fumigated unit	171	3359
Fuel cell cartridges contained in equipment, containing hydrogen in metal hydride	115	3479	Furaldehydes	132P	1199
Fuel cell cartridges contained in equipment, containing liquefied flammable gas	115	3478	Furan	128	2389
Fuel cell cartridges contained in equipment, containing water-reactive substances	138	3476	Furfural	132P	1199
Fuel cell cartridges, containing corrosive substances	153	3477	Furfuraldehydes	132P	1199
Fuel cell cartridges, containing flammable liquids	128	3473	Furfuryl alcohol	153	2874
Fuel cell cartridges, containing hydrogen in metal hydride	115	3479	Furfurylamine	132	2526
Fuel cell cartridges, containing liquefied flammable gas	115	3478	Fusee (rail or highway)	133	1325
			Fusel oil	127	1201
			GA	153	2810
			Gallium	172	2803
			Gas, refrigerated liquid, flammable, n.o.s.	115	3312
			Gas, refrigerated liquid, n.o.s.	120	3158

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Gas, refrigerated liquid, oxidizing, n.o.s.	122	3311	Hafnium powder, wetted with not less than 25% water	170	1326
Gas cartridges	115	2037	Hay, wet, damp or contaminated with oil	133	1327
Gas identification set	123	9035	Hazardous waste, liquid, n.o.s.	171	3082
Gasohol	128	1203	Hazardous waste, solid, n.o.s.	171	3077
Gas oil	128	1202	<b>HD</b>	<b>153</b>	<b>2810</b>
Gasoline	128	1203	Heating oil, light	128	1202
Gasoline and ethanol mixture, with more than 10% ethanol	127	3475	Helium	121	1046
Gas sample, non-pressurized, flammable, n.o.s., not refrigerated liquid	115	3167	Helium, compressed	121	1046
Gas sample, non-pressurized, poisonous, flammable, n.o.s., not refrigerated liquid	119	3168	Helium, refrigerated liquid (cryogenic liquid)	120	1963
Gas sample, non-pressurized, poisonous, n.o.s., not refrigerated liquid	123	3169	Heptafluoropropane	126	3296
Gas sample, non-pressurized, toxic, flammable, n.o.s., not refrigerated liquid	119	3168	n-Heptaldehyde	129	3056
Gas sample, non-pressurized, toxic, n.o.s., not refrigerated liquid	123	3169	Heptanes	128	1206
<b>GB</b>	<b>153</b>	<b>2810</b>	n-Heptene	128	2278
<b>GD</b>	<b>153</b>	<b>2810</b>	Hexachloroacetone	153	2661
Genetically modified micro-organisms	171	3245	Hexachlorobenzene	152	2729
Genetically modified organisms	171	3245	Hexachlorobutadiene	151	2279
<b>Germane</b>	<b>119</b>	<b>2192</b>	<b>Hexachlorocyclopentadiene</b>	<b>151</b>	<b>2646</b>
<b>GF</b>	<b>153</b>	<b>2810</b>	Hexachlorophene	151	2875
Glycerol alpha-monochlorohydrin	153	2689	<b>Hexadecyltrichlorosilane</b>	<b>156</b>	<b>1781</b>
Glycidaldehyde	131P	2622	Hexadiene	130	2458
Guanidine nitrate	143	1467	Hexaethyl tetraphosphate	151	1611
<b>H</b>	<b>153</b>	<b>2810</b>	Hexaethyl tetraphosphate, liquid	151	1611
Hafnium powder, dry	135	2545	Hexaethyl tetraphosphate, solid	151	1611
			<b>Hexaethyl tetraphosphate and compressed gas mixture</b>	<b>123</b>	<b>1612</b>
			<b>Hexafluoroacetone</b>	<b>125</b>	<b>2420</b>
			Hexafluoroacetone hydrate	151	2552
			Hexafluoroacetone hydrate, liquid	151	2552



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Hexafluoroacetone hydrate, solid	151	3436	Hydrazine, aqueous solution, with not more than 37% Hydrazine	152	3293
Hexafluoroethane	126	2193	Hydrazine, aqueous solutions, with more than 64% Hydrazine	132	2029
Hexafluoroethane, compressed	126	2193	Hydrazine hydrate	153	2030
Hexafluorophosphoric acid	154	1782	Hydrides, metal, n.o.s.	138	1409
Hexafluoropropylene	126	1858	Hydriodic acid	154	1787
Hexafluoropropylene, compressed	126	1858	Hydriodic acid, solution	154	1787
Hexaldehyde	130	1207	Hydrobromic acid	154	1788
Hexamethylenediamine, solid	153	2280	Hydrobromic acid, solution	154	1788
Hexamethylenediamine, solution	153	1783	Hydrocarbon gas, compressed, n.o.s.	115	1964
Hexamethylene diisocyanate	156	2281	Hydrocarbon gas, liquefied, n.o.s.	115	1965
Hexamethyleneimine	132	2493	Hydrocarbon gas mixture, compressed, n.o.s.	115	1964
Hexamethylenetetramine	133	1328	Hydrocarbon gas mixture, liquefied, n.o.s.	115	1965
Hexamine	133	1328	Hydrocarbon gas refills for small devices, with release device	115	3150
Hexanes	128	1208	Hydrocarbons, liquid, n.o.s.	128	3295
Hexanoic acid	153	2829	Hydrochloric acid	157	1789
Hexanols	129	2282	Hydrochloric acid, solution	157	1789
1-Hexene	128	2370	Hydrocyanic acid, aqueous solution, with less than 5% Hydrogen cyanide	154	1613
Hexyltrichlorosilane	156	1784	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide	154	1613
HL	153	2810	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	117	1051
HN-1	153	2810	Hydrofluoric acid	157	1790
HN-2	153	2810	Hydrofluoric acid, solution	157	1790
HN-3	153	2810	Hydrofluoric acid and Sulfuric acid mixture	157	1786
Hydrazine, anhydrous	132	2029			
Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass	132	3484			
Hydrazine, aqueous solution, with more than 37% Hydrazine	153	2030			
Hydrazine, aqueous solution, with not less than 37% but not more than 64% Hydrazine	153	2030			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Hydrofluoric acid and Sulphuric acid mixture	157	1786	Hydrogendifluorides, solution, n.o.s.	154	3471
Hydrofluorosilicic acid	154	1778	Hydrogen fluoride, anhydrous	125	1052
Hydrogen	115	1049	Hydrogen iodide, anhydrous	125	2197
Hydrogen absorbed in metal hydride	115	9279	Hydrogen peroxide, aqueous solution, stabilized, with more than 60% Hydrogen peroxide	143	2015
Hydrogen, compressed	115	1049	Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide	140	2984
Hydrogen in a metal hydride storage system	115	3468	Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)	140	2014
Hydrogen in a metal hydride storage system contained in equipment	115	3468	Hydrogen peroxide, stabilized	143	2015
Hydrogen in a metal hydride storage system packed with equipment	115	3468	Hydrogen peroxide and Peroxyacetic acid mixture, with acid(s), water and not more than 5% Peroxyacetic acid, stabilized	140	3149
Hydrogen, refrigerated liquid (cryogenic liquid)	115	1966	Hydrogen selenide, anhydrous	117	2202
Hydrogen and Carbon monoxide mixture, compressed	119	2600	Hydrogen sulfide	117	1053
Hydrogen and Methane mixture, compressed	115	2034	Hydrogen sulphide	117	1053
Hydrogen bromide, anhydrous	125	1048	Hydroquinone	153	2662
Hydrogen chloride, anhydrous	125	1050	Hydroquinone, solid	153	2662
Hydrogen chloride, refrigerated liquid	125	2186	Hydroquinone, solution	153	3435
Hydrogen cyanide, anhydrous, stabilized	117	1051	1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20% water	113	3474
Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	154	1613	1-Hydroxybenzotriazole, monohydrate	113	3474
Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	131	3294	Hydroxylamine sulfate	154	2865
Hydrogen cyanide, stabilized	117	1051	Hydroxylamine sulphate	154	2865
Hydrogen cyanide, stabilized (absorbed)	152	1614	Hypochlorite solution	154	1791
Hydrogendifluorides, n.o.s.	154	1740	Hypochlorite solution, with more than 5% available Chlorine	154	1791
Hydrogendifluorides, solid, n.o.s.	154	1740			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Hypochlorites, inorganic, n.o.s.	140	3212	Iodine	154	3495
3,3'-Iminodipropylamine	153	2269	Iodine monochloride, liquid	157	3498
Infectious substance, affecting animals only	158	2900	Iodine monochloride, solid	157	1792
Infectious substance, affecting humans	158	2814	Iodine pentafluoride	144	2495
Ink, printer's, flammable	129	1210	2-Iodobutane	129	2390
Insecticide gas, flammable, n.o.s.	115	3354	Iodomethylpropanes	129	2391
Insecticide gas, n.o.s.	126	1968	Iodopropanes	129	2392
Insecticide gas, poisonous, flammable, n.o.s.	119	3355	IPDI	156	2290
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3355	Iron oxide, spent	135	1376
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3355	Iron pentacarbonyl	131	1994
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3355	Iron sponge, spent	135	1376
Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3355	Isobutane	115	1075
Insecticide gas, poisonous, n.o.s.	123	1967	Isobutane	115	1969
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3355	Isobutane mixture	115	1075
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3355	Isobutane mixture	115	1969
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3355	Isobutanol	129	1212
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3355	Isobutyl acetate	129	1213
Insecticide gas, toxic, n.o.s.	123	1967	Isobutyl acrylate, stabilized	129P	2527
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3355	Isobutyl alcohol	129	1212
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3355	Isobutyl aldehyde	130	2045
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3355	Isobutylamine	132	1214
Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3355	Isobutyl chloroformate	155	2742
Insecticide gas, toxic, n.o.s.	123	1967	Isobutylene	115	1055
			Isobutylene	115	1075
			Isobutyl formate	129	2393
			Isobutyl isobutyrate	130	2528
			Isobutyl isocyanate	155	2486
			Isobutyl methacrylate, stabilized	130P	2283
			Isobutyl propionate	129	2394
			Isobutyraldehyde	130	2045
			Isobutyric acid	132	2529

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Isobutyronitrile	131	2284	Isopentenes	128	2371
Isobutyryl chloride	132	2395	Isophoronediamine	153	2289
Isocyanate solution, flammable, poisonous, n.o.s.	155	2478	Isophorone diisocyanate	156	2290
Isocyanate solution, flammable, toxic, n.o.s.	155	2478	Isoprene, stabilized	130P	1218
Isocyanate solution, poisonous, flammable, n.o.s.	155	3080	Isopropanol	129	1219
Isocyanate solution, poisonous, n.o.s.	155	2206	Isopropenyl acetate	129P	2403
Isocyanate solution, toxic, flammable, n.o.s.	155	3080	Isopropenylbenzene	128	2303
Isocyanate solution, toxic, n.o.s.	155	2206	Isopropyl acetate	129	1220
Isocyanate solutions, n.o.s.	155	2206	Isopropyl acid phosphate	153	1793
Isocyanate solutions, n.o.s.	155	2478	Isopropyl alcohol	129	1219
Isocyanate solutions, n.o.s.	155	3080	Isopropylamine	132	1221
Isocyanates, flammable, poisonous, n.o.s.	155	2478	Isopropylbenzene	130	1918
Isocyanates, flammable, toxic, n.o.s.	155	2478	Isopropyl butyrate	129	2405
Isocyanates, n.o.s.	155	2206	Isopropyl chloroacetate	155	2947
Isocyanates, n.o.s.	155	2478	Isopropyl chloroformate	155	2407
Isocyanates, n.o.s.	155	3080	Isopropyl 2-chloropropionate	129	2934
Isocyanates, poisonous, flammable, n.o.s.	155	3080	Isopropyl isobutyrate	127	2406
Isocyanates, poisonous, n.o.s.	155	2206	Isopropyl isocyanate	155	2483
Isocyanates, toxic, flammable, n.o.s.	155	3080	Isopropyl nitrate	130	1222
Isocyanates, toxic, n.o.s.	155	2206	Isopropyl propionate	129	2409
Isocyanatobenzotrifluorides	156	2285	Isosorbide dinitrate mixture	133	2907
Isoheptenes	128	2287	Isosorbide-5-mononitrate	133	3251
Isohexenes	128	2288	Kerosene	128	1223
Isooctane	128	1262	Ketones, liquid, n.o.s.	127	1224
Isooctenes	128	1216	Krill meal	133	3497
Isopentane	128	1265	Krypton	121	1056
			Krypton, compressed	121	1056
			Krypton, refrigerated liquid (cryogenic liquid)	120	1970
			L (Lewisite)	153	2810
			Lead acetate	151	1616
			Lead arsenates	151	1617

Name of Material	Guide No.	ID No.
Lead arsenites	151	1618
Lead compound, soluble, n.o.s.	151	2291
Lead cyanide	151	1620
Lead dioxide	141	1872
Lead nitrate	141	1469
Lead perchlorate	141	1470
Lead perchlorate, solid	141	1470
Lead perchlorate, solution	141	1470
Lead perchlorate, solution	141	3408
Lead phosphite, dibasic	133	2989
Lead sulfate, with more than 3% free acid	154	1794
Lead sulphate, with more than 3% free acid	154	1794
Lewisite	153	2810
Life-saving appliances, not self-inflating	171	3072
Life-saving appliances, self-inflating	171	2990
Lighter refills (cigarettes) (flammable gas)	115	1057
Lighters (cigarettes) (flammable gas)	115	1057
Liquefied gas, flammable, n.o.s.	115	3161
Liquefied gas, n.o.s.	126	3163
Liquefied gas, oxidizing, n.o.s.	122	3157
Liquefied gas, poisonous, corrosive, n.o.s.	123	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	123	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	123	3308
Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	123	3308

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Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	123	3308
Liquefied gas, poisonous, flammable, corrosive, n.o.s.	119	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3309
Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3309
Liquefied gas, poisonous, flammable, n.o.s.	119	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3160
Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3160
Liquefied gas, poisonous, n.o.s.	123	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	123	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	123	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	123	3162
Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	123	3162

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Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.	124	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3310
Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3310
Liquefied gas, poisonous, oxidizing, n.o.s.	124	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	124	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	124	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	124	3307
Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	124	3307
Liquefied gas, toxic, corrosive, n.o.s.	123	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	123	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	123	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	123	3308
Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	123	3308
Liquefied gas, toxic, flammable, corrosive, n.o.s.	119	3309

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Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3309
Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3309
Liquefied gas, toxic, flammable, n.o.s.	119	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	3160
Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	3160
Liquefied gas, toxic, n.o.s.	123	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	123	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	123	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	123	3162
Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)	123	3162
Liquefied gas, toxic, oxidizing, corrosive, n.o.s.	124	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3310
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3310

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3310	Lithium borohydride	138	1413
Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3310	Lithium ferrosilicon	139	2830
Liquefied gas, toxic, oxidizing, n.o.s.	124	3307	Lithium hydride	138	1414
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	124	3307	Lithium hydride, fused solid	138	2805
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	124	3307	Lithium hydroxide	154	2680
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	124	3307	Lithium hydroxide, monohydrate	154	2680
Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	124	3307	Lithium hydroxide, solid	154	2680
Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air	120	1058	Lithium hydroxide, solution	154	2679
Liquefied natural gas (cryogenic liquid)	115	1972	Lithium hypochlorite, dry	140	1471
Liquefied petroleum gas	115	1075	Lithium hypochlorite mixture	140	1471
Lithium	138	1415	Lithium hypochlorite mixtures, dry	140	1471
Lithium alkyls	135	2445	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	147	3481
Lithium alkyls, liquid	135	2445	Lithium ion batteries (including lithium ion polymer batteries)	147	3480
Lithium alkyls, solid	135	3433	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	147	3481
Lithium aluminum hydride	138	1410	Lithium metal batteries contained in equipment (including lithium alloy batteries)	138	3091
Lithium aluminum hydride, ethereal	138	1411	Lithium metal batteries (including lithium alloy batteries)	138	3090
Lithium batteries	138	3090	Lithium metal batteries packed with equipment (including lithium alloy batteries)	138	3091
Lithium batteries contained in equipment	138	3091	Lithium nitrate	140	2722
Lithium batteries, liquid or solid cathode	138	3090	Lithium nitride	138	2806
Lithium batteries packed with equipment	138	3091	Lithium peroxide	143	1472
			Lithium silicon	138	1417
			LNG (cryogenic liquid)	115	1972

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
London purple	151	1621	Maleic anhydride, molten	156	2215
LPG	115	1075	Malononitrile	153	2647
Magnesium	138	1869	Maneb	135	2210
Magnesium, in pellets, turnings or ribbons	138	1869	Maneb, stabilized	135	2968
Magnesium alkyls	135	3053	Maneb preparation, stabilized	135	2968
Magnesium alloys, with more than 50% Magnesium, in pellets, turnings or ribbons	138	1869	Maneb preparation, with not less than 60% Maneb	135	2210
Magnesium alloys powder	138	1418	Manganese nitrate	140	2724
Magnesium aluminum phosphide	139	1419	Manganese resinate	133	1330
Magnesium arsenate	151	1622	Matches, fusee	133	2254
Magnesium bromate	140	1473	Matches, safety	133	1944
Magnesium chlorate	140	2723	Matches, "strike anywhere"	133	1331
Magnesium chloride and Chlorate mixture	140	1459	Matches, wax "vesta"	133	1945
Magnesium chloride and Chlorate mixture, solid	140	1459	MD	152	1556
Magnesium chloride and Chlorate mixture, solution	140	3407	Medical waste, n.o.s.	158	3291
Magnesium diamide	135	2004	Medicine, liquid, flammable, poisonous, n.o.s.	131	3248
Magnesium diphenyl	135	2005	Medicine, liquid, flammable, toxic, n.o.s.	131	3248
Magnesium fluorosilicate	151	2853	Medicine, liquid, poisonous, n.o.s.	151	1851
Magnesium granules, coated	138	2950	Medicine, liquid, toxic, n.o.s.	151	1851
Magnesium hydride	138	2010	Medicine, solid, poisonous, n.o.s.	151	3249
Magnesium nitrate	140	1474	Medicine, solid, toxic, n.o.s.	151	3249
Magnesium perchlorate	140	1475	Mercaptan mixture, liquid, flammable, n.o.s.	130	3336
Magnesium peroxide	140	1476	Mercaptan mixture, liquid, flammable, poisonous, n.o.s.	131	1228
Magnesium phosphide	139	2011	Mercaptan mixture, liquid, flammable, toxic, n.o.s.	131	1228
Magnesium powder	138	1418	Mercaptan mixture, liquid, poisonous, flammable, n.o.s.	131	3071
Magnesium silicide	138	2624	Mercaptan mixture, liquid, toxic, flammable, n.o.s.	131	3071
Magnesium silicofluoride	151	2853			
Magnetized material	171	2807			
Maleic anhydride	156	2215			



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Mercaptans, liquid, flammable, n.o.s.	130	3336	Mercury based pesticide, solid, poisonous	151	2777
Mercaptans, liquid, flammable, poisonous, n.o.s.	131	1228	Mercury based pesticide, solid, toxic	151	2777
Mercaptans, liquid, flammable, toxic, n.o.s.	131	1228	Mercury benzoate	154	1631
Mercaptans, liquid, poisonous, flammable, n.o.s.	131	3071	Mercury bromides	154	1634
Mercaptans, liquid, toxic, flammable, n.o.s.	131	3071	Mercury compound, liquid, n.o.s.	151	2024
Mercuric arsenate	151	1623	Mercury compound, solid, n.o.s.	151	2025
Mercuric bromide	154	1634	Mercury contained in manufactured articles	172	3506
Mercuric chloride	154	1624	Mercury cyanide	154	1636
Mercuric cyanide	154	1636	Mercury gluconate	151	1637
Mercuric nitrate	141	1625	Mercury iodide	151	1638
Mercuric oxycyanide	151	1642	Mercury metal	172	2809
Mercuric potassium cyanide	157	1626	Mercury nucleate	151	1639
Mercuric sulfate	151	1645	Mercury oleate	151	1640
Mercuric sulphate	151	1645	Mercury oxide	151	1641
Mercurous bromide	154	1634	Mercury oxycyanide, desensitized	151	1642
Mercurous nitrate	141	1627	Mercury potassium iodide	151	1643
Mercury	172	2809	Mercury salicylate	151	1644
Mercury acetate	151	1629	Mercury sulfate	151	1645
Mercury ammonium chloride	151	1630	Mercury sulphate	151	1645
Mercury based pesticide, liquid, flammable, poisonous	131	2778	Mercury thiocyanate	151	1646
Mercury based pesticide, liquid, flammable, toxic	131	2778	Mesityl oxide	129	1229
Mercury based pesticide, liquid, poisonous	151	3012	Metal alkyl halides, water-reactive, n.o.s.	138	3049
Mercury based pesticide, liquid, poisonous, flammable	131	3011	Metal alkyl hydrides, water-reactive, n.o.s.	138	3050
Mercury based pesticide, liquid, toxic	151	3012	Metal alkyls, water-reactive, n.o.s.	135	2003
Mercury based pesticide, liquid, toxic, flammable	131	3011	Metal aryl halides, water-reactive, n.o.s.	138	3049
			Metal aryl hydrides, water-reactive, n.o.s.	138	3050

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Metal aryls, water-reactive, n.o.s.	135	2003	4-Methoxy-4-methylpentan-2-one	128	2293
Metal carbonyls, liquid, n.o.s.	151	3281	1-Methoxy-2-propanol	129	3092
Metal carbonyls, n.o.s.	151	3281	Methyl acetate	129	1231
Metal carbonyls, solid, n.o.s.	151	3466	Methylacetylene and Propadiene mixture, stabilized	116P	1060
Metal catalyst, dry	135	2881	Methyl acrylate, stabilized	129P	1919
Metal catalyst, wetted	170	1378	Methylal	127	1234
Metaldehyde	133	1332	Methyl alcohol	131	1230
Metal hydrides, flammable, n.o.s.	170	3182	Methylallyl chloride	130P	2554
Metal hydrides, water-reactive, n.o.s.	138	1409	Methylamine, anhydrous	118	1061
Metallic substance, water-reactive, n.o.s.	138	3208	Methylamine, aqueous solution	132	1235
Metallic substance, water-reactive, self-heating, n.o.s.	138	3209	Methylamyl acetate	130	1233
Metal powder, flammable, n.o.s.	170	3089	Methylamyl alcohol	129	2053
Metal powder, self-heating, n.o.s.	135	3189	Methyl amyl ketone	127	1110
Metal salts of organic compounds, flammable, n.o.s.	133	3181	N-Methylaniline	153	2294
Methacrylaldehyde, stabilized	131P	2396	alpha-Methylbenzyl alcohol	153	2937
Methacrylic acid, stabilized	153P	2531	alpha-Methylbenzyl alcohol, liquid	153	2937
Methacrylonitrile, stabilized	131P	3079	alpha-Methylbenzyl alcohol, solid	153	3438
Methylal alcohol	129	2614	Methylbenzyl alcohol (alpha)	153	2937
Methane	115	1971	Methyl bromide	123	1062
Methane, compressed	115	1971	Methyl bromide and Chloropicrin mixture	123	1581
Methane, refrigerated liquid (cryogenic liquid)	115	1972	Methyl bromide and Ethylene dibromide mixture, liquid	151	1647
Methane and Hydrogen mixture, compressed	115	2034	Methyl bromoacetate	155	2643
Methanesulfonyl chloride	156	3246	2-Methylbutanal	129	3371
Methanesulphonyl chloride	156	3246	3-Methylbutan-2-one	127	2397
Methanol	131	1230	2-Methyl-1-butene	128	2459
Methoxymethyl isocyanate	155	2605	2-Methyl-2-butene	128	2460
			3-Methyl-1-butene	128	2561

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
N-Methylbutylamine	132	2945	Methyl iodide	151	2644
Methyl tert-butyl ether	127	2398	Methyl isobutyl carbinol	129	2053
Methyl butyrate	129	1237	Methyl isobutyl ketone	127	1245
Methyl chloride	115	1063	Methyl isocyanate	155	2480
Methyl chloride and Chloropicrin mixture	119	1582	Methyl isopropenyl ketone, stabilized	127P	1246
Methyl chloride and Methylene chloride mixture	115	1912	Methyl isothiocyanate	131	2477
Methyl chloroacetate	155	2295	Methyl isovalerate	130	2400
Methyl chloroformate	155	1238	Methyl magnesium bromide in Ethyl ether	135	1928
Methyl chloromethyl ether	131	1239	Methyl mercaptan	117	1064
Methyl 2-chloropropionate	129	2933	Methyl methacrylate monomer, stabilized	129P	1247
Methylchlorosilane	119	2534	4-Methylmorpholine	132	2535
Methyl cyanide	127	1648	N-Methylmorpholine	132	2535
Methylcyclohexane	128	2296	Methylmorpholine	132	2535
Methylcyclohexanols	129	2617	Methyl nitrite	116	2455
Methylcyclohexanone	128	2297	Methyl orthosilicate	155	2606
Methylcyclopentane	128	2298	Methylpentadiene	128	2461
Methyl dichloroacetate	155	2299	2-Methylpentan-2-ol	129	2560
Methyldichloroarsine	152	1556	Methylphenyldichlorosilane	156	2437
Methyldichlorosilane	139	1242	Methyl phosphonic dichloride	137	9206
Methylene chloride	160	1593	Methyl phosphonous dichloride	135	2845
Methylene chloride and Methyl chloride mixture	115	1912	1-Methylpiperidine	132	2399
Methyl ethyl ether	115	1039	Methyl propionate	129	1248
Methyl ethyl ketone	127	1193	Methyl propyl ether	127	2612
2-Methyl-5-ethylpyridine	153	2300	Methyl propyl ketone	127	1249
Methyl fluoride	115	2454	Methyltetrahydrofuran	127	2536
Methyl formate	129	1243	Methyl trichloroacetate	156	2533
2-Methylfuran	128	2301	Methyltrichlorosilane	155	1250
2-Methyl-2-heptanethiol	131	3023	alpha-Methylvaleraldehyde	130	2367
5-Methylhexan-2-one	127	2302	Methyl valeraldehyde (alpha)	130	2367
Methylhydrazine	131	1244			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Methyl vinyl ketone, stabilized	131P	1251	Natural gas, refrigerated liquid (cryogenic liquid)	115	1972
M.I.B.C.	129	2053	Neohexane	128	1208
Molybdenum pentachloride	156	2508	Neon	121	1065
Monoethanolamine	153	2491	Neon, compressed	121	1065
Mononitrotoluidines	153	2660	Neon, refrigerated liquid (cryogenic liquid)	120	1913
Monopropylamine	132	1277	Nickel carbonyl	131	1259
Morpholine	132	2054	Nickel catalyst, dry	135	2881
Motor fuel anti-knock mixture	131	1649	Nickel cyanide	151	1653
Motor fuel anti-knock mixture, flammable	131	3483	Nickel nitrate	140	2725
Motor spirit	128	1203	Nickel nitrite	140	2726
Motor spirit and ethanol mixture, with more than 10% ethanol	127	3475	Nicotine	151	1654
Muriatic acid	157	1789	Nicotine compound, liquid, n.o.s.	151	3144
Musk xylene	149	2956	Nicotine compound, solid, n.o.s.	151	1655
Mustard	153	2810	Nicotine hydrochloride	151	1656
Mustard Lewisite	153	2810	Nicotine hydrochloride, liquid	151	1656
Naphthalene, crude	133	1334	Nicotine hydrochloride, solid	151	1656
Naphthalene, molten	133	2304	Nicotine hydrochloride, solid	151	3444
Naphthalene, refined	133	1334	Nicotine hydrochloride, solution	151	1656
alpha-Naphthylamine	153	2077	Nicotine preparation, liquid, n.o.s.	151	3144
Naphthylamine (alpha)	153	2077	Nicotine preparation, solid, n.o.s.	151	1655
beta-Naphthylamine	153	1650	Nicotine salicylate	151	1657
beta-Naphthylamine, solid	153	1650	Nicotine sulfate, solid	151	1658
beta-Naphthylamine, solution	153	3411	Nicotine sulfate, solid	151	3445
Naphthylamine (beta)	153	1650	Nicotine sulfate, solution	151	1658
Naphthylamine (beta), solid	153	1650	Nicotine sulphate, solid	151	1658
Naphthylamine (beta), solution	153	3411	Nicotine sulphate, solid	151	3445
Naphthylthiourea	153	1651	Nicotine sulphate, solution	151	1658
Naphthylurea	153	1652	Nicotine tartrate	151	1659
Natural gas, compressed	115	1971			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Nitrates, inorganic, aqueous solution, n.o.s.	140	3218	Nitriles, poisonous, solid, n.o.s.	151	3439
Nitrates, inorganic, n.o.s.	140	1477	Nitriles, solid, poisonous, n.o.s.	151	3439
Nitrating acid mixture with more than 50% nitric acid	157	1796	Nitriles, solid, toxic, n.o.s.	151	3439
Nitrating acid mixture with not more than 50% nitric acid	157	1796	Nitriles, toxic, flammable, n.o.s.	131	3275
Nitrating acid mixture, spent, with more than 50% nitric acid	157	1826	Nitriles, toxic, liquid, n.o.s.	151	3276
Nitrating acid mixture, spent, with not more than 50% nitric acid	157	1826	Nitriles, toxic, n.o.s.	151	3276
Nitric acid, fuming	157	2032	Nitriles, toxic, solid, n.o.s.	151	3439
Nitric acid, other than red fuming, with more than 70% nitric acid	157	2031	Nitrites, inorganic, aqueous solution, n.o.s.	140	3219
Nitric acid, other than red fuming, with not more than 70% nitric acid	157	2031	Nitrites, inorganic, n.o.s.	140	2627
Nitric acid, red fuming	157	2032	Nitroanilines	153	1661
Nitric oxide	124	1660	Nitroanisoles	152	2730
Nitric oxide, compressed	124	1660	Nitroanisoles, liquid	152	2730
Nitric oxide and Dinitrogen tetroxide mixture	124	1975	Nitroanisoles, solid	152	2730
Nitric oxide and Nitrogen dioxide mixture	124	1975	Nitroanisoles, solid	152	3458
Nitric oxide and Nitrogen tetroxide mixture	124	1975	Nitrobenzene	152	1662
Nitriles, flammable, poisonous, n.o.s.	131	3273	Nitrobenzenesulfonic acid	153	2305
Nitriles, flammable, toxic, n.o.s.	131	3273	Nitrobenzenesulphonic acid	153	2305
Nitriles, liquid, poisonous, n.o.s.	151	3276	Nitrobenzotrifluorides	152	2306
Nitriles, liquid, toxic, n.o.s.	151	3276	Nitrobenzotrifluorides, liquid	152	2306
Nitriles, poisonous, flammable, n.o.s.	131	3275	Nitrobenzotrifluorides, solid	152	3431
Nitriles, poisonous, liquid, n.o.s.	151	3276	Nitrobromobenzenes	152	2732
Nitriles, poisonous, n.o.s.	151	3276	Nitrobromobenzenes, liquid	152	2732
			Nitrobromobenzenes, solid	152	2732
			Nitrobromobenzenes, solid	152	3459
			Nitrocellulose	133	2557
			Nitrocellulose membrane filters	133	3270
			Nitrocellulose mixture, without pigment	133	2557
			Nitrocellulose mixture, without plasticizer	133	2557

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Nitrocellulose mixture, with pigment	133	2557	Nitroglycerin, solution in alcohol, with not more than 1% Nitroglycerin	127	1204
Nitrocellulose mixture, with pigment and plasticizer	133	2557	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s., with not more than 30% Nitroglycerin	113	3343
Nitrocellulose mixture, with plasticizer	133	2557	Nitroglycerin mixture, desensitized, liquid, n.o.s., with not more than 30% Nitroglycerin	113	3357
Nitrocellulose, solution, flammable	127	2059	Nitroglycerin mixture, desensitized, solid, n.o.s., with more than 2% but not more than 10% Nitroglycerin	113	3319
Nitrocellulose, solution, in a flammable liquid	127	2059	Nitroglycerin mixture with more than 2% but not more than 10% Nitroglycerin, desensitized	113	3319
Nitrocellulose with alcohol	113	2556	Nitroguanidine (Picrite), wetted with not less than 20% water	113	1336
Nitrocellulose with not less than 25% alcohol	113	2556	Nitroguanidine, wetted with not less than 20% water	113	1336
Nitrocellulose with water, not less than 25% water	113	2555	Nitrohydrochloric acid	157	1798
3-Nitro-4-chlorobenzotrifluoride	152	2307	Nitromethane	129	1261
Nitrocresols	153	2446	Nitronaphthalene	133	2538
Nitrocresols, liquid	153	3434	Nitrophenols	153	1663
Nitrocresols, solid	153	2446	4-Nitrophenylhydrazine, with not less than 30% water	113	3376
Nitroethane	129	2842	Nitropropanes	129	2608
Nitrogen	121	1066	p-Nitrosodimethylaniline	135	1369
Nitrogen, compressed	121	1066	Nitrostarch, wetted with not less than 20% water	113	1337
Nitrogen, refrigerated liquid (cryogenic liquid)	120	1977	Nitrostarch, wetted with not less than 30% solvent	113	1337
Nitrogen and Rare gases mixture, compressed	121	1981	Nitrosyl chloride	125	1069
Nitrogen dioxide	124	1067	Nitrosylsulfuric acid	157	2308
Nitrogen dioxide and Nitric oxide mixture	124	1975	Nitrosylsulfuric acid, liquid	157	2308
Nitrogen tetroxide and Nitric oxide mixture	124	1975	Nitrosylsulfuric acid, solid	157	2308
Nitrogen trifluoride	122	2451	Nitrosylsulfuric acid, solid	157	3456
Nitrogen trifluoride, compressed	122	2451			
Nitrogen trioxide	124	2421			
Nitroglycerin, solution in alcohol, with more than 1% but not more than 5% Nitroglycerin	127	3064			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Nitrosylsulphuric acid	157	2308	Oil gas	119	1071
Nitrosylsulphuric acid, liquid	157	2308	Oil gas, compressed	119	1071
Nitrosylsulphuric acid, solid	157	2308	Organic peroxide type B, liquid	146	3101
Nitrosylsulphuric acid, solid	157	3456	Organic peroxide type B, liquid, temperature controlled	148	3111
Nitrotoluenes	152	1664	Organic peroxide type B, solid	146	3102
Nitrotoluenes, liquid	152	1664	Organic peroxide type B, solid, temperature controlled	148	3112
Nitrotoluenes, solid	152	1664	Organic peroxide type C, liquid	146	3103
Nitrotoluenes, solid	152	3446	Organic peroxide type C, liquid, temperature controlled	148	3113
Nitrotoluidines (mono)	153	2660	Organic peroxide type C, solid	146	3104
Nitrous oxide	122	1070	Organic peroxide type C, solid, temperature controlled	148	3114
Nitrous oxide, compressed	122	1070	Organic peroxide type D, liquid	145	3105
Nitrous oxide, refrigerated liquid	122	2201	Organic peroxide type D, liquid, temperature controlled	148	3115
Nitrous oxide and Carbon dioxide mixture	126	1015	Organic peroxide type D, solid	145	3106
Nitroxylenes	152	1665	Organic peroxide type D, solid, temperature controlled	148	3116
Nitroxylenes, liquid	152	1665	Organic peroxide type E, liquid	145	3107
Nitroxylenes, solid	152	1665	Organic peroxide type E, liquid, temperature controlled	148	3117
Nitroxylenes, solid	152	3447	Organic peroxide type E, solid	145	3108
Nonanes	128	1920	Organic peroxide type E, solid, temperature controlled	148	3118
Nonyltrichlorosilane	156	1799	Organic peroxide type F, liquid	145	3109
2,5-Norbornadiene, stabilized	128P	2251	Organic peroxide type F, liquid, temperature controlled	148	3119
Octadecyltrichlorosilane	156	1800	Organic peroxide type F, solid	145	3110
Octadiene	128P	2309	Organic peroxide type F, solid, temperature controlled	148	3120
Octafluorobut-2-ene	126	2422			
Octafluorocyclobutane	126	1976			
Octafluoropropane	126	2424			
Octanes	128	1262			
Octyl aldehydes	129	1191			
tert-Octyl mercaptan	131	3023			
Octyltrichlorosilane	156	1801			
Oil, petroleum	128	1270			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Organic phosphate compound mixed with compressed gas	123	1955	Organometallic compound, solid, poisonous, n.o.s.	151	3467
Organic phosphate mixed with compressed gas	123	1955	Organometallic compound, solid, toxic, n.o.s.	151	3467
Organic phosphorus compound mixed with compressed gas	123	1955	Organometallic compound, solid, water-reactive, flammable, n.o.s.	138	3372
Organic pigments, self-heating	135	3313	Organometallic compound, toxic, liquid, n.o.s.	151	3282
Organoarsenic compound, liquid, n.o.s.	151	3280	Organometallic compound, toxic, n.o.s.	151	3282
Organoarsenic compound, n.o.s.	151	3280	Organometallic compound, toxic, solid, n.o.s.	151	3467
Organoarsenic compound, solid, n.o.s.	151	3465	Organometallic compound, water-reactive, flammable, n.o.s.	138	3207
Organochlorine pesticide, liquid, flammable, poisonous	131	2762	Organometallic compound dispersion, water-reactive, flammable, n.o.s.	138	3207
Organochlorine pesticide, liquid, flammable, toxic	131	2762	Organometallic compound solution, water-reactive, flammable, n.o.s.	138	3207
Organochlorine pesticide, liquid, poisonous	151	2996	Organometallic substance, liquid, pyrophoric	135	3392
Organochlorine pesticide, liquid, poisonous, flammable	131	2995	Organometallic substance, liquid, pyrophoric, water-reactive	135	3394
Organochlorine pesticide, liquid, toxic	151	2996	Organometallic substance, liquid, water-reactive	135	3398
Organochlorine pesticide, liquid, toxic, flammable	131	2995	Organometallic substance, liquid, water-reactive, flammable	138	3399
Organochlorine pesticide, solid, poisonous	151	2761	Organometallic substance, solid, pyrophoric	135	3391
Organochlorine pesticide, solid, toxic	151	2761	Organometallic substance, solid, pyrophoric, water-reactive	135	3393
Organometallic compound, liquid, poisonous, n.o.s.	151	3282	Organometallic substance, solid, self-heating	138	3400
Organometallic compound, liquid, toxic, n.o.s.	151	3282	Organometallic substance, solid, water-reactive	135	3395
Organometallic compound, poisonous, liquid, n.o.s.	151	3282	Organometallic substance, solid, water-reactive, flammable	138	3396
Organometallic compound, poisonous, n.o.s.	151	3282			
Organometallic compound, poisonous, solid, n.o.s.	151	3467			



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Organometallic substance, solid, water-reactive, self-heating	138	3397	Organophosphorus pesticide, solid, toxic	152	2783
Organophosphorus compound, liquid, poisonous, n.o.s.	151	3278	Organotin compound, liquid, n.o.s.	153	2788
Organophosphorus compound, liquid, toxic, n.o.s.	151	3278	Organotin compound, solid, n.o.s.	153	3146
Organophosphorus compound, poisonous, flammable, n.o.s.	131	3279	Organotin pesticide, liquid, flammable, poisonous	131	2787
Organophosphorus compound, poisonous, liquid, n.o.s.	151	3278	Organotin pesticide, liquid, flammable, toxic	131	2787
Organophosphorus compound, poisonous, n.o.s.	151	3278	Organotin pesticide, liquid, poisonous	153	3020
Organophosphorus compound, poisonous, solid, n.o.s.	151	3464	Organotin pesticide, liquid, poisonous, flammable	131	3019
Organophosphorus compound, solid, poisonous, n.o.s.	151	3464	Organotin pesticide, liquid, toxic	153	3020
Organophosphorus compound, solid, toxic, n.o.s.	151	3464	Organotin pesticide, liquid, toxic, flammable	131	3019
Organophosphorus compound, toxic, flammable, n.o.s.	131	3279	Organotin pesticide, solid, poisonous	153	2786
Organophosphorus compound, toxic, liquid, n.o.s.	151	3278	Organotin pesticide, solid, toxic	153	2786
Organophosphorus compound, toxic, n.o.s.	151	3278	Osmium tetroxide	154	2471
Organophosphorus compound, toxic, solid, n.o.s.	151	3464	Other regulated substances, liquid, n.o.s.	171	3082
Organophosphorus pesticide, liquid, flammable, poisonous	131	2784	Other regulated substances, solid, n.o.s.	171	3077
Organophosphorus pesticide, liquid, flammable, toxic	131	2784	Oxidizing liquid, corrosive, n.o.s.	140	3098
Organophosphorus pesticide, liquid, poisonous	152	3018	Oxidizing liquid, n.o.s.	140	3139
Organophosphorus pesticide, liquid, poisonous, flammable	131	3017	Oxidizing liquid, poisonous, n.o.s.	142	3099
Organophosphorus pesticide, liquid, toxic	152	3018	Oxidizing liquid, toxic, n.o.s.	142	3099
Organophosphorus pesticide, liquid, toxic, flammable	131	3017	Oxidizing solid, corrosive, n.o.s.	140	3085
Organophosphorus pesticide, liquid, toxic	152	3018	Oxidizing solid, flammable, n.o.s.	140	3137
Organophosphorus pesticide, liquid, toxic, flammable	131	3017	Oxidizing solid, n.o.s.	140	1479
Organophosphorus pesticide, solid, poisonous	152	2783	Oxidizing solid, poisonous, n.o.s.	141	3087
			Oxidizing solid, self-heating, n.o.s.	135	3100

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Oxidizing solid, toxic, n.o.s.	141	3087	Pentachloroethane	151	1669
Oxidizing solid, water-reactive, n.o.s.	144	3121	Pentachlorophenol	154	3155
Oxygen	122	1072	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344
Oxygen, compressed	122	1072	Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344
Oxygen, refrigerated liquid (cryogenic liquid)	122	1073	Pentafluoroethane	126	3220
Oxygen and Carbon dioxide mixture, compressed	122	1014	Pentafluoroethane and Ethylene oxide mixture, with not more than 7.9% Ethylene oxide	126	3298
Oxygen and Rare gases mixture, compressed	121	1980	Pentamethylheptane	128	2286
Oxygen difluoride	124	2190	Pentan-2,4-dione	131	2310
Oxygen difluoride, compressed	124	2190	n-Pentane	128	1265
Oxygen generator, chemical	140	3356	2,4-Pentanedione	131	2310
Oxygen generator, chemical, spent	140	3356	Pentane-2,4-dione	131	2310
Paint (corrosive)	153	3066	Pentanes	128	1265
Paint, corrosive, flammable	132	3470	Pentanol	129	1105
Paint (flammable)	128	1263	1-Pentene	128	1108
Paint, flammable, corrosive	132	3469	1-Pentol	153P	2705
Paint related material (corrosive)	153	3066	Perchlorates, inorganic, aqueous solution, n.o.s.	140	3211
Paint related material, corrosive, flammable	132	3470	Perchlorates, inorganic, n.o.s.	140	1481
Paint related material (flammable)	128	1263	Perchloric acid, with more than 50% but not more than 72% acid	143	1873
Paint related material, flammable, corrosive	132	3469	Perchloric acid, with not more than 50% acid	140	1802
Paper, unsaturated oil treated	133	1379	Perchloroethylene	160	1897
Paraformaldehyde	133	2213	Perchloromethyl mercaptan	157	1670
Paraldehyde	129	1264	Perchloryl fluoride	124	3083
Parathion and compressed gas mixture	123	1967	Perfluoroethyl vinyl ether	115	3154
PCB	171	2315			
PD	152	1556			
Pentaborane	135	1380			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Perfluoro(ethyl vinyl ether)	115	3154	Petroleum distillates, n.o.s.	128	1268
Perfluoromethyl vinyl ether	115	3153	Petroleum gases, liquefied	115	1075
Perfluoro(methyl vinyl ether)	115	3153	Petroleum oil	128	1270
Perfumery products, with flammable solvents	127	1266	Petroleum products, n.o.s.	128	1268
Permanganates, inorganic, aqueous solution, n.o.s.	140	3214	Petroleum sour crude oil, flammable, toxic	131	3494
Permanganates, inorganic, n.o.s.	140	1482	Phenacyl bromide	153	2645
Peroxides, inorganic, n.o.s.	140	1483	Phenetidines	153	2311
Persulfates, inorganic, aqueous solution, n.o.s.	140	3216	Phenol, molten	153	2312
Persulfates, inorganic, n.o.s.	140	3215	Phenol, solid	153	1671
Persulphates, inorganic, aqueous solution, n.o.s.	140	3216	Phenol solution	153	2821
Persulphates, inorganic, n.o.s.	140	3215	Phenolates, liquid	154	2904
Pesticide, liquid, flammable, poisonous, n.o.s.	131	3021	Phenolates, solid	154	2905
Pesticide, liquid, flammable, toxic, n.o.s.	131	3021	Phenolsulfonic acid, liquid	153	1803
Pesticide, liquid, poisonous, flammable, n.o.s.	131	2903	Phenolsulphonic acid, liquid	153	1803
Pesticide, liquid, poisonous, n.o.s.	151	2902	Phenoxyacetic acid derivative pesticide, liquid, flammable, poisonous	131	3346
Pesticide, liquid, toxic, flammable, n.o.s.	131	2903	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic	131	3346
Pesticide, liquid, toxic, n.o.s.	151	2902	Phenoxyacetic acid derivative pesticide, liquid, poisonous	153	3348
Pesticide, solid, poisonous	151	2588	Phenoxyacetic acid derivative pesticide, liquid, poisonous, flammable	131	3347
Pesticide, solid, poisonous, n.o.s.	151	2588	Phenoxyacetic acid derivative pesticide, liquid, toxic	153	3348
Pesticide, solid, toxic, n.o.s.	151	2588	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable	131	3347
PETN mixture, desensitized, solid, n.o.s., with more than 10% but not more than 20% PETN	113	3344	Phenoxyacetic acid derivative pesticide, solid, poisonous	153	3345
Petrol	128	1203	Phenoxyacetic acid derivative pesticide, solid, toxic	153	3345
Petrol and ethanol mixture, with more than 10% ethanol	127	3475	Phenylacetonitrile, liquid	152	2470
Petroleum crude oil	128	1267	Phenylacetyl chloride	156	2577
			Phenylcarbylamine chloride	151	1672

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Phenyl chloroformate	156	2746	Phosphorus heptasulfide, free from yellow and white Phosphorus	139	1339
Phenylenediamines	153	1673	Phosphorus heptasulphide, free from yellow and white Phosphorus	139	1339
Phenylhydrazine	153	2572	Phosphorus oxybromide	137	1939
Phenyl isocyanate	155	2487	Phosphorus oxybromide, molten	137	2576
Phenyl mercaptan	131	2337	Phosphorus oxybromide, solid	137	1939
Phenylmercuric acetate	151	1674	Phosphorus oxychloride	137	1810
Phenylmercuric compound, n.o.s.	151	2026	Phosphorus pentabromide	137	2691
Phenylmercuric hydroxide	151	1894	Phosphorus pentachloride	137	1806
Phenylmercuric nitrate	151	1895	Phosphorus pentafluoride	125	2198
Phenylphosphorus dichloride	137	2798	Phosphorus pentafluoride, compressed	125	2198
Phenylphosphorus thiodichloride	137	2799	Phosphorus pentasulfide, free from yellow and white Phosphorus	139	1340
Phenyltrichlorosilane	156	1804	Phosphorus pentasulphide, free from yellow and white Phosphorus	139	1340
Phenyl urea pesticide, liquid, poisonous	151	3002	Phosphorus pentoxide	137	1807
Phenyl urea pesticide, liquid, toxic	151	3002	Phosphorus sesquisulfide, free from yellow and white Phosphorus	139	1341
Phosgene	125	1076	Phosphorus sesquisulphide, free from yellow and white Phosphorus	139	1341
9-Phosphabicyclononanes	135	2940	Phosphorus tribromide	137	1808
Phosphine	119	2199	Phosphorus trichloride	137	1809
Phosphoric acid	154	1805	Phosphorus trioxide	157	2578
Phosphoric acid, liquid	154	1805	Phosphorus trisulfide, free from yellow and white Phosphorus	139	1343
Phosphoric acid, solid	154	1805	Phosphorus trisulphide, free from yellow and white Phosphorus	139	1343
Phosphoric acid, solid	154	3453	Phthalic anhydride	156	2214
Phosphoric acid, solution	154	1805	Picolines	129	2313
Phosphorous acid	154	2834			
Phosphorous acid, ortho	154	2834			
Phosphorus, amorphous	133	1338			
Phosphorus, amorphous, red	133	1338			
Phosphorus, white, dry or under water or in solution	136	1381			
Phosphorus, white, molten	136	2447			
Phosphorus, yellow, dry or under water or in solution	136	1381			

**Name of Material**      **Guide ID**  
**No.**      **No.**

**Name of Material**      **Guide ID**  
**No.**      **No.**

Picric acid, wetted with not less than 10% water	113	3364
Picric acid, wetted with not less than 30% water	113	1344
Picrite, wetted	113	1336
Picryl chloride, wetted with not less than 10% water	113	3365
alpha-Pinene	128	2368
Pinene (alpha)	128	2368
Pine oil	129	1272
Piperazine	153	2579
Piperidine	132	2401
Plastic molding compound	171	3314
Plastic, nitrocellulose-based, spontaneously combustible, n.o.s.	135	2006
Plastics moulding compound	171	3314
Plastics, nitrocellulose-based, self-heating, n.o.s.	135	2006
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3492
Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3493
Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	3389
Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	3390
Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	131	3488
Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	131	3489
Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3383

Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3384
Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	151	3381
Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	151	3382
Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	142	3387
Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	142	3388
Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	155	3490
Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	155	3491
Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3385
Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3386
Poisonous liquid, corrosive, inorganic, n.o.s.	154	3289
Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	154	3289
Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)	154	3289
Poisonous liquid, corrosive, n.o.s.	154	2927
Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	2927
Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	2927

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Poisonous liquid, corrosive, organic, n.o.s.	154	2927	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone B)	153	2810
Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)	154	2927	Poisonous liquid, oxidizing, n.o.s.	142	3122
Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)	154	2927	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	142	3122
Poisonous liquid, flammable, n.o.s.	131	2929	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	142	3122
Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	2929	Poisonous liquid, water-reactive, n.o.s.	139	3123
Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	131	2929	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3123
Poisonous liquid, flammable, organic, n.o.s.	131	2929	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3123
Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)	131	2929	Poisonous liquid, which in contact with water emits flammable gases, n.o.s.	139	3123
Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	131	2929	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)	139	3123
Poisonous liquid, inorganic, n.o.s.	151	3287	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)	139	3123
Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	151	3287	Poisonous solid, corrosive, inorganic, n.o.s.	154	3290
Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)	151	3287	Poisonous solid, corrosive, n.o.s.	154	2928
Poisonous liquid, n.o.s.	153	2810	Poisonous solid, flammable, n.o.s.	134	2930
Poisonous liquid, n.o.s. (Inhalation Hazard Zone A)	153	2810	Poisonous solid, flammable, organic, n.o.s.	134	2930
Poisonous liquid, n.o.s. (Inhalation Hazard Zone B)	153	2810	Poisonous solid, inorganic, n.o.s.	151	3288
Poisonous liquid, organic, n.o.s.	153	2810	Poisonous solid, organic, n.o.s.	154	2811
Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone A)	153	2810	Poisonous solid, oxidizing, n.o.s.	141	3086

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Poisonous solid, self-heating, n.o.s.	136	3124	Potassium, metal alloys, liquid	138	1420
Poisonous solid, water-reactive, n.o.s.	139	3125	Potassium, metal alloys, solid	138	3403
Poisonous solid, which in contact with water emits flammable gases, n.o.s.	139	3125	Potassium arsenate	151	1677
Polyalkylamines, n.o.s.	132	2733	Potassium arsenite	154	1678
Polyalkylamines, n.o.s.	132	2734	Potassium borohydride	138	1870
Polyalkylamines, n.o.s.	153	2735	Potassium bromate	140	1484
Polyamines, flammable, corrosive, n.o.s.	132	2733	Potassium chlorate	140	1485
Polyamines, liquid, corrosive, flammable, n.o.s.	132	2734	Potassium chlorate, aqueous solution	140	2427
Polyamines, liquid, corrosive, n.o.s.	153	2735	Potassium chlorate, solution	140	2427
Polyamines, solid, corrosive, n.o.s.	154	3259	Potassium cuprocyanide	157	1679
Polychlorinated biphenyls	171	2315	Potassium cyanide	157	1680
Polychlorinated biphenyls, liquid	171	2315	Potassium cyanide, solid	157	1680
Polychlorinated biphenyls, solid	171	2315	Potassium cyanide, solution	157	3413
Polychlorinated biphenyls, solid	171	3432	Potassium dithionite	135	1929
Polyester resin kit	128	3269	Potassium fluoride	154	1812
Polyhalogenated biphenyls, liquid	171	3151	Potassium fluoride, solid	154	1812
Polyhalogenated biphenyls, solid	171	3152	Potassium fluoride, solution	154	3422
Polyhalogenated terphenyls, liquid	171	3151	Potassium fluoroacetate	151	2628
Polyhalogenated terphenyls, solid	171	3152	Potassium fluorosilicate	151	2655
Polymeric beads, expandable	133	2211	Potassium hydrogendifluoride	154	1811
Polystyrene beads, expandable	133	2211	Potassium hydrogen difluoride, solid	154	1811
Potassium	138	2257	Potassium hydrogen difluoride, solution	154	3421
Potassium, metal	138	2257	Potassium hydrogen sulfate	154	2509
Potassium, metal alloys	138	1420	Potassium hydrogen sulphate	154	2509
			Potassium hydrosulfite	135	1929
			Potassium hydrosulphite	135	1929
			Potassium hydroxide, dry, solid	154	1813
			Potassium hydroxide, flake	154	1813
			Potassium hydroxide, solid	154	1813

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Potassium hydroxide, solution	154	1814	Potassium sulphide, hydrated, with not less than 30% water of hydration	153	1847
Potassium metavanadate	151	2864	Potassium sulphide, with less than 30% water of crystallization	135	1382
Potassium monoxide	154	2033	Potassium sulphide, with less than 30% water of hydration	135	1382
Potassium nitrate	140	1486	Potassium superoxide	143	2466
Potassium nitrate and Sodium nitrate mixture	140	1499	Printing ink, flammable	129	1210
Potassium nitrate and Sodium nitrite mixture	140	1487	Printing ink related material	129	1210
Potassium nitrite	140	1488	Propadiene, stabilized	116P	2200
Potassium perchlorate	140	1489	Propadiene and Methylacetylene mixture, stabilized	116P	1060
Potassium permanganate	140	1490	Propane	115	1075
Potassium peroxide	144	1491	Propane	115	1978
Potassium persulfate	140	1492	Propane-Ethane mixture, refrigerated liquid	115	1961
Potassium persulphate	140	1492	Propane mixture	115	1075
Potassium phosphide	139	2012	Propane mixture	115	1978
Potassium silicofluoride	151	2655	Propanethiols	130	2402
Potassium sodium alloys	138	1422	n-Propanol	129	1274
Potassium sodium alloys, liquid	138	1422	Propionaldehyde	129	1275
Potassium sodium alloys, solid	138	3404	Propionic acid	132	1848
Potassium sulfide, anhydrous	135	1382	Propionic acid, with not less than 10% and less than 90% acid	132	1848
Potassium sulfide, hydrated, with not less than 30% water of crystallization	153	1847	Propionic acid, with not less than 90% acid	132	3463
Potassium sulfide, hydrated, with not less than 30% water of hydration	153	1847	Propionic anhydride	156	2496
Potassium sulfide, with less than 30% water of crystallization	135	1382	Propionitrile	131	2404
Potassium sulfide, with less than 30% water of hydration	135	1382	Propionyl chloride	132	1815
Potassium sulphide, anhydrous	135	1382	n-Propyl acetate	129	1276
Potassium sulphide, hydrated, with not less than 30% water of crystallization	153	1847	normal Propyl alcohol	129	1274
			Propyl alcohol, normal	129	1274
			Propylamine	132	1277



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
n-Propyl benzene	128	2364	Pyrethroid pesticide, solid, poisonous	151	3349
Propyl chloride	129	1278	Pyrethroid pesticide, solid, toxic	151	3349
n-Propyl chloroformate	155	2740	Pyridine	129	1282
Propylene	115	1075	Pyrophoric alloy, n.o.s.	135	1383
Propylene	115	1077	Pyrophoric liquid, inorganic, n.o.s.	135	3194
Propylene, Ethylene and Acetylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138	Pyrophoric liquid, n.o.s.	135	2845
Propylene chlorohydrin	131	2611	Pyrophoric liquid, organic, n.o.s.	135	2845
1,2-Propylenediamine	132	2258	Pyrophoric metal, n.o.s.	135	1383
1,3-Propylenediamine	132	2258	Pyrophoric organometallic compound, water-reactive, n.o.s.	135	3203
Propylene dichloride	130	1279	Pyrophoric solid, inorganic, n.o.s.	135	3200
Propyleneimine, stabilized	131P	1921	Pyrophoric solid, n.o.s.	135	2846
Propylene oxide	127P	1280	Pyrophoric solid, organic, n.o.s.	135	2846
Propylene oxide and Ethylene oxide mixture, with not more than 30% Ethylene oxide	129P	2983	Pyrosulfuryl chloride	137	1817
Propylene tetramer	128	2850	Pyrosulphuryl chloride	137	1817
Propyl formates	129	1281	Pyrrolidine	132	1922
n-Propyl isocyanate	155	2482	Quinoline	154	2656
n-Propyl nitrate	131	1865	Radioactive material, excepted package, articles manufactured from depleted Uranium	161	2909
Propyltrichlorosilane	155	1816	Radioactive material, excepted package, articles manufactured from natural Thorium	161	2909
Pyrethroid pesticide, liquid, flammable, poisonous	131	3350	Radioactive material, excepted package, articles manufactured from natural Uranium	161	2909
Pyrethroid pesticide, liquid, flammable, toxic	131	3350	Radioactive material, excepted package, empty packaging	161	2908
Pyrethroid pesticide, liquid, poisonous	151	3352	Radioactive material, excepted package, empty packaging	161	2910
Pyrethroid pesticide, liquid, poisonous, flammable	131	3351			
Pyrethroid pesticide, liquid, toxic	151	3352			
Pyrethroid pesticide, liquid, toxic, flammable	131	3351			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Radioactive material, excepted package, instruments or articles	161	2910	Radioactive material, surface contaminated objects (SCO-II), non fissile or fissile-excepted	162	2913
Radioactive material, excepted package, instruments or articles	161	2911	Radioactive material, transported under special arrangement, fissile	165	3331
Radioactive material, excepted package, limited quantity of material	161	2910	Radioactive material, transported under special arrangement, non fissile or fissile-excepted	163	2919
Radioactive material, fissile, n.o.s.	165	2918	Radioactive material, Type A package, fissile, non-special form	165	3327
Radioactive material, low specific activity (LSA), n.o.s.	162	2912	Radioactive material, Type A package non-special form, non fissile or fissile-excepted	163	2915
Radioactive material, low specific activity (LSA-I), non fissile or fissile-excepted	162	2912	Radioactive material, Type A package, special form, fissile	165	3333
Radioactive material, low specific activity (LSA-II), fissile	165	3324	Radioactive material, Type A package, special form, non fissile or fissile-excepted	164	3332
Radioactive material, low specific activity (LSA-II), non fissile or fissile-excepted	162	3321	Radioactive material, Type B(M) package, fissile	165	3329
Radioactive material, low specific activity (LSA-III), fissile	165	3325	Radioactive material, Type B(M) package, non fissile or fissile-excepted	163	2917
Radioactive material, low specific activity (LSA-III), non fissile or fissile-excepted	162	3322	Radioactive material, Type B(U) package, fissile	165	3328
Radioactive material, n.o.s.	163	2982	Radioactive material, Type B(U) package, non fissile or fissile-excepted	163	2916
Radioactive material, special form, n.o.s.	164	2974	Radioactive material, Type C package, non fissile or fissile excepted	163	3323
Radioactive material, surface contaminated objects (SCO)	162	2913	Radioactive material, Type C package, fissile	165	3330
Radioactive material, surface contaminated objects (SCO-I), fissile	165	3326	Radioactive material, Uranium hexafluoride	166	2978
Radioactive material, surface contaminated objects (SCO-I), non fissile or fissile-excepted	162	2913	Radioactive material, Uranium hexafluoride, fissile	166	2977
Radioactive material, surface contaminated objects (SCO-II), fissile	165	3326	Rags, oily	133	1856

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Rare gases and Nitrogen mixture, compressed	121	1981	Refrigerant gas R-115	126	1020
Rare gases and Oxygen mixture, compressed	121	1980	Refrigerant gas R-116	126	2193
Rare gases mixture, compressed	121	1979	Refrigerant gas R-116, compressed	126	2193
Receptacles, small, containing gas	115	2037	Refrigerant gas R-124	126	1021
Red phosphorus	133	1338	Refrigerant gas R-125	126	3220
Red phosphorus, amorphous	133	1338	Refrigerant gas R-133a	126	1983
Refrigerant gas, n.o.s.	126	1078	Refrigerant gas R-134a	126	3159
Refrigerant gas, n.o.s. (flammable)	115	1954	Refrigerant gas R-142b	115	2517
Refrigerant gas R-12	126	1028	Refrigerant gas R-143a	115	2035
Refrigerant gas R-12 and Refrigerant gas R-152a azeotropic mixture with 74% Refrigerant gas R-12	126	2602	Refrigerant gas R-152a	115	1030
Refrigerant gas R-12B1	126	1974	Refrigerant gas R-152a and Refrigerant gas R-12 azeotropic mixture with 74% Refrigerant gas R-12	126	2602
Refrigerant gas R-13	126	1022	Refrigerant gas R-161	115	2453
Refrigerant gas R-13 and Refrigerant gas R-23 azeotropic mixture with 60% Refrigerant gas R-13	126	2599	Refrigerant gas R-218	126	2424
Refrigerant gas R-13B1	126	1009	Refrigerant gas R-227	126	3296
Refrigerant gas R-14	126	1982	Refrigerant gas R-404A	126	3337
Refrigerant gas R-14, compressed	126	1982	Refrigerant gas R-407A	126	3338
Refrigerant gas R-21	126	1029	Refrigerant gas R-407B	126	3339
Refrigerant gas R-22	126	1018	Refrigerant gas R-407C	126	3340
Refrigerant gas R-23	126	1984	Refrigerant gas R-500 (azeotropic mixture of Refrigerant gas R-12 and Refrigerant gas R-152a with approximately 74% Refrigerant gas R-12)	126	2602
Refrigerant gas R-23 and Refrigerant gas R-13 azeotropic mixture with 60% Refrigerant gas R-13	126	2599	Refrigerant gas R-502	126	1973
Refrigerant gas R-32	115	3252	Refrigerant gas R-503 (azeotropic mixture of Refrigerant gas R-13 and Refrigerant gas R-23 with approximately 60% Refrigerant gas R-13)	126	2599
Refrigerant gas R-40	115	1063	Refrigerant gas R-1132a	116P	1959
Refrigerant gas R-41	115	2454	Refrigerant gas R-1216	126	1858
Refrigerant gas R-114	126	1958	Refrigerant gas R-1318	126	2422

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Refrigerant gas RC-318	126	1976	Seed cake, with more than 1.5% oil and not more than 11% moisture	135	1386
Refrigerating machines, containing Ammonia solutions (UN2672)	126	2857	Seed cake, with not more than 1.5% oil and not more than 11% moisture	135	2217
Refrigerating machines, containing flammable, non-poisonous, liquefied gases	115	3358	Selenates	151	2630
Refrigerating machines, containing flammable, non-toxic, liquefied gases	115	3358	Selenic acid	154	1905
Refrigerating machines, containing non-flammable, non-poisonous gases	126	2857	Selenites	151	2630
Refrigerating machines, containing non-flammable, non-toxic gases	126	2857	Selenium compound, liquid, n.o.s.	151	3440
Regulated medical waste, n.o.s.	158	3291	Selenium compound, n.o.s.	151	3283
Resin solution	127	1866	Selenium compound, solid, n.o.s.	151	3283
Resorcinol	153	2876	Selenium disulfide	153	2657
Rosin oil	127	1286	Selenium disulphide	153	2657
Rubber scrap, powdered or granulated	133	1345	Selenium hexafluoride	125	2194
Rubber shoddy, powdered or granulated	133	1345	Selenium oxychloride	157	2879
Rubber solution	127	1287	Self-defense spray, non-pressurized	171	3334
Rubidium	138	1423	Self-heating liquid, corrosive, inorganic, n.o.s.	136	3188
Rubidium hydroxide	154	2678	Self-heating liquid, corrosive, organic, n.o.s.	136	3185
Rubidium hydroxide, solid	154	2678	Self-heating liquid, inorganic, n.o.s.	135	3186
Rubidium hydroxide, solution	154	2677	Self-heating liquid, organic, n.o.s.	135	3183
Rubidium metal	138	1423	Self-heating liquid, poisonous, inorganic, n.o.s.	136	3187
SA	119	2188	Self-heating liquid, poisonous, organic, n.o.s.	136	3184
Sarin	153	2810	Self-heating liquid, toxic, inorganic, n.o.s.	136	3187
Seat-belt modules	171	3268	Self-heating liquid, toxic, organic, n.o.s.	136	3184
Seat-belt pre-tensioners	171	3268	Self-heating metal powders, n.o.s.	135	3189
Seat-belt pre-tensioners, compressed gas	126	3353	Self-heating solid, corrosive, inorganic, n.o.s.	136	3192
Seat-belt pre-tensioners, pyrotechnic	171	3268			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Self-heating solid, corrosive, organic, n.o.s.	136	3126	Self-reactive solid type D	149	3226
Self-heating solid, inorganic, n.o.s.	135	3190	Self-reactive solid type D, temperature controlled	150	3236
Self-heating solid, inorganic, poisonous, n.o.s.	136	3191	Self-reactive solid type E	149	3228
Self-heating solid, inorganic, toxic, n.o.s.	136	3191	Self-reactive solid type E, temperature controlled	150	3238
Self-heating solid, organic, n.o.s.	135	3088	Self-reactive solid type F	149	3230
Self-heating solid, oxidizing, n.o.s.	135	3127	Self-reactive solid type F, temperature controlled	150	3240
Self-heating solid, poisonous, inorganic, n.o.s.	136	3191	Shale oil	128	1288
Self-heating solid, poisonous, organic, n.o.s.	136	3128	Silane	116	2203
Self-heating solid, toxic, inorganic, n.o.s.	136	3191	Silicofluorides, n.o.s.	151	2856
Self-heating solid, toxic, organic, n.o.s.	136	3128	Silane, compressed	116	2203
Self-reactive liquid type B	149	3221	Silicon powder, amorphous	170	1346
Self-reactive liquid type B, temperature controlled	150	3231	Silicon tetrachloride	157	1818
Self-reactive liquid type C	149	3223	Silicon tetrafluoride	125	1859
Self-reactive liquid type C, temperature controlled	150	3233	Silicon tetrafluoride, compressed	125	1859
Self-reactive liquid type D	149	3225	Silver arsenite	151	1683
Self-reactive liquid type D, temperature controlled	150	3235	Silver cyanide	151	1684
Self-reactive liquid type E	149	3227	Silver nitrate	140	1493
Self-reactive liquid type E, temperature controlled	150	3237	Silver picrate, wetted with not less than 30% water	113	1347
Self-reactive liquid type F	149	3229	Sludge acid	153	1906
Self-reactive liquid type F, temperature controlled	150	3239	Smokeless powder for small arms	133	3178
Self-reactive solid type B	149	3222	Soda lime, with more than 4% Sodium hydroxide	154	1907
Self-reactive solid type B, temperature controlled	150	3232	Sodium	138	1428
Self-reactive solid type C	149	3224	Sodium aluminate, solid	154	2812
Self-reactive solid type C, temperature controlled	150	3234	Sodium aluminate, solution	154	1819
			Sodium aluminum hydride	138	2835
			Sodium ammonium vanadate	154	2863
			Sodium arsenilate	154	2473
			Sodium arsenate	151	1685

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Sodium arsenite, aqueous solution	154	1686	Sodium dinitro-ortho-cresolate, wetted	113	1348
Sodium arsenite, solid	151	2027	Sodium dithionite	135	1384
Sodium azide	153	1687	Sodium fluoride	154	1690
Sodium bisulfate, solution	154	2837	Sodium fluoride, solid	154	1690
Sodium bisulphate, solution	154	2837	Sodium fluoride, solution	154	3415
Sodium borohydride	138	1426	Sodium fluoroacetate	151	2629
Sodium borohydride and Sodium hydroxide solution, with not more than 12% Sodium borohydride and not more than 40% Sodium hydroxide	157	3320	Sodium fluorosilicate	154	2674
Sodium bromate	141	1494	Sodium hydride	138	1427
Sodium cacodylate	152	1688	Sodium hydrogendifluoride	154	2439
Sodium carbonate peroxyhydrate	140	3378	Sodium hydrogen sulfate, solution	154	2837
Sodium chlorate	140	1495	Sodium hydrogen sulphate, solution	154	2837
Sodium chlorate, aqueous solution	140	2428	Sodium hydrosulfide, solid, with less than 25% water of crystallization	135	2318
Sodium chlorite	143	1496	Sodium hydrosulfide, with less than 25% water of crystallization	135	2318
Sodium chlorite, solution, with more than 5% available Chlorine	154	1908	Sodium hydrosulfide, with not less than 25% water of crystallization	154	2949
Sodium chloroacetate	151	2659	Sodium hydrosulfite	135	1384
Sodium cuprocyanide, solid	157	2316	Sodium hydrosulphide, solid, with less than 25% water of crystallization	135	2318
Sodium cuprocyanide, solution	157	2317	Sodium hydrosulphide, with less than 25% water of crystallization	135	2318
Sodium cyanide	157	1689	Sodium hydrosulphide, with not less than 25% water of crystallization	154	2949
Sodium cyanide, solid	157	1689	Sodium hydrosulphite	135	1384
Sodium cyanide, solution	157	3414	Sodium hydroxide, bead	154	1823
Sodium dichloroisocyanurate	140	2465	Sodium hydroxide, dry	154	1823
Sodium dichloro-s-triazinetrione	140	2465	Sodium hydroxide, flake	154	1823
Sodium dinitro-o-cresolate, wetted with not less than 10% water	113	3369	Sodium hydroxide, granular	154	1823
Sodium dinitro-o-cresolate, wetted with not less than 15% water	113	1348	Sodium hydroxide, solid	154	1823

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Sodium hydroxide, solution	154	1824	Sodium sulphide, hydrated, with not less than 30% water	153	1849
Sodium methylate	138	1431	Sodium sulphide, with less than 30% water of crystallization	135	1385
Sodium methylate, dry	138	1431	Sodium superoxide	143	2547
Sodium methylate, solution in alcohol	132	1289	Solids containing corrosive liquid, n.o.s.	154	3244
Sodium monoxide	157	1825	Solids containing flammable liquid, n.o.s.	133	3175
Sodium nitrate	140	1498	Solids containing poisonous liquid, n.o.s.	151	3243
Sodium nitrate and Potassium nitrate mixture	140	1499	Solids containing toxic liquid, n.o.s.	151	3243
Sodium nitrite	140	1500	<b>Soman</b>	<b>153</b>	<b>2810</b>
Sodium nitrite and Potassium nitrate mixture	140	1487	Stannic chloride, anhydrous	137	1827
Sodium pentachlorophenate	154	2567	Stannic chloride, pentahydrate	154	2440
Sodium perborate monohydrate	140	3377	Stannic phosphides	139	1433
Sodium perchlorate	140	1502	<b>Stibine</b>	<b>119</b>	<b>2676</b>
Sodium permanganate	140	1503	Straw, wet, damp or contaminated with oil	133	1327
Sodium peroxide	144	1504	Strontium arsenite	151	1691
Sodium peroxoborate, anhydrous	140	3247	Strontium chlorate	143	1506
Sodium persulfate	140	1505	Strontium chlorate, solid	143	1506
Sodium persulphate	140	1505	Strontium chlorate, solution	143	1506
<b>Sodium phosphide</b>	<b>139</b>	<b>1432</b>	Strontium nitrate	140	1507
Sodium picramate, wetted with not less than 20% water	113	1349	Strontium perchlorate	140	1508
Sodium potassium alloys	138	1422	Strontium peroxide	143	1509
Sodium potassium alloys, liquid	138	1422	<b>Strontium phosphide</b>	<b>139</b>	<b>2013</b>
Sodium potassium alloys, solid	138	3404	Strychnine	151	1692
Sodium silicofluoride	154	2674	Strychnine salts	151	1692
Sodium sulfide, anhydrous	135	1385	Styrene monomer, stabilized	128P	2055
Sodium sulfide, hydrated, with not less than 30% water	153	1849	Substituted nitrophenol pesticide, liquid, flammable, poisonous	131	2780
Sodium sulfide, with less than 30% water of crystallization	135	1385			
Sodium sulphide, anhydrous	135	1385			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Substituted nitrophenol pesticide, liquid, flammable, toxic	131	2780	Sulfur trioxide, stabilized	137	1829
Substituted nitrophenol pesticide, liquid, poisonous	153	3014	Sulfur trioxide and Chlorosulfonic acid mixture	137	1754
Substituted nitrophenol pesticide, liquid, poisonous, flammable	131	3013	Sulfuryl chloride	137	1834
Substituted nitrophenol pesticide, liquid, toxic	153	3014	Sulfuryl fluoride	123	2191
Substituted nitrophenol pesticide, liquid, toxic, flammable	131	3013	Sulphamic acid	154	2967
Substituted nitrophenol pesticide, solid, poisonous	153	2779	Sulphur	133	1350
Substituted nitrophenol pesticide, solid, toxic	153	2779	Sulphur, molten	133	2448
Sulfamic acid	154	2967	Sulphur chlorides	137	1828
Sulfur	133	1350	Sulphur dioxide	125	1079
Sulfur, molten	133	2448	Sulphur hexafluoride	126	1080
Sulfur chlorides	137	1828	Sulphuric acid	137	1830
Sulfur dioxide	125	1079	Sulphuric acid, fuming	137	1831
Sulfur hexafluoride	126	1080	Sulphuric acid, fuming, with less than 30% free Sulphur trioxide	137	1831
Sulfuric acid	137	1830	Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide	137	1831
Sulfuric acid, fuming	137	1831	Sulphuric acid, spent	137	1832
Sulfuric acid, fuming, with less than 30% free Sulfur trioxide	137	1831	Sulphuric acid, with more than 51% acid	137	1830
Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide	137	1831	Sulphuric acid, with not more than 51% acid	157	2796
Sulfuric acid, spent	137	1832	Sulphuric acid and Hydrofluoric acid mixture	157	1786
Sulfuric acid, with more than 51% acid	137	1830	Sulphurous acid	154	1833
Sulfuric acid, with not more than 51% acid	157	2796	Sulphur tetrafluoride	125	2418
Sulfuric acid and Hydrofluoric acid mixture	157	1786	Sulphur trioxide, stabilized	137	1829
Sulfurous acid	154	1833	Sulphur trioxide and Chlorosulphonic acid mixture	137	1754
Sulfur tetrafluoride	125	2418	Sulphuryl chloride	137	1834
			Sulphuryl fluoride	123	2191
			Tabun	153	2810
			Tars, liquid	130	1999



Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Tear gas candles	159	1700	Tetrahydrophthalic anhydrides	156	2698
Tear gas devices	159	1693	1,2,3,6-Tetrahydropyridine	129	2410
Tear gas grenades	159	1700	1,2,5,6-Tetrahydropyridine	129	2410
Tear gas substance, liquid, n.o.s.	159	1693	Tetrahydrothiophene	130	2412
Tear gas substance, solid, n.o.s.	159	1693	Tetramethylammonium hydroxide	153	1835
Tear gas substance, solid, n.o.s.	159	3448	Tetramethylammonium hydroxide, solid	153	3423
Tellurium compound, n.o.s.	151	3284	Tetramethylammonium hydroxide, solution	153	1835
<b>Tellurium hexafluoride</b>	<b>125</b>	<b>2195</b>	Tetramethylsilane	130	2749
Terpene hydrocarbons, n.o.s.	128	2319	<b>Tetranitromethane</b>	<b>143</b>	<b>1510</b>
Terpinolene	128	2541	Tetrapropyl orthotitanate	128	2413
Tetrabromoethane	159	2504	Textile waste, wet	133	1857
1,1,2,2-Tetrachloroethane	151	1702	Thallium chlorate	141	2573
Tetrachloroethane	151	1702	Thallium compound, n.o.s.	151	1707
Tetrachloroethylene	160	1897	Thallium nitrate	141	2727
Tetraethyl dithiopyrophosphate	153	1704	4-Thiapentanal	152	2785
Tetraethyl dithiopyrophosphate, mixture, dry or liquid	153	1704	Thia-4-pentanal	152	2785
Tetraethylenepentamine	153	2320	<b>Thickened GD</b>	<b>153</b>	<b>2810</b>
Tetraethyl silicate	129	1292	Thioacetic acid	129	2436
1,1,1,2-Tetrafluoroethane	126	3159	Thiocarbamate pesticide, liquid, flammable, poisonous	131	2772
Tetrafluoroethane and Ethylene oxide mixture, with not more than 5.6% Ethylene oxide	126	3299	Thiocarbamate pesticide, liquid, flammable, toxic	131	2772
Tetrafluoroethylene, stabilized	116P	1081	Thiocarbamate pesticide, liquid, poisonous	151	3006
Tetrafluoromethane	126	1982	Thiocarbamate pesticide, liquid, poisonous, flammable	131	3005
Tetrafluoromethane, compressed	126	1982	Thiocarbamate pesticide, liquid, toxic	151	3006
1,2,3,6-Tetrahydrobenzaldehyde	129	2498	Thiocarbamate pesticide, liquid, toxic, flammable	131	3005
Tetrahydrofuran	127	2056	Thiocarbamate pesticide, solid, poisonous	151	2771
Tetrahydrofurfurylamine	129	2943			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Thiocarbamate pesticide, solid, toxic	151	2771	Toluene	130	1294
Thioglycol	153	2966	2,4-Toluenediamine	151	1709
Thioglycolic acid	153	1940	Toluene diisocyanate	156	2078
Thiolactic acid	153	2936	Toluidines	153	1708
Thionyl chloride	137	1836	Toluidines, liquid	153	1708
Thiophene	130	2414	Toluidines, solid	153	1708
Thiophosgene	157	2474	Toluidines, solid	153	3451
Thiophosphoryl chloride	157	1837	2,4-Toluylenediamine	151	1709
Thiourea dioxide	135	3341	2,4-Toluylenediamine, solid	151	1709
Thorium metal, pyrophoric	162	2975	2,4-Toluylenediamine, solution	151	3418
Thorium nitrate, solid	162	2976	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3492
Tinctures, medicinal	127	1293	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3493
Tin tetrachloride	137	1827	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	3389
Tin tetrachloride, pentahydrate	154	2440	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	3390
Titanium disulfide	135	3174	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	131	3488
Titanium disulphide	135	3174	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	131	3489
Titanium hydride	170	1871	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	3383
Titanium powder, dry	135	2546	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	131	3384
Titanium powder, wetted with not less than 25% water	170	1352	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	151	3381
Titanium sponge granules	170	2878	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	151	3382
Titanium sponge powders	170	2878			
Titanium tetrachloride	137	1838			
Titanium trichloride, pyrophoric	135	2441			
Titanium trichloride mixture	157	2869			
Titanium trichloride mixture, pyrophoric	135	2441			
TNT, wetted with not less than 10% water	113	3366			
TNT, wetted with not less than 30% water	113	1356			
Toe puffs, nitrocellulose base	133	1353			

**Name of Material**      **Guide ID**  
**No.**      **No.**

**Name of Material**      **Guide ID**  
**No.**      **No.**

Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	142	3387
Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	142	3388
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	155	3490
Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	155	3491
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3385
Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3386
Toxic liquid, corrosive, inorganic, n.o.s.	154	3289
Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	154	3289
Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)	154	3289
Toxic liquid, corrosive, n.o.s.	154	2927
Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	154	2927
Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	154	2927
Toxic liquid, corrosive, organic, n.o.s.	154	2927
Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)	154	2927
Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)	154	2927
Toxic liquid, flammable, n.o.s.	131	2929
Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	131	2929

Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	131	2929
Toxic liquid, flammable, organic, n.o.s.	131	2929
Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)	131	2929
Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	131	2929
Toxic liquid, inorganic, n.o.s.	151	3287
Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	151	3287
Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)	151	3287
Toxic liquid, n.o.s.	153	2810
Toxic liquid, n.o.s. (Inhalation Hazard Zone A)	153	2810
Toxic liquid, n.o.s. (Inhalation Hazard Zone B)	153	2810
Toxic liquid, organic, n.o.s.	153	2810
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)	153	2810
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)	153	2810
Toxic liquid, oxidizing, n.o.s.	142	3122
Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	142	3122
Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	142	3122
Toxic liquid, water-reactive, n.o.s.	139	3123
Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	139	3123
Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	139	3123
Toxic liquid, which in contact with water emits flammable gases, n.o.s.	139	3123

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)	139	3123	Triazine pesticide, liquid, poisonous	151	2998
Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)	139	3123	Triazine pesticide, liquid, poisonous, flammable	131	2997
Toxic solid, corrosive, inorganic, n.o.s.	154	3290	Triazine pesticide, liquid, toxic	151	2998
Toxic solid, corrosive, organic, n.o.s.	154	2928	Triazine pesticide, liquid, toxic, flammable	131	2997
Toxic solid, flammable, n.o.s.	134	2930	Triazine pesticide, solid, poisonous	151	2763
Toxic solid, flammable, organic, n.o.s.	134	2930	Triazine pesticide, solid, toxic	151	2763
Toxic solid, inorganic, n.o.s.	151	3288	Tri-(1-aziridinyl)phosphine oxide, solution	152	2501
Toxic solid, organic, n.o.s.	154	2811	Tributylamine	153	2542
Toxic solid, oxidizing, n.o.s.	141	3086	Tributylphosphane	135	3254
Toxic solid, self-heating, n.o.s.	136	3124	Tributylphosphine	135	3254
Toxic solid, water-reactive, n.o.s.	139	3125	Trichloroacetic acid	153	1839
Toxic solid, which in contact with water emits flammable gases, n.o.s.	139	3125	Trichloroacetic acid, solution	153	2564
Toxins	153	—	Trichloroacetyl chloride	156	2442
Toxins, extracted from living sources, liquid, n.o.s.	153	3172	Trichlorobenzenes, liquid	153	2321
Toxins, extracted from living sources, n.o.s.	153	3172	Trichlorobutene	152	2322
Toxins, extracted from living sources, solid, n.o.s.	153	3172	1,1,1-Trichloroethane	160	2831
Toxins, extracted from living sources, solid, n.o.s.	153	3462	Trichloroethylene	160	1710
Triallylamine	132	2610	Trichloroisocyanuric acid, dry	140	2468
Triallyl borate	156	2609	Trichlorosilane	139	1295
Triazine pesticide, liquid, flammable, poisonous	131	2764	Tricresyl phosphate	151	2574
Triazine pesticide, liquid, flammable, toxic	131	2764	Triethylamine	132	1296
			Triethylenetetramine	153	2259
			Triethyl phosphite	130	2323
			Trifluoroacetic acid	154	2699
			Trifluoroacetyl chloride	125	3057
			Trifluorochloroethylene, stabilized	119P	1082
			1,1,1-Trifluoroethane	115	2035
			Trifluoroethane, compressed	115	2035
			Trifluoromethane	126	1984

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Trifluoromethane, refrigerated liquid	120	3136	Trinitrotoluene, wetted with not less than 10% water	113	3366
Trifluoromethane and Chlorotrifluoromethane azeotropic mixture with approximately 60% Chlorotrifluoromethane	126	2599	Trinitrotoluene, wetted with not less than 30% water	113	1356
2-Trifluoromethylaniline	153	2942	Trippropylamine	132	2260
3-Trifluoromethylaniline	153	2948	Trippropylene	128	2057
Triisobutylene	128	2324	Tris-(1-aziridinyl)phosphine oxide, solution	152	2501
Triisopropyl borate	129	2616	<b>Tungsten hexafluoride</b>	<b>125</b>	<b>2196</b>
<b>Trimethoxysilane</b>	<b>132</b>	<b>9269</b>	Turpentine	128	1299
<b>Trimethylacetyl chloride</b>	<b>132</b>	<b>2438</b>	Turpentine substitute	128	1300
Trimethylamine, anhydrous	118	1083	Undecane	128	2330
Trimethylamine, aqueous solution	132	1297	<b>Uranium hexafluoride</b>	<b>166</b>	<b>2978</b>
1,3,5-Trimethylbenzene	129	2325	<b>Uranium hexafluoride, fissile containing more than 1% Uranium-235</b>	<b>166</b>	<b>2977</b>
Trimethyl borate	129	2416	<b>Uranium hexafluoride, non fissile or fissile-excepted</b>	<b>166</b>	<b>2978</b>
<b>Trimethylchlorosilane</b>	<b>155</b>	<b>1298</b>	Uranium metal, pyrophoric	162	2979
Trimethylcyclohexylamine	153	2326	Uranyl nitrate, hexahydrate, solution	162	2980
Trimethylhexamethylenediamines	153	2327	Uranyl nitrate, solid	162	2981
Trimethylhexamethylene diisocyanate	156	2328	Urea hydrogen peroxide	140	1511
Trimethyl phosphite	130	2329	Urea nitrate, wetted with not less than 10% water	113	3370
Trinitrobenzene, wetted with not less than 10% water	113	3367	Urea nitrate, wetted with not less than 20% water	113	1357
Trinitrobenzene, wetted with not less than 30% water	113	1354	Valeraldehyde	129	2058
Trinitrobenzoic acid, wetted with not less than 10% water	113	3368	Valeryl chloride	132	2502
Trinitrobenzoic acid, wetted with not less than 30% water	113	1355	Vanadium compound, n.o.s.	151	3285
Trinitrochlorobenzene, wetted with not less than 10% water	113	3365	Vanadium oxytrichloride	137	2443
Trinitrophenol, wetted with not less than 10% water	113	3364	Vanadium pentoxide	151	2862
Trinitrophenol, wetted with not less than 30% water	113	1344	Vanadium tetrachloride	137	2444
			Vanadium trichloride	157	2475
			Vanadyl sulfate	151	2931

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Vanadyl sulphate	151	2931	Water-reactive solid, oxidizing, n.o.s.	138	3133
Vehicle, flammable gas powered	128	3166	Water-reactive solid, poisonous, n.o.s.	139	3134
Vehicle, flammable liquid powered	128	3166	Water-reactive solid, self-heating, n.o.s.	138	3135
Vehicle, fuel cell, flammable gas powered	128	3166	Water-reactive solid, toxic, n.o.s.	139	3134
Vehicle, fuel cell, flammable liquid powered	128	3166	Wheelchair, electric, with batteries	154	3171
Vinyl acetate, stabilized	129P	1301	White asbestos	171	2590
Vinyl bromide, stabilized	116P	1085	White phosphorus, dry	136	1381
Vinyl butyrate, stabilized	129P	2838	White phosphorus, in solution	136	1381
Vinyl chloride, stabilized	116P	1086	White phosphorus, molten	136	2447
Vinyl chloroacetate	155	2589	White phosphorus, under water	136	1381
Vinyl ethyl ether, stabilized	127P	1302	Wood preservatives, liquid	129	1306
Vinyl fluoride, stabilized	116P	1860	Wool waste, wet	133	1387
Vinylidene chloride, stabilized	130P	1303	Xanthates	135	3342
Vinyl isobutyl ether, stabilized	127P	1304	Xenon	121	2036
Vinyl methyl ether, stabilized	116P	1087	Xenon, compressed	121	2036
Vinylpyridines, stabilized	131P	3073	Xenon, refrigerated liquid (cryogenic liquid)	120	2591
Vinyltoluenes, stabilized	130P	2618	Xylenes	130	1307
Vinyltrichlorosilane	155P	1305	Xylenols	153	2261
Vinyltrichlorosilane, stabilized	155P	1305	Xylenols, liquid	153	3430
VX	153	2810	Xylenols, solid	153	2261
Water-reactive liquid, corrosive, n.o.s.	138	3129	Xylidines	153	1711
Water-reactive liquid, n.o.s.	138	3148	Xylidines, liquid	153	1711
Water-reactive liquid, poisonous, n.o.s.	139	3130	Xylidines, solid	153	1711
Water-reactive liquid, toxic, n.o.s.	139	3130	Xylidines, solid	153	3452
Water-reactive solid, corrosive, n.o.s.	138	3131	Xylyl bromide	152	1701
Water-reactive solid, flammable, n.o.s.	138	3132	Xylyl bromide, liquid	152	1701
Water-reactive solid, n.o.s.	138	2813	Xylyl bromide, solid	152	3417
			Yellow phosphorus, dry	136	1381

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Yellow phosphorus, in solution	136	1381	Zirconium, dry, coiled wire, finished metal sheets or strips	170	2858
Yellow phosphorus, molten	136	2447			
Yellow phosphorus, under water	136	1381	Zirconium, dry, finished sheets, strips or coiled wire	135	2009
Zinc ammonium nitrite	140	1512	Zirconium hydride	138	1437
Zinc arsenate	151	1712	Zirconium metal, liquid suspension	170	1308
Zinc arsenate and Zinc arsenite mixture	151	1712	Zirconium metal, powder, wet	170	1358
Zinc arsenite	151	1712	Zirconium nitrate	140	2728
Zinc arsenite and Zinc arsenate mixture	151	1712	Zirconium picramate, wetted with not less than 20% water	113	1517
Zinc ashes	138	1435	Zirconium powder, dry	135	2008
Zinc bromate	140	2469	Zirconium powder, wetted with not less than 25% water	170	1358
Zinc chlorate	140	1513	Zirconium scrap	135	1932
Zinc chloride, anhydrous	154	2331	Zirconium suspended in a flammable liquid	170	1308
Zinc chloride, solution	154	1840	Zirconium suspended in a liquid (flammable)	170	1308
Zinc cyanide	151	1713	Zirconium tetrachloride	137	2503
Zinc dithionite	171	1931			
Zinc dross	138	1435			
Zinc dust	138	1436			
Zinc fluorosilicate	151	2855			
Zinc hydrosulfite	171	1931			
Zinc hydrosulphite	171	1931			
Zinc nitrate	140	1514			
Zinc permanganate	140	1515			
Zinc peroxide	143	1516			
Zinc phosphide	139	1714			
Zinc powder	138	1436			
Zinc residue	138	1435			
Zinc resinate	133	2714			
Zinc silicofluoride	151	2855			
Zinc skimmings	138	1435			





# GUIDES

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May explode from heat, shock, friction or contamination.
- May react violently or explosively on contact with air, water or foam.
- May be ignited by heat, sparks or flames.
- Vapors may travel to source of ignition and flash back.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**HEALTH**

- Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death.
- High concentration of gas may cause asphyxiation without warning.
- Contact may cause burns to skin and eyes.
- Fire or contact with water may produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations.

**EVACUATION**

- Fire**
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

**CAUTION:** Material may react with extinguishing agent.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

**Small Spill**

- Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Shower and wash with soap and water.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS**

**FIRE OR EXPLOSION**

- **MAY EXPLODE AND THROW FRAGMENTS 1600 meters (1 MILE) OR MORE IF FIRE REACHES CARGO.**
- **For information on "Compatibility Group" letters, refer to Glossary section.**

**HEALTH**

- Fire may produce irritating, corrosive and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION**

**Large Spill**

- **Consider initial EVACUATION for 800 meters (1/2 mile) in all directions.**

**Fire**

- If rail car or trailer is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 meters (1 mile) in all directions.

**\* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS, REFER TO THE GLOSSARY SECTION.**

**EMERGENCY RESPONSE****FIRE****CARGO Fire**

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

**TIRE or VEHICLE Fire**

- **Use plenty of water - FLOOD it! If water is not available, use CO<sub>2</sub>, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- **DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 meters (330 feet) OF ELECTRIC DETONATORS.**
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

\* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS,  
REFER TO THE GLOSSARY SECTION.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- **DRIED OUT material may explode if exposed to heat, flame, friction or shock; Treat as an explosive (GUIDE 112).**
- **Keep material wet with water or treat as an explosive (GUIDE 112).**
- Runoff to sewer may create fire or explosion hazard.

**HEALTH**

- Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin.
- Contact may cause burns to skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- **Consider initial EVACUATION for 500 meters (1/3 mile) in all directions.**

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****CARGO Fire**

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 800 meters (1/2 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

**TIRE or VEHICLE Fire**

- **Use plenty of water - FLOOD it! If water is not available, use CO<sub>2</sub>, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.

**Small Spill**

- Flush area with flooding quantities of water.

**Large Spill**

- Wet down with water and dike for later disposal.
- **KEEP "WETTED" PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS**

**FIRE OR EXPLOSION**

- **MAY EXPLODE AND THROW FRAGMENTS 500 meters (1/3 MILE) OR MORE IF FIRE REACHES CARGO.**
- **For information on "Compatibility Group" letters, refer to Glossary section.**

**HEALTH**

- Fire may produce irritating, corrosive and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION**

**Large Spill**

- **Consider initial EVACUATION for 250 meters (800 feet) in all directions.**

**Fire**

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

**\* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS, REFER TO THE GLOSSARY SECTION.**



**EMERGENCY RESPONSE****FIRE****CARGO Fire**

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 500 meters (1/3 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

**TIRE or VEHICLE Fire**

- **Use plenty of water - FLOOD it! If water is not available, use CO<sub>2</sub>, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- **DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 meters (330 feet) OF ELECTRIC DETONATORS.**
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**SUPPLEMENTAL INFORMATION**

- Packages bearing the 1.4S label or packages containing material classified as 1.4S are designed or packaged in such a manner that when involved in a fire, may burn vigorously with localized detonations and projection of fragments.
- Effects are usually confined to immediate vicinity of packages.
- If fire threatens cargo area containing packages bearing the 1.4S label or packages containing material classified as 1.4S, consider isolating at least 15 meters (50 feet) in all directions. Fight fire with normal precautions from a reasonable distance.

\* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS,  
REFER TO THE GLOSSARY SECTION.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION****• EXTREMELY FLAMMABLE.**

- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

**CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)**

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**HEALTH**

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**CAUTION:** Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame.

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.

**CAUTION:** When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Silane will ignite spontaneously in air.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**HEALTH**

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be toxic if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Stop leak if you can do it without risk.
- Do not touch or walk through spilled material.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; Extremely Hazardous.**
- May be fatal if inhaled or absorbed through skin.
- Initial odor may be irritating or foul and may deaden your sense of smell.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- These materials are extremely flammable.
- May form explosive mixtures with air.
- May be ignited by heat, sparks or flames.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Runoff may create fire or explosion hazard.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Consider igniting spill or leak to eliminate toxic gas concerns.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **EXTREMELY FLAMMABLE.**
- May be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**HEALTH**

- May cause toxic effects if inhaled.
- Vapors are extremely irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.



## EMERGENCY RESPONSE

## FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- **ALWAYS** stay away from tanks engulfed in fire.

## SPILL OR LEAK

- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- Flammable; may be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- Runoff may create fire or explosion hazard.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER;** use AFFF alcohol-resistant medium expansion foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **FOR CHLOROSILANES**, use AFFF alcohol-resistant medium expansion foam to reduce vapors.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

**FIRST AID**

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

**FIRE OR EXPLOSION**

- **Non-flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids or solids.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

**CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

**FIRE OR EXPLOSION**

- **Non-flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Substance does not burn but will support combustion.
- Some may react explosively with fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**HEALTH**

- Vapors may cause dizziness or asphyxiation without warning.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



## EMERGENCY RESPONSE

**FIRE**

- Use extinguishing agent suitable for type of surrounding fire.

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Isolate area until gas has dispersed.
- **CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Vapors may be irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- Some may burn but none ignite readily.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Fire will produce irritating, corrosive and/or toxic gases.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- Substance does not burn but will support combustion.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- These are strong oxidizers and will react vigorously or explosively with many materials including fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react violently with air, moist air and/or water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**Small Fire**

**CAUTION:** These materials do not burn but will support combustion. Some will react violently with water.

- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- **Water only; no dry chemical, CO<sub>2</sub> or Halon®.**
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Vapors are extremely irritating and corrosive.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- Some may burn but none ignite readily.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Isolate area until gas has dispersed.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of contact with Hydrogen fluoride, anhydrous (UN1052), flush skin and eyes with water for 5 minutes; then, for skin exposures rub on a calcium/gel combination; for eyes flush with a water/calcium solution for 15 minutes.**
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

### POTENTIAL HAZARDS

#### FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

#### HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating, corrosive and/or toxic gases.

#### PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

#### PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

#### EVACUATION

##### Large Spill

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

##### Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE**

- Use extinguishing agent suitable for type of surrounding fire.

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- Some of these materials, if spilled, may evaporate leaving a flammable residue.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**HEALTH**

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

**CAUTION:** All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- For UN3166, if Lithium ion batteries are involved, also consult GUIDE 147.
- **If molten aluminum is involved, refer to GUIDE 169.**

**HEALTH**

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

**CAUTION:** All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

**CAUTION:** For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**HEALTH**

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

**CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.**

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.
- **Do not use dry chemical extinguishers to control fires involving nitromethane or nitroethane.**

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**HEALTH**

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE**

**CAUTION:** All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

**CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.**

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- **Small Spill** • Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Use clean non-sparking tools to collect absorbed material.
- **Large Spill** • Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. • Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**HEALTH**

- May cause toxic effects if inhaled or ingested/swallowed.
- Contact with substance may cause severe burns to skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

• **Some of these materials may react violently with water.**

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Do not get water inside containers.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb with earth, sand or other non-combustible material and transfer to containers (except for Hydrazine).
- Use clean non-sparking tools to collect absorbed material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**FIRST AID**

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Flammable/combustible material.
- May be ignited by friction, heat, sparks or flames.
- Some may burn rapidly with flare burning effect.
- Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence.
- Substance may be transported in a molten form at a temperature that may be above its flash point.
- May re-ignite after fire is extinguished.

**HEALTH**

- Fire may produce irritating and/or toxic gases.
- Contact may cause burns to skin and eyes.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, sand, earth, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

**Fire Involving Metal Pigments or Pastes (e.g. "Aluminum Paste")**

- Aluminum Paste fires should be treated as a combustible metal fire. Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1® or Met-L-X® powder.  
Also, see GUIDE 170.

**Fire involving Tanks or Car/Trailer Loads**

- Cool containers with flooding quantities of water until well after fire is out.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.

**Small Dry Spill**

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

**Large Spill**

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.

**HEALTH**

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Do not get water inside containers.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Flammable/combustible material.
- May ignite on contact with moist air or moisture.
- May burn rapidly with flare-burning effect.
- Some react vigorously or explosively on contact with water.
- Some may decompose explosively when heated or involved in a fire.
- May re-ignite after fire is extinguished.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.

**HEALTH**

- Fire will produce irritating, corrosive and/or toxic gases.
- Inhalation of decomposition products may cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind.
- Keep unauthorized personnel away.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

• **DO NOT USE WATER, CO<sub>2</sub> OR FOAM ON MATERIAL ITSELF.**

- Some of these materials may react violently with water.

**EXCEPTION: For Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite) UN1384, UN1923 and UN1929, USE FLOODING AMOUNTS OF WATER for SMALL AND LARGE fires to stop the reaction. Smothering will not work for these materials, they do not need air to burn.**

**Small Fire**

- Dry chemical, soda ash, lime or DRY sand, **EXCEPT for UN1384, UN1923, UN1929 and UN3342.**

**Large Fire**

- DRY sand, dry chemical, soda ash or lime **EXCEPT for UN1384, UN1923, UN1929 and UN3342**, or withdraw from area and let fire burn.
- **CAUTION: UN3342** when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapors.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers or in contact with substance.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- **ALWAYS** stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

**Small Spill**

**EXCEPTION: For spills of Xanthates, UN3342 and for Dithionite (Hydrosulfite/Hydrosulphite), UN1384, UN1923 and UN1929, dissolve in 5 parts water and collect for proper disposal.**

- **CAUTION: UN3342** when flooded with water will continue to evolve flammable Carbon disulfide/Carbon disulphide vapors.
- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Extremely flammable; will ignite itself if exposed to air.
- Burns rapidly, releasing dense, white, irritating fumes.
- Substance may be transported in a molten form.
- May re-ignite after fire is extinguished.
- Corrosive substances in contact with metals may produce flammable hydrogen gas.
- Containers may explode when heated.

**HEALTH**

- Fire will produce irritating, corrosive and/or toxic gases.
- **TOXIC**; ingestion of substance or inhalation of decomposition products will cause severe injury or death.
- Contact with substance may cause severe burns to skin and eyes.
- Some effects may be experienced due to skin absorption.
- Runoff from fire control may be corrosive and/or toxic and cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind.
- Keep unauthorized personnel away.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- **For Phosphorus (UN1381): Special aluminized protective clothing should be worn when direct contact with the substance is possible.**

**EVACUATION****Spill**

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Water spray, wet sand or wet earth.

**Large Fire**

- Water spray or fog.

**Do not scatter spilled material with high pressure water streams.**

- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

**Small Spill**

- Cover with water, sand or earth. Shovel into metal container and keep material under water.

**Large Spill**

- Dike for later disposal and cover with wet sand or earth.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, keep exposed skin areas immersed in water or covered with wet bandages until medical attention is received.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes at the site and place in metal container filled with water. Fire hazard if allowed to dry.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- CORROSIVE and/or TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

**FIRE OR EXPLOSION**

- **EXCEPT FOR ACETIC ANHYDRIDE (UN1715), THAT IS FLAMMABLE**, some of these materials may burn, but none ignite readily.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Substance will react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.
- Substance may be transported in a molten form.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **When material is not involved in fire, do not use water on material itself.**

**Small Fire**

- Dry chemical or CO<sub>2</sub>.
- Move containers from fire area if you can do it without risk.

**Large Fire**

- Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only.

**Fire involving Tanks or Car/Trailer Loads**

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Produce flammable gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate the area before entry.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE**

- **DO NOT USE WATER OR FOAM.**

**Small Fire**

- Dry chemical, soda ash, lime or sand.

**Large Fire**

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Move containers from fire area if you can do it without risk.

**Fire Involving Metals or Powders (Aluminum, Lithium, Magnesium, etc.)**

- Use dry chemical, DRY sand, sodium chloride powder, graphite powder or Met-L-X® powder; in addition, for Lithium you may use Lith-X® powder or copper powder.
- Also, see GUIDE 170.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

**DO NOT GET WATER on spilled substance or inside containers.****Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

**Powder Spill**

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Produce flammable and toxic gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Highly toxic: contact with water produces toxic gas, may be fatal if inhaled.
- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate the area before entry.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

- **DO NOT USE WATER OR FOAM. (FOAM MAY BE USED FOR CHLOROSILANES, SEE BELOW)**

**Small Fire**

- Dry chemical, soda ash, lime or sand.

**Large Fire**

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- **FOR CHLOROSILANES, DO NOT USE WATER;** use AFFF alcohol-resistant medium expansion foam; **DO NOT USE** dry chemicals, soda ash or lime on chlorosilane fires (large or small) as they may release large quantities of hydrogen gas that may explode.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- **ALWAYS** stay away from tanks engulfed in fire.

## SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

**DO NOT GET WATER on spilled substance or inside containers.**

- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **FOR CHLOROSILANES,** use AFFF alcohol-resistant medium expansion foam to reduce vapors.

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

**Powder Spill**

- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- These substances will accelerate burning when involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Use water. Do not use dry chemicals or foams. CO<sub>2</sub> or Halon® may provide limited control.

**Large Fire**

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire Involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Do not get water inside containers.

**Small Dry Spill**

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

**Small Liquid Spill**

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- **Following product recovery, flush area with water.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some may burn rapidly.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Toxic by ingestion.
- Inhalation of dust is toxic.
- Fire may produce irritating, corrosive and/or toxic gases.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Use water. Do not use dry chemicals or foams. CO<sub>2</sub> or Halon® may provide limited control.

**Large Fire**

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.

**Small Dry Spill**

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

**Large Spill**

- Dike far ahead of spill for later disposal.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- These substances will accelerate burning when involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Toxic/flammable fumes may accumulate in confined areas (basement, tanks, tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE****Small Fire**

- Use water. Do not use dry chemicals or foams. CO<sub>2</sub> or Halon® may provide limited control.

**Large Fire**

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift.
- Do not get water inside containers.

**Small Liquid Spill**

- Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May explode from friction, heat or contamination.
- These substances will accelerate burning when involved in a fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react explosively with hydrocarbons (fuels).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Fire may produce irritating and/or toxic gases.
- Toxic fumes or dust may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Use water. Do not use dry chemicals or foams. CO<sub>2</sub> or Halon® may provide limited control.

**Large Fire**

- Flood fire area with water from a distance.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers: a violent reaction may occur.

**Fire involving Tanks or Car/Trailer Loads**

- Cool containers with flooding quantities of water until well after fire is out.
- Dike fire-control water for later disposal.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Use water spray to reduce vapors or divert vapor cloud drift.
- Prevent entry into waterways, sewers, basements or confined areas.

**Small Spill**

- Flush area with flooding quantities of water.

**Large Spill**

- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May ignite combustibles (wood, paper, oil, clothing, etc.).
- React vigorously and/or explosively with water.
- Produce toxic and/or corrosive substances on contact with water.
- Flammable/toxic gases may accumulate in tanks and hopper cars.
- Some may produce flammable hydrogen gas upon contact with metals.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- **TOXIC**; inhalation or contact with vapor, substance, or decomposition products may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **DO NOT USE WATER OR FOAM.**

**Small Fire**

- Dry chemical, soda ash or lime.

**Large Fire**

- DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- **DO NOT GET WATER on spilled substance or inside containers.**

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

**Large Spill**

- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May explode from heat or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Water spray or fog is preferred; if water not available use dry chemical, CO<sub>2</sub> or regular foam.

**Large Fire**

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

**Small Spill**

- Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal.

**Large Spill**

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May explode from heat, shock, friction or contamination.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE****Small Fire**

- Water spray or fog is preferred; if water not available use dry chemical, CO<sub>2</sub> or regular foam.

**Large Fire**

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Keep substance wet using water spray.
- Stop leak if you can do it without risk.

**Small Spill**

- Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal.

**Large Spill**

- Wet down with water and dike for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused (e.g., mechanical damage or electrical overcharging).
- May burn rapidly with flare-burning effect.
- May ignite other batteries in close proximity.

**HEALTH**

- Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Burning batteries may produce toxic hydrogen fluoride gas (see GUIDE 125).
- Fumes may cause dizziness or suffocation.

**PUBLIC SAFETY**

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Absorb with earth, sand or other non-combustible material.
- Leaking batteries and contaminated absorbent material should be placed in metal containers.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- May explode from heat, contamination or loss of temperature control.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose violently and catch fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May ignite spontaneously if exposed to air.
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare-burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**HEALTH**

- Fire may produce irritating, corrosive and/or toxic gases.
- Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- **DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.**

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **The temperature of the substance must be maintained at or below the “Control Temperature” at all times.**

**Small Fire**

- Water spray or fog is preferred; if water not available use dry chemical, CO<sub>2</sub> or regular foam.

**Large Fire**

- Flood fire area with water from a distance.
- Use water spray or fog; do not use straight streams.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- **BEWARE OF POSSIBLE CONTAINER EXPLOSION.**
- **ALWAYS** stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

**Small Spill**

- Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- Remove material from skin immediately.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Self-decomposition or self-ignition may be triggered by heat, chemical reaction, friction or impact.
- May be ignited by heat, sparks or flames.
- Some may decompose explosively when heated or involved in a fire.
- May burn violently. Decomposition may be self-accelerating and produce large amounts of gases.
- Vapors or dust may form explosive mixtures with air.

**HEALTH**

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 250 meters (800 feet) in all directions.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

**Fire Involving Tanks or Car/Trailer Loads****• BEWARE OF POSSIBLE CONTAINER EXPLOSION.**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

**Small Spill**

- Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **Self-decomposition or self-ignition may be triggered by heat, chemical reaction, friction or impact.**
- Self-accelerating decomposition may occur if the specific control temperature is not maintained.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" they decompose violently and catch fire.
- May be ignited by heat, sparks or flames.
- Some may decompose explosively when heated or involved in a fire.
- May burn violently. Decomposition may be self-accelerating and produce large amounts of gases.
- Vapors or dust may form explosive mixtures with air.

**HEALTH**

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- **DO NOT allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing, see GUIDE 120), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately.**

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial evacuation for at least 250 meters (800 feet) in all directions.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE**

- The temperature of the substance must be maintained at or below the “Control Temperature” at all times.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- **BEWARE OF POSSIBLE CONTAINER EXPLOSION.**
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

**Small Spill**

- Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **Highly toxic**, may be fatal if inhaled, swallowed or absorbed through skin.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**FIRE OR EXPLOSION**

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Containers may explode when heated.
- Runoff may pollute waterways.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## SPILL OR LEAK

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **Highly toxic**, may be fatal if inhaled, swallowed or absorbed through skin.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**FIRE OR EXPLOSION**

- Combustible material: may burn but does not ignite readily.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Cover with plastic sheet to prevent spreading.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS**

**HEALTH**

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**FIRE OR EXPLOSION**

- Combustible material: may burn but does not ignite readily.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION**

**Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

**Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**FIRE OR EXPLOSION**

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- For UN3171, if Lithium ion batteries are involved, also consult GUIDE 147.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



## EMERGENCY RESPONSE

## FIRE

**Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

## FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapors form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapors may travel to source of ignition and flash back.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

**HEALTH**

- **TOXIC;** inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- **Bromoacetates and chloroacetates are extremely irritating/lachrymators.**
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

**CAUTION: For Acetyl chloride (UN1717), use CO<sub>2</sub> or dry chemical only.**

**Small Fire**

- CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER;** use AFFF alcohol-resistant medium expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor suppressing foam may be used to reduce vapors.
- **FOR CHLOROSILANES,** use AFFF alcohol-resistant medium expansion foam to reduce vapors.
- **DO NOT GET WATER on spilled substance or inside containers.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

## FIRST AID

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Combustible material: may burn but does not ignite readily.
- Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapors may travel to source of ignition and flash back.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

**HEALTH**

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

**Small Fire**

- CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- **FOR CHLOROSILANES, DO NOT USE WATER;** use AFFF alcohol-resistant medium expansion foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor suppressing foam may be used to reduce vapors.
- **FOR CHLOROSILANES,** use AFFF alcohol-resistant medium expansion foam to reduce vapors.
- **DO NOT GET WATER on spilled substance or inside containers.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

## FIRST AID

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**FIRE OR EXPLOSION**

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- For UN1796, UN1826, UN2031 at high concentrations and for UN2032, these may act as oxidizers, also consult GUIDE 140.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

## EMERGENCY RESPONSE

## FIRE

- Note: Some foams will react with the material and release corrosive/toxic gases.

**Small Fire**

- CO<sub>2</sub> (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

## SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor suppressing foam may be used to reduce vapors.
- DO NOT GET WATER INSIDE CONTAINERS.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

**Small Spill**

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

## FIRST AID

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of contact with Hydrofluoric acid (UN1790)**, flush skin and eyes with water for 5 minutes; then, for skin exposures rub on a calcium/gel combination; for eyes flush with a water/calcium solution if available, otherwise continue with water for 15 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Inhalation or contact with substance may cause infection, disease or death.
- Runoff from fire control may cause pollution.
- **Note: Damaged packages containing solid CO<sub>2</sub> as a refrigerant may produce water or frost from condensation of air. Do not touch this liquid as it could be contaminated by the contents of the parcel.**

**FIRE OR EXPLOSION**

- Some of these materials may burn, but none ignite readily.
- Some may be transported in flammable liquids.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Obtain identity of substance involved.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.



**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, soda ash, lime or sand.

**Large Fire**

- Use extinguishing agent suitable for type of surrounding fire.
- Do not scatter spilled material with high pressure water streams.
- Move containers from fire area if you can do it without risk.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Absorb with earth, sand or other non-combustible material.
- Cover damaged package or spilled material with damp towel or rag and keep wet with liquid bleach or other disinfectant.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

**FIRST AID**

- Move victim to a safe isolated area.
- **CAUTION: Victim may be a source of contamination.**
- Call 911 or emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- **For further assistance, contact your local Poison Control Center.**
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Inhalation of vapors or dust is extremely irritating.
- May cause burning of eyes and flow of tears.
- May cause coughing, difficult breathing and nausea.
- Brief exposure effects last only a few minutes.
- Exposure in an enclosed area may be very harmful.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**FIRE OR EXPLOSION**

- Some of these materials may burn, but none ignite readily.
- Containers may explode when heated.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.

**Small Spill**

- Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects should disappear after individual has been exposed to fresh air for approximately 10 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Toxic by ingestion.
- Vapors may cause dizziness or suffocation.
- Exposure in an enclosed area may be very harmful.
- Contact may irritate or burn skin and eyes.
- Fire may produce irritating and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**FIRE OR EXPLOSION**

- Some of these materials may burn, but none ignite readily.
- Most vapors are heavier than air.
- Air/vapor mixtures may explode when ignited.
- Container may explode in heat of fire.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer.
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

**Fire involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.

**Small Liquid Spill**

- Take up with sand, earth or other non-combustible absorbent material.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Wash skin with soap and water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Very low levels of contained radioactive materials and low radiation levels outside packages result in low risks to people. Damaged packages may release measurable amounts of radioactive material, but the resulting risks are expected to be low.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.

**FIRE OR EXPLOSION**

- Some of these materials may burn, but most do not ignite readily.
- Many have cardboard outer packaging; content (physically large or small) can be of many different physical forms.
- Radioactivity does not change flammability or other properties of materials.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog (flooding amounts).

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Low radiation hazard when material is inside container. If material is released from package or bulk container, hazard will vary from low to moderate. Level of hazard will depend on the type and amount of radioactivity, the kind of material it is in, and/or the surfaces it is on.
- Some material may be released from packages during accidents of moderate severity but risks to people are not great.
- Released radioactive materials or contaminated objects usually will be visible if packaging fails.
- Some exclusive use shipments of bulk and packaged materials will not have "RADIOACTIVE" labels. Placards, markings and shipping papers provide identification.
- Some packages may have a "RADIOACTIVE" label and a second hazard label. The second hazard is usually greater than the radiation hazard; so follow this GUIDE as well as the response GUIDE for the second hazard class label.
- Some radioactive materials cannot be detected by commonly available instruments.
- Runoff from control of cargo fire may cause low-level pollution.

**FIRE OR EXPLOSION**

- Some of these materials may burn, but most do not ignite readily.
- Uranium and Thorium metal cuttings may ignite spontaneously if exposed to air (see GUIDE 136).
- Nitrates are oxidizers and may ignite other combustibles (see GUIDE 141).

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.



**EMERGENCY RESPONSE****FIRE**

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Dike to collect large liquid spills.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life endangering amounts. Partial releases might be expected if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type A, Type B or Type C packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control may cause pollution.

**FIRE OR EXPLOSION**

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.
- Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe; contents of damaged packages may cause external radiation exposure, and much higher external exposure if contents (source capsules) are released.
- Contamination and internal radiation hazards are not expected, but not impossible.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life endangering amounts. Radioactive sources may be released if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Radiation from the package contents, usually in durable metal capsules, can be detected by most radiation instruments.
- Water from cargo fire control is not expected to cause pollution.

**FIRE OR EXPLOSION**

- Packagings can burn completely without risk of content loss from sealed source capsule.
- Radioactivity does not change flammability or other properties of materials.
- Radioactive source capsules and Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind. • Keep unauthorized personnel away.
- Delay final cleanup until instructions or advice is received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog (flooding amounts).

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Contents are seldom liquid. Content is usually a metal capsule, easily seen if released from package.
- If source capsule is identified as being out of package, **DO NOT TOUCH**. Stay away and await advice from Radiation Authority.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Persons exposed to special form sources are not likely to be contaminated with radioactive material.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type AF or IF packages, identified by package markings, do not contain life-threatening amounts of material. External radiation levels are low and packages are designed, evaluated and tested to control releases and to prevent a fission chain reaction under severe transport conditions.
- Type B(U)F, B(M)F and CF packages (identified by markings on packages or shipping papers) contain potentially life endangering amounts. Because of design, evaluation and testing of packages, fission chain reactions are prevented and releases are not expected to be life endangering for all accidents except those of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type AF, BF or CF packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- The transport index (TI) shown on labels or a shipping paper might not indicate the radiation level at one meter from a single, isolated, undamaged package; instead, it might relate to controls needed during transport because of the fissile properties of the materials. Alternatively, the fissile nature of the contents may be indicated by a criticality safety index (CSI) on a special FISSILE label or on the shipping paper.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control is not expected to cause pollution.

**FIRE OR EXPLOSION**

- These materials are seldom flammable. Packages are designed to withstand fires without damage to contents.
- Radioactivity does not change flammability or other properties of materials.
- Type AF, IF, B(U)F, B(M)F and CF packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

**Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog (flooding amounts).

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.

**Liquid Spill**

- Package contents are seldom liquid. If any radioactive contamination resulting from a liquid release is present, it probably will be low-level.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Chemical hazard greatly exceeds radiation hazard.
- Substance reacts with water and water vapor in air to form toxic and corrosive hydrogen fluoride gas and an extremely irritating and corrosive, white-colored, water-soluble residue.
- If inhaled, may be fatal.
- Direct contact causes burns to skin, eyes, and respiratory tract.
- Low-level radioactive material; very low radiation hazard to people.
- Runoff from control of cargo fire may cause low-level pollution.

**FIRE OR EXPLOSION**

- Substance does not burn.
- The material may react violently with fuels.
- Containers in protective overpacks (horizontal cylindrical shape with short legs for tie-downs), are identified with "AF", "B(U)F" or "H(U)" on shipping papers or by markings on the overpacks. They are designed and evaluated to withstand severe conditions including total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.
- Bare filled cylinders, identified with UN2978 as part of the marking (may also be marked H(U) or H(M)), may rupture in heat of engulfing fire; bare empty (except for residue) cylinders will not rupture in fires.
- Radioactivity does not change flammability or other properties of materials.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION**

- Spill**
- See Table 1 - Initial Isolation and Protective Action Distances.
- Fire**
- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.



**EMERGENCY RESPONSE****FIRE**

- DO NOT USE WATER OR FOAM ON MATERIAL ITSELF.
- Move containers from fire area if you can do it without risk.

**Small Fire**

- Dry chemical or CO<sub>2</sub>.

**Large Fire**

- Water spray, fog or regular foam.
- Cool containers with flooding quantities of water until well after fire is out.
- If this is impossible, withdraw from area and let fire burn.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Do not touch damaged packages or spilled material.
- Without fire or smoke, leak will be evident by visible and irritating vapors and residue forming at the point of release.
- Use fine water spray to reduce vapors; do not put water directly on point of material release from container.
- Residue buildup may self-seal small leaks.
- Dike far ahead of spill to collect runoff water.

**FIRST AID**

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; may be fatal if inhaled.**
- Vapors are extremely irritating.
- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Runoff from fire control may cause pollution.

**FIRE OR EXPLOSION**

- Substance does not burn but will support combustion.
- This is a strong oxidizer and will react vigorously or explosively with many materials including fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, soda ash, lime or sand.

**Large Fire**

- Water spray, fog (flooding amounts).
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- If you have not donned special protective clothing approved for this material, do not expose yourself to any risk of this material touching you.
- **Do not direct water at spill or source of leak.**
- A fine water spray remotely directed to the edge of the spill pool can be used to direct and maintain a hot flare fire that will burn the spilled material in a controlled manner.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- **TOXIC; Extremely Hazardous.**
- Inhalation extremely dangerous; may be fatal.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Odorless, will not be detected by sense of smell.

**FIRE OR EXPLOSION**

- **EXTREMELY FLAMMABLE.**
- May be ignited by heat, sparks or flames.
- Flame may be invisible.
- Containers may explode when heated.
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flash back.
- Runoff may create fire or explosion hazard.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances.

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**Small Fire**

- Dry chemical, CO<sub>2</sub> or water spray.

**Large Fire**

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Substance is transported in molten form at a temperature above 705°C (1300°F).
- Violent reaction with water; contact may cause an explosion or may produce a flammable gas.
- Will ignite combustible materials (wood, paper, oil, debris, etc.).
- Contact with nitrates or other oxidizers may cause an explosion.
- Contact with containers or other materials, including cold, wet or dirty tools, may cause an explosion.
- Contact with concrete will cause spalling and small pops.

**HEALTH**

- Contact causes severe burns to skin and eyes.
- Fire may produce irritating and/or toxic gases.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear flame retardant structural firefighters' protective clothing, including faceshield, helmet and gloves, this will provide limited thermal protection.

**EMERGENCY RESPONSE****FIRE**

- **Do Not Use Water, except in life threatening situations and then only in a fine spray.**
- **Do not use halogenated extinguishing agents or foam.**
- Move combustibles out of path of advancing pool if you can do so without risk.
- Extinguish fires started by molten material by using appropriate method for the burning material; keep water, halogenated extinguishing agents and foam away from the molten material.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Do not attempt to stop leak, due to danger of explosion.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Substance is very fluid, spreads quickly, and may splash. Do not try to stop it with shovels or other objects.
- Dike far ahead of spill; use dry sand to contain the flow of material.
- Where possible allow molten material to solidify naturally.
- Avoid contact even after material solidifies. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold.
- Clean up under the supervision of an expert after material has solidified.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- For severe burns, immediate medical attention is required.
- Removal of solidified molten material from skin requires medical assistance.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.

**POTENTIAL HAZARDS**

**FIRE OR EXPLOSION**

- May react violently or explosively on contact with water.
- Some are transported in flammable liquids.
- May be ignited by friction, heat, sparks or flames.
- Some of these materials will burn with intense heat.
- Dusts or fumes may form explosive mixtures in air.
- Containers may explode when heated.
- May re-ignite after fire is extinguished.

**HEALTH**

- Oxides from metallic fires are a severe health hazard.
- Inhalation or contact with substance or decomposition products may cause severe injury or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Stay upwind.
- Keep unauthorized personnel away.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION**

**Large Spill**

- Consider initial downwind evacuation for at least 50 meters (160 feet).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.



**EMERGENCY RESPONSE****FIRE****• DO NOT USE WATER, FOAM OR CO<sub>2</sub>.**

- Dousing metallic fires with water will generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment (i.e., building, cargo hold, etc.).
- Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1® or Met-L-X® powder.
- Confining and smothering metal fires is preferable rather than applying water.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks or Car/Trailer Loads**

- If impossible to extinguish, protect surroundings and allow fire to burn itself out.

**SPILL OR LEAK**

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****FIRE OR EXPLOSION**

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.

**HEALTH**

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

**EMERGENCY RESPONSE****FIRE****Small Fire**

- Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Large Fire**

- Water spray, fog or regular foam.
- Do not scatter spilled material with high pressure water streams.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal.

**Fire involving Tanks**

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

**Small Dry Spill**

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

**Small Spill**

- Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

**Large Spill**

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**POTENTIAL HAZARDS****HEALTH**

- Inhalation of vapors or contact with substance will result in contamination and potential harmful effects.
- Fire will produce irritating, corrosive and/or toxic gases.

**FIRE OR EXPLOSION**

- Non-combustible, substance itself does not burn but may react upon heating to produce corrosive and/or toxic fumes.
- Runoff may pollute waterways.

**PUBLIC SAFETY**

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

**EVACUATION****Large Spill**

- Consider initial downwind evacuation for at least 100 meters (330 feet).

**Fire**

- When any large container is involved in a fire, consider initial evacuation for 500 meters (1/3 mile) in all directions.

**EMERGENCY RESPONSE****FIRE**

- Use extinguishing agent suitable for type of surrounding fire.
- **Do not direct water at the heated metal.**

**SPILL OR LEAK**

- Do not touch or walk through spilled material.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not use steel or aluminum tools or equipment.
- Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- For mercury, use a mercury spill kit.
- Mercury spill areas may be subsequently treated with calcium sulphide/calcium sulfide or with sodium thiosulphate/sodium thiosulfate wash to neutralize any residual mercury.

**FIRST AID**

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

## NOTES

## **INTRODUCTION TO GREEN TABLES - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

**Table 1** - Initial Isolation and Protective Action Distances suggests distances useful to protect people from vapors resulting from spills involving dangerous goods that are considered toxic by inhalation (TIH). This list includes certain chemical warfare agents and materials that produce toxic gases upon contact with water. Table 1 provides first responders with initial guidance until technically qualified emergency response personnel are available.

The **Initial Isolation Zone** defines an area SURROUNDING the incident in which persons may be exposed to dangerous (upwind) and life threatening (downwind) concentrations of material. The **Protective Action Zone** defines an area DOWNWIND from the incident in which persons may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects. Table 1 provides specific guidance for small and large spills occurring day or night.

Adjusting distances for a specific incident involves many interdependent variables and should be made only by personnel technically qualified to make such adjustments. For this reason, no precise guidance can be provided in this document to aid in adjusting the table distances; however, general guidance follows.

### **Factors That May Change the Protective Action Distances**

**The orange-bordered guide for a material** clearly indicates under the section EVACUATION – Fire, the evacuation distance required to protect against fragmentation hazard of a large container. If the material becomes involved in a **FIRE**, the toxic hazard may be less than the fire or explosion hazard. In these cases, the **Fire** hazard distance should be used.

Initial isolation and protective action distances in this guidebook are derived from historical data on transportation incidents and the use of statistical models. For worst-case scenarios involving the instantaneous release of the entire contents of a package (e.g., as a result of terrorism, sabotage or catastrophic accident) the distances may increase substantially. For such events, doubling of the initial isolation and protective action distances is appropriate in absence of other information.

If more than one tank car containing TIH materials involved in the incident is leaking, LARGE SPILL distances may need to be increased.

For a material with a protective action distance of 11.0+ km (7.0+ miles), the actual distance can be larger in certain atmospheric conditions. If the dangerous goods vapor plume is channeled in a valley or between many tall buildings, distances may be larger than shown in Table 1 due to less mixing of the plume with the atmosphere. Daytime spills in regions with known strong inversions or snow cover, or occurring near sunset, may require an increase of the protective action distance because airborne contaminants mix and disperse more slowly and may travel much farther downwind. In such cases, the nighttime protective action distance may be more appropriate. In addition, protective action distances may be larger for liquid spills when either the material or outdoor temperature exceeds 30°C (86°F).

Materials which react with water to produce large amounts of toxic gases are included in Table 1 - Initial Isolation and Protective Action Distances. Note that some water-reactive materials (WRM) which are also TIH (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.) produce additional TIH materials when spilled in water. For these materials, two entries are provided in Table 1 - Initial Isolation and Protective Action Distances (i.e., for spills on land and for spills in water). **If it is not clear whether the spill is on land or in water, or in cases where the spill occurs both on land and in water, choose the larger Protective Action Distance.**

Following Table 1, **Table 2** – Water-Reactive Materials Which Produce Toxic Gases lists materials that produce large amounts of Toxic Inhalation Hazard gases (TIH) when spilled in water as well as the toxic gases that are produced when spilled in water.

When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current and stretch from the spill point downstream for a substantial distance.

Finally, **Table 3** lists Initial Isolation and Protective Action Distances for Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and for different wind speeds.



## **PROTECTIVE ACTION DECISION FACTORS TO CONSIDER**

The choice of protective actions for a given situation depends on a number of factors. For some cases, evacuation may be the best option; in others, sheltering in-place may be the best course. Sometimes, these two actions may be used in combination. In any emergency, officials need to quickly give the public instructions. The public will need continuing information and instructions while being evacuated or sheltered in-place.

Proper evaluation of the factors listed below will determine the effectiveness of evacuation or in-place protection (shelter in-place). The importance of these factors can vary with emergency conditions. In specific emergencies, other factors may need to be identified and considered as well. This list indicates what kind of information may be needed to make the initial decision.

### **The Dangerous Goods**

- Degree of health hazard
- Chemical and physical properties
- Amount involved
- Containment/control of release
- Rate of vapor movement

### **The Population Threatened**

- Location
- Number of people
- Time available to evacuate or shelter in-place
- Ability to control evacuation or shelter in-place
- Building types and availability
- Special institutions or populations, e.g., nursing homes, hospitals, prisons

### **Weather Conditions**

- Effect on vapor and cloud movement
- Potential for change
- Effect on evacuation or shelter in-place

## **PROTECTIVE ACTIONS**

**Protective Actions** are those steps taken to preserve the health and safety of emergency responders and the public during an incident involving releases of dangerous goods. Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) predicts the size of downwind areas which could be affected by a cloud of toxic gas. People in this area should be evacuated and/or sheltered in-place inside buildings.

**Isolate Hazard Area and Deny Entry** means to keep everybody away from the area if they are not directly involved in emergency response operations. Unprotected emergency responders should not be allowed to enter the isolation zone. This "isolation" task is done first to establish control over the area of operations. This is the first step for any protective actions that may follow. See Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) for more detailed information on specific materials.

**Evacuate** means to move all people from a threatened area to a safer place. To perform an evacuation, there must be enough time for people to be warned, to get ready, and to leave an area. If there is enough time, evacuation is the best protective action. Begin evacuating people nearby and those outdoors in direct view of the scene. When additional help arrives, expand the area to be evacuated downwind and crosswind to at least the extent recommended in this guidebook. Even after people move to the distances recommended, they may not be completely safe from harm. They should not be permitted to congregate at such distances. Send evacuees to a definite place, by a specific route, far enough away so they will not have to be moved again if the wind shifts.

**Shelter In-Place** means people should seek shelter inside a building and remain inside until the danger passes. **Sheltering in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed.** Direct the people inside to **close all doors and windows** and to **shut off all ventilating, heating and cooling systems.** In-place protection (shelter in-place) may not be the best option if (a) the vapors are flammable; (b) if it will take a long time for the gas to clear the area; or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.

**It is vital to maintain communications with competent persons inside the building** so that they are advised about changing conditions. **Persons protected-in-place should be warned to stay far from windows** because of the danger from glass and projected metal fragments in a fire and/or explosion.

Every dangerous goods incident is different. Each will have special problems and concerns. Action to protect the public must be selected carefully. These pages can help with **initial** decisions on how to protect the public. Officials must continue to gather information and monitor the situation until the threat is removed.

## **BACKGROUND ON TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

Initial Isolation and Protective Action Distances in this guidebook were determined for small and large spills occurring during day or night. The overall analysis was statistical in nature and utilized state-of-the-art emission rate and dispersion models; statistical release data from the U.S. DOT HMIS (Hazardous Materials Information System) database; meteorological observations from over 120 locations in United States, Canada and Mexico; and the most current toxicological exposure guidelines.

For each chemical, thousands of hypothetical releases were modeled to account for the statistical variation in both release amount and atmospheric conditions. Based on this statistical sample, the 90<sup>th</sup> percentile Protective Action Distance for each chemical and category was selected to appear in the Table. A brief description of the analysis is provided below. A detailed report outlining the methodology and data used in the generation of the Initial Isolation and Protective Action Distances may be obtained from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

**Release amounts and emission rates** into the atmosphere were statistically modeled based on (1) data from the U.S. DOT HMIS database; (2) container types and sizes authorized for transport as specified in 49 CFR §172.101 and Part 173; (3) physical properties of the individual materials, and (4) atmospheric data from a historical database. The emission model calculated the release of vapor due to evaporation of pools on the ground, direct release of vapors from the container, or a combination of both, as would occur for liquefied gases which can flash to form both a vapor/aerosol mixture and an evaporating pool. In addition, the emission model also calculated the emission of toxic vapor by-products generated from spilling water-reactive materials in water. Spills that involve releases of approximately 208 liters for liquids (55 US gallons) and 300 kg for solids (660 pounds) or less are considered Small Spills, while spills that involve greater quantities are considered Large Spills. An exception to this is certain chemical warfare agents where Small Spills include releases up to 2 kg (4.4 lbs), and Large Spills include releases up to 25 kg (55 lbs). These agents are BZ, CX, GA, GB, GD, GF, HD, HL, HN1, HN2, HN3, L and VX.

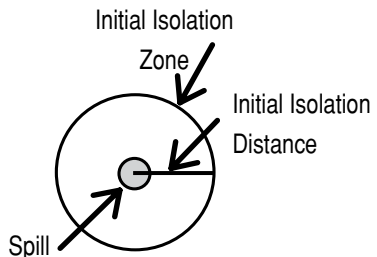
**Downwind dispersion** of the vapor was estimated for each case modeled. Atmospheric parameters affecting the dispersion, and the emission rate, were selected in a statistical fashion from a database containing hourly meteorological data from 120 cities in the United States, Canada and Mexico. The dispersion calculation accounted for the time dependent emission rate from the source as well as the density of the vapor plume (i.e., heavy gas effects). Since atmospheric mixing is less effective at dispersing vapor plumes during nighttime, day and night were separated in the analysis. In Table 1, "Day" refers to time periods after sunrise and before sunset, while "Night" includes all hours between sunset and sunrise.

**Toxicological short-term exposure guidelines** for the materials were applied to determine the downwind distance to which persons may become incapacitated and unable to take protective action or may incur serious health effects after a once-in-a-lifetime, or rare, exposure. When available, toxicological exposure guidelines were chosen from AEGL-2 or ERPG-2 emergency response guidelines, with AEGL-2 values being the first choice. For materials that do not have AEGL-2 or ERPG-2 values, emergency response guidelines estimated from lethal concentration limits derived from animal studies were used, as recommended by an independent panel of toxicological experts from industry and academia.

## HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

- (1) The responder should already have:
  - Identified the material by its ID Number and Name; (if an ID Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
  - Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
  - **Noted the wind direction.**
- (2) Look in Table 1 (the green-bordered pages) for the ID Number and Name of the Material involved in the incident. Some ID Numbers have more than one shipping name listed—look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same ID Number, use the entry with the largest protective action distances.)
- (3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. Generally, a SMALL SPILL is one which involves a single, small package (e.g., a drum containing up to approximately 208 liters (55 US gallons)), a small cylinder, or a small leak from a large package. A LARGE SPILL is one which involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

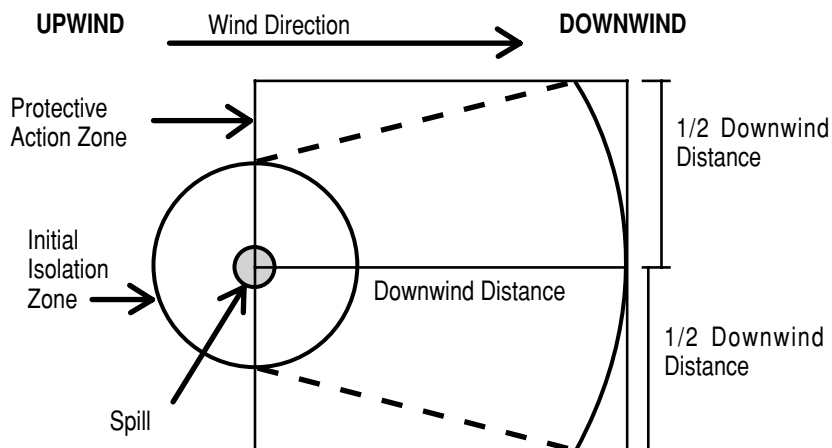
- (4) Look up the INITIAL ISOLATION DISTANCE. Direct all persons to move, in a crosswind direction, away from the spill to the distance specified—in meters and feet.



- (5) Look up the initial PROTECTIVE ACTION DISTANCE shown in Table 1. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometers and miles—for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind distance shown in Table 1.

- (6) Initiate Protective Actions to the extent possible, beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a substantial distance.

The shape of the area in which protective actions should be taken (the Protective Action Zone) is shown in this figure. The spill is located at the center of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill.



**NOTE 1:** See "Introduction To Green Tables – Initial Isolation And Protective Action Distances" under "Factors That May Change the Protective Action Distances" (page 285)

**NOTE 2:** See Table 2 – Water-Reactive Materials which Produce Toxic Gases for the list of gases produced when these materials are spilled in water.

Call the emergency response telephone number listed on the shipping paper or the appropriate response agency as soon as possible for additional information on the material, safety precautions and mitigation procedures.

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1005 *	125	Ammonia, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
1005 *	125	Anhydrous ammonia								
1008	125	Boron trifluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.4 mi)	300 m (1000 ft)	1.7 km (1.1 mi)	4.8 km (3.0 mi)		
1008	125	Boron trifluoride, compressed								
1016	119	Carbon monoxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.8 km (3.0 mi)		
1016	119	Carbon monoxide, compressed								
1017 *	124	Chlorine	60 m (200 ft)	0.4 km (0.2 mi)	1.5 km (1.0 mi)	500 m (1500 ft)	3.0 km (1.9 mi)	7.9 km (4.9 mi)		
1023	119	Coal gas	60 m (200 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)		
1023	119	Coal gas, compressed								
1026	119	Cyanogen	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.0 mi)		
1026	119	Cyanogen gas								
1040 *	119P	Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.9 km (0.5 mi)	2.0 km (1.3 mi)		
1040 *	119P	Ethylene oxide with Nitrogen								
1045	124	Fluorine	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.3 mi)	2.3 km (1.4 mi)		
1045	124	Fluorine, compressed								
1048	125	Hydrogen bromide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.2 km (0.8 mi)	3.9 km (2.4 mi)		
1050 *	125	Hydrogen chloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.3 km (0.8 mi)		
1051	117	AC (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)	1000 m (3000 ft)	3.7 km (2.3 mi)	8.4 km (5.3 mi)		

1051	117	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	60 m (200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	400 m (1250 ft)	1.4 km (0.9 mi)	3.8 km (2.4 mi)
1051	117	Hydrogen cyanide, anhydrous, stabilized						
1051	117	Hydrogen cyanide, stabilized						
1052	* 125	Hydrogen fluoride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	3.2 km (2.0 mi)
1053	117	Hydrogen sulfide	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	1.7 km (1.0 mi)	5.6 km (3.5 mi)
1053	117	Hydrogen sulphide						
1062	123	Methyl bromide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	100 m (300 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1064	117	Methyl mercaptan	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
1067	124	Dinitrogen tetroxide	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	300 m (1000 ft)	1.1 km (0.7 mi)	2.7 km (1.7 mi)
1067	124	Nitrogen dioxide						
1069	125	Nitrosyl chloride	30 m (100 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	600 m (2000 ft)	3.6 km (2.3 mi)	9.5 km (5.9 mi)
1071	119	Oil gas	60 m (200 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)
1071	119	Oil gas, compressed						
1076	125	CG (when used as a weapon)	150 m (500 ft)	0.8 km (0.5 mi)	3.2 km (2.0 mi)	1000 m (3000 ft)	7.5 km (4.7 mi)	11.0+ km (7.0+ mi)
1076	125	Diphosgene	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
1076	125	DP (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	200 m (600 ft)	1.0 km (0.7 mi)	2.4 km (1.5 mi)
1076	125	Phosgene	100 m (300 ft)	0.6 km (0.4 mi)	2.7 km (1.7 mi)	500 m (1500 ft)	3.1 km (1.9 mi)	10.8 km (6.7 mi)
1079	* 125	Sulfur dioxide	100 m (300 ft)	0.7 km (0.4 mi)	2.8 km (1.7 mi)	1000 m (3000 ft)	5.6 km (3.5 mi)	11.0+ km (7.0+ mi)
1079	* 125	Sulphur dioxide						
1082	119P	Trifluorochloroethylene, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.9 km (0.6 mi)
1092	131P	Acrolein, stabilized	150 m (500 ft)	1.4 km (0.9 mi)	4.0 km (2.5 mi)	800 m (2500 ft)	9.3 km (5.8 mi)	11.0+ km (7.0+ mi)
1098	131	Allyl alcohol	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)

"," means distance can be larger in certain atmospheric conditions

\* PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		
1135	131	Ethylene chlorohydrin	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)		
1143	131P	Crotonaldehyde	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)		
1143	131P	Crotonaldehyde, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)		
1162	155	Dimethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	100 m (300 ft)	1.1 km (0.7 mi)	2.2 km (1.4 mi)		
1163	131	1,1-Dimethylhydrazine	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.6 km (0.4 mi)		
1163	131	Dimethylhydrazine, unsymmetrical	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.2 km (1.4 mi)		
1182	155	Ethyl chloroformate	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.0 km (0.6 mi)	2.0 km (1.3 mi)		
1183	139	Ethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)	200 m (600 ft)	2.1 km (1.3 mi)	6.3 km (3.9 mi)		
1185	131P	Ethyleneimine, stabilized	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	150 m (500 ft)	1.1 km (0.7 mi)	2.3 km (1.4 mi)		
1196	155	Ethyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.6 km (2.9 mi)		
1238	155	Methyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)		
1239	131	Methyl chloromethyl ether	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.4 km (0.9 mi)	2.3 km (1.4 mi)		
1242	139	Methyldichlorosilane (when spilled in water)	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.6 km (1.7 mi)		
1244	131	Methylhydrazine	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.4 km (0.9 mi)	2.3 km (1.4 mi)		
1250	155	Methyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.6 km (1.7 mi)		



1251	<b>131P</b>	Methyl vinyl ketone, stabilized	100 m (300 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	800 m (2500 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
1259	<b>131</b>	Nickel carbonyl	100 m (300 ft)	1.4 km (0.9 mi)	5.4 km (3.4 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
1295	<b>139</b>	Trichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.2 km (1.4 mi)
1298	<b>155</b>	Trimethylchlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.6 km (1.0 mi)
1305	<b>155P</b>	Vinyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)
1305	<b>155P</b>	Vinyltrichlorosilane, stabilized (when spilled in water)						
1340	<b>139</b>	Phosphorus pentasulfide, free from yellow and white Phosphorus	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)
1340	<b>139</b>	Phosphorus pentasulphide, free from yellow and white Phosphorus (when spilled in water)						
1360	<b>139</b>	Calcium phosphide (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	300 m (1000 ft)	1.1 km (0.7 mi)	3.8 km (2.4 mi)
1380	<b>135</b>	Pentaborane	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.2 mi)	200 m (600 ft)	2.7 km (1.7 mi)	8.2 km (5.1 mi)
1384	<b>135</b>	Sodium dithionite (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.7 km (1.7 mi)
1384	<b>135</b>	Sodium hydrosulfite (when spilled in water)						
1384	<b>135</b>	Sodium hydrosulphite (when spilled in water)						
1397	<b>139</b>	Aluminum phosphide (when spilled in water)	60 m (200 ft)	0.2 km (0.2 mi)	0.9 km (0.6 mi)	500 m (1500 ft)	2.1 km (1.3 mi)	7.5 km (4.7 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1419	139	Magnesium aluminum phosphide (when spilled in water)	60 m (200 ft)	0.2 km (0.1 mi)	0.9 km (0.5 mi)	500 m (1500 ft)	1.9 km (1.2 mi)	6.5 km (4.1 mi)		
1432	139	Sodium phosphide (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	400 m (1250 ft)	1.4 km (0.9 mi)	4.2 km (2.6 mi)		
1510	143	Tetranitromethane	30 m (100 ft)	0.2 km (0.2 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)		
1541	155	Acetone cyanohydrin, stabilized (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	100 m (300 ft)	0.3 km (0.2 mi)	1.0 km (0.7 mi)		
1556	152	MD (when used as a weapon)	300 m (1000 ft)	1.6 km (1.0 mi)	4.3 km (2.7 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)		
1556	152	Methyldichloroarsine	100 m (300 ft)	1.4 km (0.9 mi)	2.2 km (1.4 mi)	300 m (1000 ft)	3.8 km (2.4 mi)	6.9 km (4.3 mi)		
1556	152	PD (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	1.6 km (1.0 mi)	1.6 km (1.0 mi)		
1560	157	Arsenic chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.6 km (1.0 mi)		
1560	157	Arsenic trichloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.6 km (1.0 mi)		
1569	131	Bromoacetone	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	150 m (500 ft)	1.9 km (1.2 mi)	3.6 km (2.3 mi)		
1580	154	Chloropicrin	30 m (100 ft)	0.4 km (0.3 mi)	1.0 km (0.6 mi)	150 m (500 ft)	1.6 km (1.0 mi)	3.1 km (1.9 mi)		
1581	123	Chloropicrin and Methyl bromide mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	2.1 km (1.3 mi)	5.9 km (3.7 mi)		
1581	123	Methyl bromide and Chloropicrin mixture								

1582	119	Chloropicrin and Methyl chloride mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)
1582	119	Methyl chloride and Chloropicrin mixture						
1583	154	Chloropicrin mixture, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.0 km (0.6 mi)	150 m (500 ft)	1.6 km (1.0 mi)	3.1 km (1.9 mi)
1589	125	CK (when used as a weapon)	150 m (500 ft)	1.0 km (0.6 mi)	3.8 km (2.4 mi)	800 m (2500 ft)	5.7 km (3.6 mi)	11.0+ km (7.0+ mi)
1589	125	Cyanogen chloride, stabilized	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	400 m (1250 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1595	156	Dimethyl sulfate	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.8 km (0.5 mi)
1595	156	Dimethyl sulphate						
1605	154	Ethylene dibromide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)
1612	123	Hexaethyl tetraphosphate and compressed gas mixture	100 m (300 ft)	0.8 km (0.5 mi)	2.7 km (1.7 mi)	400 m (1250 ft)	3.5 km (2.2 mi)	8.1 km (5.1 mi)
1613	154	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide	60 m (200 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.5 km (0.3 mi)	1.3 km (0.8 mi)
1613	154	Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide						
1614	152	Hydrogen cyanide, stabilized (absorbed)	60 m (200 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	150 m (500 ft)	0.5 km (0.4 mi)	1.7 km (1.1 mi)
1647	151	Ethylene dibromide and Methyl bromide mixture, liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	100 m (300 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1647	151	Methyl bromide and Ethylene dibromide mixture, liquid						
1660	124	Nitric oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.6 km (0.4 mi)	2.3 km (1.5 mi)
1660	124	Nitric oxide, compressed						
1670	157	Perchloromethyl mercaptan	30 m (100 ft)	0.2 km (0.2 mi)	0.4 km (0.2 mi)	100 m (300 ft)	0.7 km (0.5 mi)	1.3 km (0.8 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1680	157	Potassium cyanide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)		
1680	157	Potassium cyanide, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)		
1689	157	Sodium cyanide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)		
1689	157	Sodium cyanide, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)		
1694	159	CA (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	100 m (300 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)		
1695	131	Chloroacetone, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)		
1697	153	CN (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)		
1698	154	Adamsite	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)		
1698	154	DM (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)		
1699	151	DA (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	7.5 km (4.7 mi)		
1716	156	Acetyl bromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.3 km (0.8 mi)		
1717	155	Acetyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	2.8 km (1.7 mi)		
1722	155	Allyl chloroformate	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)		
1722	155	Allyl chloroformate	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)		

1724	155	Allyltrichlorosilane, stabilized (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1725	137	Aluminum bromide, anhydrous (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)
1726	137	Aluminum chloride, anhydrous (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.2 km (1.4 mi)
1728	155	Amyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1732	157	Antimony pentafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	150 m (500 ft)	1.2 km (0.7 mi)	4.2 km (2.6 mi)
1741	125	Boron trichloride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.6 km (0.4 mi)	1.4 km (0.9 mi)
1741	125	Boron trichloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.3 km (0.8 mi)	3.8 km (2.4 mi)
1744	154	Bromine	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)	300 m (1000 ft)	2.8 km (1.8 mi)	6.5 km (4.0 mi)
1744	154	Bromine, solution						
1744	154	Bromine, solution (Inhalation Hazard Zone A)						
1744	154	Bromine, solution (Inhalation Hazard Zone B)	60 m (200 ft)	0.5 km (0.3 mi)	1.3 km (0.8 mi)	150 m (500 ft)	1.8 km (1.1 mi)	4.2 km (2.6 mi)
1745	144	Bromine pentafluoride (when spilled on land)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
1745	144	Bromine pentafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	150 m (500 ft)	1.2 km (0.8 mi)	4.4 km (2.7 mi)
1746	144	Bromine trifluoride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.4 mi)
1746	144	Bromine trifluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.1 km (0.7 mi)	4.1 km (2.5 mi)

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ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)		
1747	155	Butyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.8 km (1.1 mi)		
1749	124	Chlorine trifluoride	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		
1752	156	Chloroacetyl chloride (when spilled on land)	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.2 km (0.8 mi)	2.3 km (1.4 mi)		
1752	156	Chloroacetyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.9 km (0.6 mi)		
1753	156	Chlorophenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.7 mi)		
1754	137	Chlorosulfonic acid (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)		
1754	137	Chlorosulfonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)		
1754	137	Chlorosulfonic acid and Sulfur trioxide mixture (when spilled on land)	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)		
1754	137	Chlorosulfonic acid and Sulfur trioxide mixture (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)		
1754	137	Chlorosulphonic acid (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.2 mi)		

1754	137	Chlorosulphonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)
1754	137	Chlorosulphonic acid and Sulphur trioxide mixture (when spilled on land)	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)
1754	137	Chlorosulphonic acid and Sulphur trioxide mixture (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)
1754	137	Sulfur trioxide and Chlorosulfonic acid mixture (when spilled on land)	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)
1754	137	Sulphur trioxide and Chlorosulfonic acid mixture (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)
1754	137	Sulphur trioxide and Chlorosulphonic acid mixture (when spilled on land)	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)
1754	137	Sulphur trioxide and Chlorosulphonic acid mixture (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.5 mi)
1758	137	Chromium oxychloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)
1762	156	Cyclohexenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)
1763	156	Cyclohexyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)

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**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-	
			Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1765	156	Dichloroacetyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)	
1766	156	Dichlorophenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.3 mi)	
1767	155	Diethylchlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	
1769	156	Diphenyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	
1771	156	Dodecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.4 km (0.9 mi)	
1777	137	Fluorosulfonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)	
1777	137	Fluorosulphonic acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)	
1781	156	Hexadecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.7 km (0.4 mi)	
1784	156	Hexyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)	
1799	156	Nonyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
1800	156	Octadecyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (1.0 mi)	



1801	156	Oxytrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 mi	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
1804	156	Phenyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 mi	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (1.0 mi)
1806	137	Phosphorus pentachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	0.2 mi	30 m (100 ft)	0.4 km (0.3 mi)	1.5 km (0.9 mi)
1808	137	Phosphorus tribromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	0.2 mi	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.2 mi)
1809	137	Phosphorus trichloride (when spilled on land)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	0.3 mi	100 m (300 ft)	1.0 km (0.6 mi)	2.2 km (1.4 mi)
1809	137	Phosphorus trichloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.2 mi	60 m (200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)
1810	137	Phosphorus oxychloride (when spilled on land)	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)	0.4 mi	100 m (300 ft)	1.2 km (0.7 mi)	2.2 km (1.4 mi)
1810	137	Phosphorus oxychloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.2 mi	60 m (200 ft)	0.7 km (0.4 mi)	2.3 km (1.4 mi)
1815	132	Propionyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 mi	30 m (100 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)
1816	155	Propyltrichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.2 mi	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)
1818	157	Silicon tetrachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.2 mi	100 m (300 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
1828	137	Sulfur chlorides (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 mi	60 m (200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
1828	137	Sulfur chlorides (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 mi	30 m (100 ft)	0.4 km (0.2 mi)	1.2 km (0.8 mi)
1828	137	Sulphur chlorides (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	0.1 mi	60 m (200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during-		ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during-	
				DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1828	137	Sulphur chlorides (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.2 km (0.8 mi)
1829	137	Sulfur trioxide, stabilized	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)
1829	137	Sulphur trioxide, stabilized	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.5 mi)	400 m (1250 ft)	2.9 km (1.8 mi)	5.7 km (3.5 mi)
1831	137	Sulfuric acid, fuming						
1831	137	Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide						
1831	137	Sulphuric acid, fuming						
1831	137	Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide						
1834	137	Sulfuryl chloride (when spilled on land)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.3 mi)
1834	137	Sulfuryl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.8 km (1.1 mi)
1834	137	Sulphuryl chloride (when spilled on land)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.3 mi)
1834	137	Sulphuryl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.8 km (1.1 mi)
1836	137	Thionyl chloride (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.0 km (1.3 mi)
1836	137	Thionyl chloride (when spilled on land)	30 m (100 ft)	0.2 km (0.2 mi)	0.7 km (0.5 mi)	100 m (300 ft)	0.9 km (0.6 mi)	1.9 km (1.2 mi)

1836	137	Thionyl chloride (when spilled in water)	100 m (300 ft)	1.1 km (0.7 mi)	3.0 km (1.9 mi)	800 m (2500 ft)	9.9 km (6.2 mi)	11.0+ km (7.0+ mi)
1838	137	Titanium tetrachloride (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)
1838	137	Titanium tetrachloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.8 km (1.1 mi)
1859	125	Silicon tetrafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	100 m (300 ft)	0.6 km (0.4 mi)	2.5 km (1.6 mi)
1859	125	Silicon tetrafluoride, compressed						
1892	151	ED (when used as a weapon)	150 m (500 ft)	2.0 km (1.2 mi)	2.9 km (1.8 mi)	1000 m (3000 ft)	10.4 km (6.5 mi)	11.0+ km (7.0+ mi)
1892	151	Ethylchloroarsine	150 m (500 ft)	1.5 km (1.0 mi)	2.4 km (1.5 mi)	500 m (1500 ft)	5.2 km (3.3 mi)	10.2 km (6.1 mi)
1898	156	Acetyl iodide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)
1911	119	Diborane	60 m (200 ft)	0.3 km (0.2 mi)	1.0 km (0.7 mi)	200 m (600 ft)	1.3 km (0.8 mi)	3.9 km (2.5 mi)
1911	119	Diborane, compressed						
1923	135	Calcium dithionite	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.4 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.8 km (1.7 mi)
1923	135	Calcium dithionite (when spilled in water)						
1923	135	Calcium hydrosulfite						
1923	135	Calcium hydrosulfite (when spilled in water)						
1923	135	Calcium hydrosulphite						
1923	135	Calcium hydrosulphite (when spilled in water)						
1929	135	Potassium dithionite	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.5 km (1.5 mi)
1929	135	Potassium dithionite (when spilled in water)						
1929	135	Potassium hydrosulfite						
1929	135	Potassium hydrosulfite (when spilled in water)						
1929	135	Potassium hydrosulphite						
1929	135	Potassium hydrosulphite (when spilled in water)						

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ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-		First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-	
				DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1931	171	Zinc dithionite (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.6 mi)
1931	171	Zinc hydrosulfite (when spilled in water)						
1931	171	Zinc hydrosulphite (when spilled in water)						
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
1953	119	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)

1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
1953	119	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
1953	119	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)

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			First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-	
			Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1953	119	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
1955	123	Compressed gas, poisonous, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)	
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)	
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)	
1955	123	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)	
1955	123	Compressed gas, toxic, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)	
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)	
1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)	

1955	123	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1955	123	Organic phosphate compound mixed with compressed gas	100 m (300 ft)	0.9 km (0.6 mi)	2.6 km (1.6 mi)	500 m (1500 ft)	3.9 km (2.4 mi)	9.4 km (5.9 mi)
1955	123	Organic phosphate mixed with compressed gas						
1955	123	Organic phosphorus compound mixed with compressed gas						
1967	123	Insecticide gas, poisonous, n.o.s.	100 m (300 ft)	0.9 km (0.6 mi)	2.6 km (1.6 mi)	500 m (1500 ft)	3.9 km (2.4 mi)	9.4 km (5.9 mi)
1967	123	Insecticide gas, toxic, n.o.s.						
1967	123	Parathion and compressed gas mixture						
1975	124	Dinitrogen tetroxide and Nitric oxide mixture	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.6 km (0.4 mi)	2.3 km (1.5 mi)
1975	124	Nitric oxide and Dinitrogen tetroxide mixture						
1975	124	Nitric oxide and Nitrogen dioxide mixture						
1975	124	Nitric oxide and Nitrogen tetroxide mixture						
1975	124	Nitrogen dioxide and Nitric oxide mixture						
1975	124	Nitrogen tetroxide and Nitric oxide mixture						
1994	131	Iron pentacarbonyl	100 m (300 ft)	0.9 km (0.6 mi)	2.1 km (1.3 mi)	400 m (1250 ft)	4.8 km (3.0 mi)	8.3 km (5.2 mi)
2004	135	Magnesium diamide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	0.7 km (0.5 mi)	2.4 km (1.5 mi)
2011	139	Magnesium phosphide (when spilled in water)	60 m (200 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	500 m (1500 ft)	1.8 km (1.1 mi)	6.0 km (3.8 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			First ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		
2012	139	Potassium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.2 km (0.8 mi)	4.0 km (2.5 mi)		
2013	139	Strontium phosphide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.2 km (0.7 mi)	3.8 km (2.4 mi)		
2032	157	Nitric acid, fuming	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)		
2032	157	Nitric acid, red fuming	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	2.0 km (1.3 mi)	7.6 km (4.7 mi)		
2186 *	125	Hydrogen chloride, refrigerated liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	2.0 km (1.3 mi)	7.6 km (4.7 mi)		
2188	119	Arsine	150 m (500 ft)	1.0 km (0.6 mi)	4.0 km (2.5 mi)	1000 m (3000 ft)	5.8 km (3.6 mi)	11.0+ km (7.0+ mi)		
2188	119	SA (when used as a weapon)	300 m (1000 ft)	1.9 km (1.2 mi)	5.7 km (3.6 mi)	1000 m (3000 ft)	8.9 km (5.6 mi)	11.0+ km (7.0+ mi)		
2189	119	Dichlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	200 m (600 ft)	1.2 km (0.8 mi)	2.9 km (1.8 mi)		
2190	124	Oxygen difluoride	200 m (600 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	1000 m (3000 ft)	2.2 km (1.4 mi)	8.6 km (5.4 mi)		
2190	124	Oxygen difluoride, compressed	200 m (600 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	1000 m (3000 ft)	2.2 km (1.4 mi)	8.6 km (5.4 mi)		
2191	123	Sulfuryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	5.1 km (3.2 mi)		
2191	123	Sulphuryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	5.1 km (3.2 mi)		
2192	119	Germane	150 m (500 ft)	0.8 km (0.5 mi)	3.2 km (2.0 mi)	800 m (2500 ft)	4.4 km (2.7 mi)	10.6 km (6.6 mi)		
2194	125	Selenium hexafluoride	200 m (600 ft)	1.1 km (0.7 mi)	3.7 km (2.3 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)		
2195	125	Tellurium hexafluoride	200 m (600 ft)	1.2 km (0.7 mi)	4.4 km (2.8 mi)	1000 m (3000 ft)	6.7 km (4.2 mi)	11.0+ km (7.0+ mi)		
2196	125	Tungsten hexafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	0.9 km (0.6 mi)	3.1 km (2.0 mi)		
2197	125	Hydrogen iodide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		



2198	125	Phosphorus pentafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	0.9 km (0.5 mi)	3.3 km (2.0 mi)
2198	125	Phosphorus pentafluoride, compressed	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	0.9 km (0.5 mi)	3.3 km (2.0 mi)
2199	119	Phosphine	60 m (200 ft)	0.2 km (0.2 mi)	1.0 km (0.7 mi)	400 m (1250 ft)	1.3 km (0.8 mi)	4.1 km (2.5 mi)
2202	117	Hydrogen selenide, anhydrous	200 m (600 ft)	1.1 km (0.7 mi)	4.9 km (3.1 mi)	1000 m (3000 ft)	8.5 km (5.3 mi)	11.0+ km (7.0+ mi)
2204	119	Carbonyl sulfide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
2204	119	Carbonyl sulphide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
2232	153	Chloroacetaldehyde	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.3 km (0.8 mi)
2232	153	2-Chloroethanal	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.3 km (0.8 mi)
2308	157	Nitrosylsulfuric acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2308	157	Nitrosylsulfuric acid, liquid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2308	157	Nitrosylsulfuric acid, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2308	157	Nitrosylsulphuric acid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2308	157	Nitrosylsulphuric acid, liquid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2308	157	Nitrosylsulphuric acid, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	0.9 km (0.6 mi)	2.5 km (1.6 mi)
2334	131	Allylamine	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	150 m (500 ft)	1.5 km (0.9 mi)	2.8 km (1.7 mi)
2337	131	Phenyl mercaptan	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
2353	132	Butyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.0 km (0.6 mi)
2382	131	1,2-Dimethylhydrazine	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.8 km (0.5 mi)	1.5 km (1.0 mi)
2382	131	Dimethylhydrazine, symmetrical	30 m (100 ft)	0.2 km (0.1 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.8 km (0.5 mi)	1.5 km (1.0 mi)

"+" means distance can be larger in certain atmospheric conditions

\* PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			First ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		
2395	132	Isobutyril chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)		
2407	155	Isopropyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)		
2417	125	Carbonyl fluoride	100 m (300 ft)	0.6 km (0.4 mi)	2.3 km (1.4 mi)	600 m (2000 ft)	3.7 km (2.3 mi)	8.0 km (5.0 mi)		
2418	125	Sulfur tetrafluoride	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
2418	125	Sulphur tetrafluoride	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
2420	125	Hexafluoroacetone	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)	1000 m (3000 ft)	7.6 km (4.7 mi)	11.0+ km (7.0+ mi)		
2421	124	Nitrogen trioxide	60 m (200 ft)	0.4 km (0.3 mi)	1.8 km (1.1 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	6.7 km (4.2 mi)		
2434	156	Dibenzylchlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)		
2435	156	Ethylphenyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.1 km (0.7 mi)		
2437	156	Methylphenyldichlorosilane (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)		
2438	132	Trimethylacetyl chloride	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.2 km (0.8 mi)	2.1 km (1.3 mi)		
2442	156	Trichloroacetyl chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)		
2474	157	Thiophosgene	60 m (200 ft)	0.7 km (0.4 mi)	2.0 km (1.2 mi)	300 m (1000 ft)	2.7 km (1.7 mi)	5.5 km (3.4 mi)		
2477	131	Methyl isothiocyanate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.4 km (0.2 mi)		
2480	155	Methyl isocyanate	150 m (500 ft)	1.7 km (1.1 mi)	5.8 km (3.6 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)		

2481	155	Ethyl isocyanate	150 m (500 ft)	1.8 km (1.2 mi)	5.9 km (3.7 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
2482	155	n-Propyl isocyanate	100 m (300 ft)	1.1 km (0.7 mi)	2.8 km (1.7 mi)	600 m (2000 ft)	7.8 km (4.9 mi)	11.0+ km (7.0+ mi)
2483	155	Isopropyl isocyanate	100 m (300 ft)	1.2 km (0.8 mi)	3.1 km (1.9 mi)	800 m (2500 ft)	10.1 km (6.3 mi)	11.0+ km (7.0+ mi)
2484	155	tert-Butyl isocyanate	100 m (300 ft)	1.1 km (0.7 mi)	2.7 km (1.7 mi)	600 m (2000 ft)	7.2 km (4.5 mi)	11.0+ km (7.0+ mi)
2485	155	n-Butyl isocyanate	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.7 km (4.2 mi)
2486	155	Isobutyl isocyanate	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
2487	155	Phenyl isocyanate	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.8 km (0.5 mi)	1.2 km (0.8 mi)
2488	155	Cyclohexyl isocyanate	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2495	144	Iodine pentafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	150 m (500 ft)	1.2 km (0.8 mi)	4.6 km (2.9 mi)
2521	131P	Diketene, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
2534	119	Methylchlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.7 km (0.4 mi)	1.8 km (1.1 mi)
2548	124	Chlorine pentafluoride	30 m (100 ft)	0.2 km (0.2 mi)	1.2 km (0.7 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	7.3 km (4.6 mi)
2600	119	Carbon monoxide and Hydrogen mixture, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.8 km (3.0 mi)
2600	119	Hydrogen and Carbon monoxide mixture, compressed						
2605	155	Methoxyethyl isocyanate	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.4 mi)	100 m (300 ft)	1.2 km (0.8 mi)	1.8 km (1.2 mi)
2606	155	Methyl orthosilicate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)
2644	151	Methyl iodide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)
2646	151	Hexachlorocyclopentadiene	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2668	131	Chloroacetonitrile	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)
2676	119	Stibine	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	6.5 km (4.0 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)		
2691	137	Phosphorus pentabromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)		
2692	157	Boron tribromide (when spilled on land)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)		
2692	157	Boron tribromide (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)		
2740	155	n-Propyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)		
2742	155	sec-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)		
2742	155	Isobutyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)		
2743	155	n-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.4 mi)		
2806	138	Lithium nitride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.3 mi)		
2810	153	Buzz (when used as a weapon)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	8.1 km (5.0 mi)		
2810	153	BZ (when used as a weapon)								
2810	153	CS (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.4 km (0.3 mi)	1.9 km (1.2 mi)		
2810	153	DC (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.8 km (1.1 mi)		
2810	153	GA (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)		
2810	153	GB (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)		
2810	153	GD (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)		

2810	153	GF (when used as a weapon)	30 m (100 ft)	0.2 km (0.2 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.8 km (0.5 mi)	1.0 km (0.6 mi)
2810	153	H (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2810	153	HD (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	HL (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)	200 m (600 ft)	1.1 km (0.7 mi)	1.8 km (1.1 mi)
2810	153	HN-1 (when used as a weapon)	60 m (200 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	2.1 km (1.3 mi)
2810	153	HN-2 (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)
2810	153	HN-3 (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	L (Lewisite) (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	Lewisite (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
2810	153	Mustard (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2810	153	Mustard Lewisite (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
2810	153	Poisonous liquid, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2810	153	Poisonous liquid, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	4.5 km (2.8 mi)
2810	153	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2810	153	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

		<b>SMALL SPILLS</b> (From a small package or small leak from a large package)				<b>LARGE SPILLS</b> (From a large package or from many small packages)				
<b>ID No.</b>	<b>Guide</b>	<b>NAME OF MATERIAL</b>	<b>ISOLATE</b> First in all Directions		<b>PROTECT</b> Then persons Downwind during-		<b>ISOLATE</b> First in all Directions		<b>PROTECT</b> Then persons Downwind during-	
			Meters (Feet)	Kilometers (Miles)	<b>DAY</b> Kilometers (Miles)	<b>NIGHT</b> Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	<b>DAY</b> Kilometers (Miles)	<b>NIGHT</b> Kilometers (Miles)
2810	153	Sarin (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)		
2810	153	Soman (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)		
2810	153	Tabun (when used as a weapon)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)		
2810	153	Thickened GD (when used as a weapon)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)		
2810	153	Toxic liquid, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
2810	153	Toxic liquid, n.o.s. (Inhalation Hazard Zone A)								
2810	153	Toxic liquid, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
2810	153	Toxic liquid, organic, n.o.s.	30 m (100 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	4.5 km (2.8 mi)		
2810	153	Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)								
2810	153	Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
2810	153	VX (when used as a weapon)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.3 km (0.2 mi)		
2811	154	CX (when used as a weapon)	60 m (200 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)	1.2 km (0.7 mi)	5.1 km (3.2 mi)		
2826	155	Ethyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)		

2845	<b>135</b>	Ethyl phosphonous dichloride, anhydrous	30 m (100 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	150 m (500 ft)	1.5 km (0.9 mi)	2.8 km (1.7 mi)
2845	<b>135</b>	Methyl phosphonous dichloride	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	4.3 km (2.7 mi)
2901	<b>124</b>	Bromine chloride	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
2927	<b>154</b>	Ethyl phosphonothioic dichloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)
2927	<b>154</b>	Ethyl phosphorodichloridate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)
2927	<b>154</b>	Poisonous liquid, corrosive, n.o.s.	60 m (200 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	200 m (600 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
2927	<b>154</b>	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)						
2927	<b>154</b>	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)
2927	<b>154</b>	Poisonous liquid, corrosive, organic, n.o.s.	60 m (200 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
2927	<b>154</b>	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)						
2927	<b>154</b>	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
2927	<b>154</b>	Toxic liquid, corrosive, n.o.s.	60 m (200 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	200 m (600 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
2927	<b>154</b>	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)						
2927	<b>154</b>	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) (Kilometers (Miles))	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) (Kilometers (Miles))				
2927	154	Toxic liquid, corrosive, organic, n.o.s.	60 m (200 ft)	0.3 km (0.2 mi) 0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)			
2927	154	Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi) 0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)			
2929	131	Poisonous liquid, flammable, n.o.s.	60 m (200 ft)	0.8 km (0.5 mi) 1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)			
2929	131	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi) 0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)			
2929	131	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.4 km (0.3 mi) 1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.6 km (2.9 mi)			
2929	131	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi) 0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)			
2929	131	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi) 0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)			



2929	131	Toxic liquid, flammable, n.o.s.	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
2929	131	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2929	131	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.6 km (2.9 mi)
2929	131	Toxic liquid, flammable, organic, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2929	131	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2929	131	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2977	166	Radioactive material, Uranium hexafluoride, fissile (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.5 km (0.3 mi)	2.4 km (1.5 mi)
2977	166	Uranium hexafluoride, fissile containing more than 1% Uranium-235 (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.5 km (0.3 mi)	2.4 km (1.5 mi)
2978	166	Radioactive material, Uranium hexafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.5 km (0.3 mi)	2.3 km (1.5 mi)
2978	166	Uranium hexafluoride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.5 km (0.3 mi)	2.3 km (1.5 mi)
2978	166	Uranium hexafluoride, non-fissile or fissile-excepted (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.5 km (0.3 mi)	2.3 km (1.5 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-	
			Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
2985	155	Chlorosilanes, flammable, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
2985	155	Chlorosilanes, n.o.s. (when spilled in water)								
2986	155	Chlorosilanes, corrosive, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
2986	155	Chlorosilanes, n.o.s. (when spilled in water)								
2987	156	Chlorosilanes, corrosive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
2987	156	Chlorosilanes, n.o.s. (when spilled in water)								
2988	139	Chlorosilanes, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)	
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s. (when spilled in water)								
3023	131	2-Methyl-2-heptanethiol	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.9 km (0.5 mi)	
3023	131	tert-Octyl mercaptan								
3048	157	Aluminum phosphide pesticide (when spilled in water)	60 m (200 ft)	0.2 km (0.2 mi)	0.9 km (0.6 mi)	0.2 km (0.2 mi)	500 m (1500 ft)	2.1 km (1.3 mi)	7.4 km (4.6 mi)	

3049	138	Metal alkyl halides, water-reactive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3049	138	Metal aryl halides, water-reactive, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3052	135	Aluminum alkyl halides (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3052	135	Aluminum alkyl halides, liquid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3052	135	Aluminum alkyl halides, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3057	125	Trifluoroacetyl chloride	30 m (100 ft)	0.2 km (0.1 mi)	1.0 km (0.6 mi)	800 m (2500 ft)	4.2 km (2.7 mi)	11.0+ km (7.0+ mi)
3079	131P	Methacrylonitrile, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3083	124	Perchloryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	400 m (1250 ft)	2.5 km (1.6 mi)	7.7 km (4.8 mi)
3122	142	Poisonous liquid, oxidizing, n.o.s.	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3122	142	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3122	142	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)
3122	142	Toxic liquid, oxidizing, n.o.s.	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3122	142	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3122	142	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS			LARGE SPILLS				
			(From a small package or small leak from a large package)		(From a large package or from many small packages)					
			First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) Kilometers (Miles)	First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) Kilometers (Miles)				
3123	139	Poisonous liquid, water-reactive, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3123	139	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)								
3123	139	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)								
3123	139	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)		
3123	139	Toxic liquid, water-reactive, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3123	139	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)								

3123	<b>139</b>	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3123	<b>139</b>	Toxic liquid, which in contact with water emits flammable gases, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3123	<b>139</b>	Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3160	<b>119</b>	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3160	<b>119</b>	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
3160	<b>119</b>	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
3160	<b>119</b>	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3160	119	Liquefied gas, toxic, flammable, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)								
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)		
3160	119	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3162	123	Liquefied gas, poisonous, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)								
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3162	123	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		

3162	123	Liquefied gas, toxic, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3162	123	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3246	156	Methanesulfonyl chloride	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)
3246	156	Methanesulphonyl chloride	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3275	131	Nitriles, poisonous, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3275	131	Nitriles, toxic, flammable, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, liquid, poisonous, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, liquid, toxic, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, poisonous, liquid, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, poisonous, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, toxic, liquid, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
3276	151	Nitriles, toxic, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-		First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-	
				DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
3278	151	Organophosphorus compound, liquid, poisonous, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	4.3 km (2.7 mi)
3278	151	Organophosphorus compound, liquid, toxic, n.o.s.						
3278	151	Organophosphorus compound, poisonous, liquid, n.o.s.						
3278	151	Organophosphorus compound, poisonous, n.o.s.						
3278	151	Organophosphorus compound, toxic, liquid, n.o.s.						
3278	151	Organophosphorus compound, toxic, n.o.s.						
3279	131	Organophosphorus compound, poisonous, flammable, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	4.3 km (2.7 mi)
3279	131	Organophosphorus compound, toxic, flammable, n.o.s.						
3280	151	Organoarsenic compound, liquid, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	1.8 km (1.1 mi)	4.5 km (2.8 mi)
3280	151	Organoarsenic compound, n.o.s.						
3281	151	Metal carbonyls, liquid, n.o.s.	100 m (300 ft)	1.4 km (0.9 mi)	5.4 km (3.4 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	
3281	151	Metal carbonyls, n.o.s.						



3287	<b>151</b>	Poisonous liquid, inorganic, n.o.s.	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.2 mi)	300 m (1000 ft)	2.8 km (1.8 mi)	6.5 km (4.0 mi)
3287	<b>151</b>	Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.6 km (1.0 mi)
3287	<b>151</b>	Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.2 mi)	300 m (1000 ft)	2.8 km (1.8 mi)	6.5 km (4.0 mi)
3287	<b>151</b>	Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	1.6 km (1.0 mi)
3289	<b>154</b>	Poisonous liquid, corrosive, inorganic, n.o.s.	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3289	<b>154</b>	Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)
3289	<b>154</b>	Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3289	<b>154</b>	Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3294	131	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	60 m (200 ft)	0.2 km (0.1 mi)	0.4 km (0.2 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.0 km (1.2 mi)		
3300	119P	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.9 km (0.5 mi)	2.0 km (1.3 mi)		
3300	119P	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide								
3303	124	Compressed gas, poisonous, oxidizing, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)		
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)								
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)		
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3303	124	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.0 km (1.3 mi)		

3303	124	Compressed gas, toxic, oxidizing, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3303	124	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.0 km (1.3 mi)
3304	123	Compressed gas, poisonous, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3304	123	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)		
3304	123	Compressed gas, toxic, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3304	123	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		

3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3305	119	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3305	119	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		Then		(From a large package or from many small packages)		Then	
			First ISOLATE in all Directions Meters (Feet)	DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	DAY Kilometers (Miles)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)		
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)		
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3306	124	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)		
3307	124	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)								

3307	<b>124</b> Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3307	<b>124</b> Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3307	<b>124</b> Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.0 km (1.3 mi)
3307	<b>124</b> Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3307	<b>124</b> Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3307	<b>124</b> Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3307	<b>124</b> Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.7 km (0.4 mi)	2.0 km (1.3 mi)
3308	<b>123</b> Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3308	<b>123</b> Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)						

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3308	123	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)		
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3308	123	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		



3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3309	119	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3309	119	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)		(From a large package or from many small packages)		First		Then	
			ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) Kilometers (Miles)	ISOLATE in all Directions Meters (Feet)	PROTECT persons Downwind during- DAY NIGHT Kilometers (Miles) Kilometers (Miles)				
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)		
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)		
3310	124	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)		
3310	124	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)		

3310	<b>124</b>	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3310	<b>124</b>	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3318	<b>125</b>	Ammonia solution, with more than 50% Ammonia	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3355	<b>119</b>	Insecticide gas, poisonous, flammable, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3355	<b>119</b>	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3355	<b>119</b>	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
3355	<b>119</b>	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
3355	<b>119</b>	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3355	<b>119</b>	Insecticide gas, toxic, flammable, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3355	<b>119</b>	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3355	<b>119</b>	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-	
			Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)		
3355	119	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)		
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		
3361	156	Chlorosilanes, toxic, corrosive, n.o.s. (when spilled in water)								
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s. (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)		
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s. (when spilled in water)								
3381	151	Poisonous by inhalation liquid, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)		
3381	151	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)								

3382	<b>151</b>	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3382	<b>151</b>	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)						
3383	<b>131</b>	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
3383	<b>131</b>	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)						
3384	<b>131</b>	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3384	<b>131</b>	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)						
3385	<b>139</b>	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3385	<b>139</b>	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)						
3386	<b>139</b>	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3386	<b>139</b>	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)						

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**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
			First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-		First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-	
				DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
3387	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3387	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)						
3388	142	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)
3388	142	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)						
3389	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	200 m (600 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
3389	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3390	154	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)
3390	154	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)						

3456	157	Nitrosylsulfuric acid, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	200 m (600 ft)	0.7 km (0.5 mi)	2.5 km (1.6 mi)
3456	157	Nitrosylsulphuric acid, solid (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
3461	135	Aluminum alkyl halides, solid (when spilled in water)	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
3488	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3488	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3489	131	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3489	131	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3490	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
3490	155	Toxic by inhalation liquid, water- reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3491	155	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3491	155	Toxic by inhalation liquid, water- reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)

"+" means distance can be larger in certain atmospheric conditions

**TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS			LARGE SPILLS		
			(From a small package or small leak from a large package)			(From a large package or from many small packages)		
			First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during- DAY (Miles) NIGHT (Miles)	First ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during- DAY (Miles) NIGHT (Miles)		
3492	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
3492	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)						
3493	131	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3493	131	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)						
3494	131	Petroleum sour crude oil, flammable, toxic	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
9191	143	Chlorine dioxide, hydrate, frozen (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)
9202	168	Carbon monoxide, refrigerated liquid (cryogenic liquid)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.8 km (3.0 mi)
9206	137	Methyl phosphonic dichloride	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
9263	156	Chloropivaloyl chloride	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)
9264	151	3,5-Dichloro-2,4,6-trifluoropyridine	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)



9269 132 Trimethoxysilane

30 m (100 ft)

0.2 km (0.1 mi)

0.5 km (0.3 mi)

100 m (300 ft)

0.9 km (0.6 mi)

1.9 km (1.2 mi)

See Next Page for Table of Water-Reactive Materials Which Produce Toxic Gases

"+" means distance can be larger in certain atmospheric conditions

## HOW TO USE TABLE 2 – WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Table 2 lists materials which produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced.

The materials are listed by ID number order.

These Water Reactive materials are easily identified in Table 1 as their name is immediately followed by **(when spilled in water)**.

**Note:** Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange guide.

## TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethylchlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methylchlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1305	155P	Vinyltrichlorosilane, stabilized	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H <sub>2</sub> S
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus	H <sub>2</sub> S
1360	139	Calcium phosphide	PH <sub>3</sub>
1384	135	Sodium dithionite	H <sub>2</sub> S SO <sub>2</sub>
1384	135	Sodium hydrosulfite	H <sub>2</sub> S SO <sub>2</sub>
1384	135	Sodium hydrosulphite	H <sub>2</sub> S SO <sub>2</sub>
1397	139	Aluminum phosphide	PH <sub>3</sub>
1419	139	Magnesium aluminum phosphide	PH <sub>3</sub>
1432	139	Sodium phosphide	PH <sub>3</sub>
1541	155	Acetone cyanohydrin, stabilized	HCN
1680	157	Potassium cyanide	HCN
1680	157	Potassium cyanide, solid	HCN
1689	157	Sodium cyanide	HCN
1689	157	Sodium cyanide, solid	HCN

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		

## TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1716	156	Acetyl bromide	HBr
1717	155	Acetyl chloride	HCl
1724	155	Allyltrichlorosilane, stabilized	HCl
1725	137	Aluminum bromide, anhydrous	HBr
1726	137	Aluminum chloride, anhydrous	HCl
1728	155	Amyltrichlorosilane	HCl
1732	157	Antimony pentafluoride	HF
1741	125	Boron trichloride	HCl
1745	144	Bromine pentafluoride	HF Br <sub>2</sub>
1746	144	Bromine trifluoride	HF Br <sub>2</sub>
1747	155	Butyltrichlorosilane	HCl
1752	156	Chloroacetyl chloride	HCl
1753	156	Chlorophenyltrichlorosilane	HCl
1754	137	Chlorosulfonic acid	HCl
1754	137	Chlorosulfonic acid and Sulfur trioxide mixture	HCl
1754	137	Chlorosulphonic acid	HCl
1754	137	Chlorosulphonic acid and Sulphur trioxide mixture	HCl
1754	137	Sulfur trioxide and Chlorosulfonic acid	HCl
1754	137	Sulphur trioxide and Chlorosulphonic acid	HCl
1758	137	Chromium oxychloride	HCl
1762	156	Cyclohexenyltrichlorosilane	HCl
1763	156	Cyclohexyltrichlorosilane	HCl
1765	156	Dichloroacetyl chloride	HCl

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		

## TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1766	156	Dichlorophenyltrichlorosilane	HCl
1767	155	Diethylchlorosilane	HCl
1769	156	Diphenylchlorosilane	HCl
1771	156	Dodecyltrichlorosilane	HCl
1777	137	Fluorosulfonic acid	HF
1777	137	Fluorosulphonic acid	HF
1781	156	Hexadecyltrichlorosilane	HCl
1784	156	Hexyltrichlorosilane	HCl
1799	156	Nonyltrichlorosilane	HCl
1800	156	Octadecyltrichlorosilane	HCl
1801	156	Octyltrichlorosilane	HCl
1804	156	Phenyltrichlorosilane	HCl
1806	137	Phosphorus pentachloride	HCl
1808	137	Phosphorus tribromide	HBr
1809	137	Phosphorus trichloride	HCl
1810	137	Phosphorus oxychloride	HCl
1815	132	Propionyl chloride	HCl
1816	155	Propyltrichlorosilane	HCl
1818	157	Silicon tetrachloride	HCl
1828	137	Sulfur chlorides	HCl SO <sub>2</sub> H <sub>2</sub> S
1828	137	Sulphur chlorides	HCl SO <sub>2</sub> H <sub>2</sub> S
1834	137	Sulfuryl chloride	HCl
1834	137	Sulphuryl chloride	HCl

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		

## TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1836	137	Thionyl chloride	HCl SO <sub>2</sub>
1838	137	Titanium tetrachloride	HCl
1898	156	Acetyl iodide	HI
1923	135	Calcium dithionite	H <sub>2</sub> S SO <sub>2</sub>
1923	135	Calcium hydrosulfite	H <sub>2</sub> S SO <sub>2</sub>
1923	135	Calcium hydrosulphite	H <sub>2</sub> S SO <sub>2</sub>
1929	135	Potassium dithionite	H <sub>2</sub> S SO <sub>2</sub>
1929	135	Potassium hydrosulfite	H <sub>2</sub> S SO <sub>2</sub>
1929	135	Potassium hydrosulphite	H <sub>2</sub> S SO <sub>2</sub>
1931	171	Zinc dithionite	H <sub>2</sub> S SO <sub>2</sub>
1931	171	Zinc hydrosulfite	H <sub>2</sub> S SO <sub>2</sub>
1931	171	Zinc hydrosulphite	H <sub>2</sub> S SO <sub>2</sub>
2004	135	Magnesium diamide	NH <sub>3</sub>
2011	139	Magnesium phosphide	PH <sub>3</sub>
2012	139	Potassium phosphide	PH <sub>3</sub>
2013	139	Strontium phosphide	PH <sub>3</sub>
2308	157	Nitrosylsulfuric acid	NO <sub>2</sub>
2308	157	Nitrosylsulfuric acid, liquid	NO <sub>2</sub>
2308	157	Nitrosylsulfuric acid, solid	NO <sub>2</sub>
2308	157	Nitrosylsulphuric acid	NO <sub>2</sub>
2308	157	Nitrosylsulphuric acid, liquid	NO <sub>2</sub>
2308	157	Nitrosylsulphuric acid, solid	NO <sub>2</sub>
2353	132	Butyryl chloride	HCl

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		

## TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
2395	132	Isobutryl chloride	HCl
2434	156	Dibenzylchlorosilane	HCl
2435	156	Ethylphenylchlorosilane	HCl
2437	156	Methylphenylchlorosilane	HCl
2495	144	Iodine pentafluoride	HF
2691	137	Phosphorus pentabromide	HBr
2692	157	Boron tribromide	HBr
2806	138	Lithium nitride	NH <sub>3</sub>
2977	166	Radioactive material, Uranium hexafluoride, fissile	HF
2977	166	Uranium hexafluoride, fissile containing more than 1% Uranium-235	HF
2978	166	Radioactive material, Uranium hexafluoride	HF
2978	166	Uranium hexafluoride	HF
2978	166	Uranium hexafluoride, non fissile or fissile-excepted	HF
2985	155	Chlorosilanes, flammable, corrosive, n.o.s	HCl
2985	155	Chlorosilanes, n.o.s	HCl
2986	155	Chlorosilanes, corrosive, flammable, n.o.s	HCl
2986	155	Chlorosilanes, n.o.s	HCl
2987	156	Chlorosilanes, corrosive, n.o.s	HCl
2987	156	Chlorosilanes, n.o.s	HCl
2988	139	Chlorosilanes, n.o.s	HCl
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	HCl
3048	157	Aluminum phosphide pesticide	PH <sub>3</sub>

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		

## TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

### Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
3049	138	Metal alkyl halides, water-reactive, n.o.s	HCl
3049	138	Metal aryl halides, water-reactive, n.o.s	HCl
3052	135	Aluminum alkyl halide	HCl
3052	135	Aluminum alkyl halides, liquid	HCl
3052	135	Aluminum alkyl halides, solid	HCl
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.	HCl
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.	HCl
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	HCl
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	HCl
3456	157	Nitrosylsulfuric acid, solid	NO <sub>2</sub>
3456	157	Nitrosylsulphuric acid, solid	NO <sub>2</sub>
3461	135	Aluminum alkyl halides, solid	HCl
9191	143	Chlorine dioxide, hydrate, frozen	Cl <sub>2</sub>

#### Chemical Symbols for TIH Gases:

Br <sub>2</sub>	Bromine	HF	Hydrogen fluoride	NO <sub>2</sub>	Nitrogen dioxide
Cl <sub>2</sub>	Chlorine	HI	Hydrogen iodide	PH <sub>3</sub>	Phosphine
HBr	Hydrogen bromide	H <sub>2</sub> S	Hydrogen sulfide	SO <sub>2</sub>	Sulfur dioxide
HCl	Hydrogen chloride	H <sub>2</sub> S	Hydrogen sulphide	SO <sub>2</sub>	Sulphur dioxide
HCN	Hydrogen cyanide	NH <sub>3</sub>	Ammonia		



## NOTES

### **HOW TO USE TABLE 3 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES**

Table 3 lists Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

**TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES**

TRANSPORT CONTAINER		UN1005 Ammonia, anhydrous: Large Spills														
		First ISOLATE in all Directions	Then PROTECT persons Downwind during						NIGHT							
			DAY			Low wind (< 6 mph = < 10 km/h)			Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		High wind (> 12 mph = > 20 km/h)			
Meters	(Feet)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	
Rail tank car	300 (1000)	2.3 (1.4)	1.3 (0.8)	1.0 (0.6)	6.3 (3.9)	2.6 (1.6)	1.3 (0.8)	1.0 (0.6)	6.3 (3.9)	2.6 (1.6)	1.3 (0.8)	1.0 (0.6)	6.3 (3.9)	2.6 (1.6)	1.3 (0.8)	
Highway tank truck or trailer	125 (400)	1.0 (0.6)	0.5 (0.3)	0.3 (0.2)	2.6 (1.6)	0.8 (0.5)	0.5 (0.3)	0.3 (0.2)	2.6 (1.6)	0.8 (0.5)	0.5 (0.3)	0.3 (0.2)	2.6 (1.6)	0.8 (0.5)	0.5 (0.3)	
Agricultural nurse tank	60 (200)	0.6 (0.4)	0.3 (0.2)	0.3 (0.2)	1.5 (0.9)	0.5 (0.3)	0.3 (0.2)	0.3 (0.2)	1.5 (0.9)	0.5 (0.3)	0.3 (0.2)	0.3 (0.2)	1.5 (0.9)	0.5 (0.3)	0.3 (0.2)	
Multiple small cylinders	30 (100)	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.8 (0.5)	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.8 (0.5)	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.8 (0.5)	0.3 (0.2)	0.2 (0.1)	
TRANSPORT CONTAINER		UN1017 Chlorine: Large Spills														
Rail tank car	1000 (3000)	11+ (7+)	9.0 (5.6)	5.5 (3.4)	11+ (7+)	11+ (7+)	5.5 (3.4)	7.1 (4.4)	11+ (7+)	11+ (7+)	5.5 (3.4)	7.1 (4.4)	11+ (7+)	11+ (7+)	5.5 (3.4)	7.1 (4.4)
Highway tank truck or trailer	1000 (3000)	10.6 (6.6)	3.5 (2.2)	2.9 (1.8)	11+ (7+)	11+ (7+)	2.9 (1.8)	4.2 (2.6)	11+ (7+)	11+ (7+)	2.9 (1.8)	4.2 (2.6)	11+ (7+)	11+ (7+)	2.9 (1.8)	4.2 (2.6)
Multiple ton cylinders	400 (1250)	4.0 (2.5)	1.5 (0.9)	1.1 (0.7)	7.9 (4.9)	2.7 (1.7)	1.5 (0.9)	1.1 (0.7)	7.9 (4.9)	2.7 (1.7)	1.5 (0.9)	1.1 (0.7)	7.9 (4.9)	2.7 (1.7)	1.5 (0.9)	1.5 (0.9)
Multiple small cylinders or single ton cylinder	250 (800)	2.6 (1.6)	1.0 (0.6)	0.8 (0.5)	5.6 (3.5)	1.8 (1.1)	1.0 (0.6)	0.8 (0.5)	5.6 (3.5)	1.8 (1.1)	1.0 (0.6)	0.8 (0.5)	5.6 (3.5)	1.8 (1.1)	1.0 (0.6)	0.8 (0.5)

"+" means distance can be larger in certain atmospheric conditions

## UN1040 Ethylene oxide: Large Spills

TRANSPORT CONTAINER	Then PROTECT persons Downwind during							
	First ISOLATE in all Directions	DAY			NIGHT			High wind (> 12 mph = > 20 km/h) Km (Miles)
		Low wind (< 6 mph = < 10 km/h) Km (Miles)	Moderate wind (6-12 mph = 10 - 20 km/h) Km (Miles)	High wind (> 12 mph = > 20 km/h) Km (Miles)	Low wind (< 6 mph = < 10 km/h) Km (Miles)	Moderate wind (6-12 mph = 10 - 20 km/h) Km (Miles)	High wind (> 12 mph = > 20 km/h) Km (Miles)	
Rail tank car	200 (600)	1.4 (0.9)	0.8 (0.5)	0.6 (0.4)	4.0 (2.5)	1.4 (0.9)	0.8 (0.5)	
Highway tank truck or trailer	100 (300)	0.8 (0.5)	0.5 (0.3)	0.3 (0.2)	2.1 (1.3)	0.6 (0.4)	0.5 (0.3)	
Multiple small cylinders or single ton cylinder	30 (100)	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.8 (0.5)	0.3 (0.2)	0.2 (0.1)	

## UN1050 Hydrogen chloride: Large Spills UN2186 Hydrogen chloride, refrigerated liquid: Large Spills

Rail tank car	600 (2000)	6.1 (3.8)	2.3 (1.4)	1.8 (1.1)	11+ (7+)	4.0 (2.5)	2.6 (1.6)
Highway tank truck or trailer	300 (1000)	3.1 (1.9)	1.1 (0.7)	0.8 (0.5)	7.4 (4.6)	2.1 (1.3)	1.0 (0.6)
Multiple ton cylinders	60 (200)	0.6 (0.4)	0.3 (0.2)	0.2 (0.1)	1.8 (1.1)	0.3 (0.2)	0.2 (0.1)
Multiple small cylinders or single ton cylinder	45 (150)	0.5 (0.3)	0.2 (0.1)	0.2 (0.1)	1.5 (0.9)	0.3 (0.2)	0.2 (0.1)

TRANSPORT CONTAINER		UN1052 Hydrogen fluoride: Large Spills									
		First ISOLATE in all Directions		Then PROTECT persons Downwind during						NIGHT	
				DAY			NIGHT				
		Meters (Feet)	Low wind (< 6 mph = < 10 km/h)	Moderate wind (6-12 mph = 10 - 20 km/h)	High wind (> 12 mph = > 20 km/h)	Low wind (< 6 mph = < 10 km/h)	Moderate wind (6-12 mph = 10 - 20 km/h)	High wind (> 12 mph = > 20 km/h)	Low wind (< 6 mph = < 10 km/h)	Moderate wind (6-12 mph = 10 - 20 km/h)	High wind (> 12 mph = > 20 km/h)
			Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)	Km (Miles)
Rail tank car		400 (1250)	3.2 (2.0)	1.9 (1.2)	1.6 (1.0)	7.9 (4.9)	3.1 (1.9)	1.9 (1.2)	7.9 (4.9)	3.1 (1.9)	1.9 (1.2)
Highway tank truck or trailer		210 (700)	1.9 (1.2)	1.0 (0.6)	0.8 (0.5)	3.9 (2.4)	1.6 (1.0)	1.0 (0.6)	3.9 (2.4)	1.6 (1.0)	1.0 (0.6)
Multiple small cylinders or single ton cylinder		100 (300)	0.8 (0.5)	0.3 (0.2)	0.3 (0.2)	1.6 (1.0)	0.5 (0.3)	0.3 (0.2)	1.6 (1.0)	0.5 (0.3)	0.3 (0.2)
TRANSPORT CONTAINER		UN1079 Sulfur dioxide/Sulphur dioxide: Large Spills									
Rail tank car		1000 (3000)	11+ (7+)	11+ (7+)	7.6 (4.7)	11+ (7+)	11+ (7+)	10.8 (6.7)	11+ (7+)	11+ (7+)	10.8 (6.7)
Highway tank truck or trailer		1000 (3000)	11+ (7+)	7.6 (4.7)	5.1 (3.2)	11+ (7+)	10 (6.2)	6.1 (3.8)	11+ (7+)	10 (6.2)	6.1 (3.8)
Multiple ton cylinders		600 (2000)	7.1 (4.4)	2.7 (1.7)	1.9 (1.2)	10.5 (6.5)	4.7 (2.9)	2.9 (1.8)	10.5 (6.5)	4.7 (2.9)	2.9 (1.8)
Multiple small cylinders or single ton cylinder		300 (1000)	5.3 (3.3)	1.6 (1.0)	1.1 (0.7)	7.9 (4.9)	2.7 (1.7)	1.5 (0.9)	7.9 (4.9)	2.7 (1.7)	1.5 (0.9)

"+" means distance can be larger in certain atmospheric conditions

## ERG2012 USER'S GUIDE

The 2012 Emergency Response Guidebook (ERG2012) was developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Información Química para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods. **It is primarily a guide to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.** For the purposes of this guidebook, the "initial response phase" is that period following arrival at the scene of an incident during which the presence and/or identification of dangerous goods is confirmed, protective actions and area securement are initiated, and assistance of qualified personnel is requested. It is not intended to provide information on the physical or chemical properties of dangerous goods.

This guidebook will assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. ERG2012 does not address all possible circumstances that may be associated with a dangerous goods incident. It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad. Be mindful that there may be limited value in its application at fixed facility locations.

ERG2012 incorporates dangerous goods lists from the most recent United Nations Recommendations as well as from other international and national regulations. Explosives are not listed individually by either proper shipping name or ID Number. They do, however, appear under the general heading "Explosives" on the first page of the ID Number index (yellow-bordered pages) and alphabetically in the Name of Material index (blue-bordered pages). Also, the letter **(P)** following the guide number in the yellow-bordered and blue-bordered pages identifies those materials which present a polymerization hazard under certain conditions, for example: Acrolein, stabilized **131P**.

First responders at the scene of a dangerous goods incident should seek additional specific information about any material in question as soon as possible. The information received by contacting the appropriate emergency response agency, by calling the emergency response telephone number on the shipping document, or by consulting the information on or accompanying the shipping document, may be more specific and accurate than this guidebook in providing guidance for the materials involved.

**BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK!** In the U.S., according to the requirements of the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA, 29 CFR 1910.120), and regulations issued by the U.S. Environmental Protection Agency (EPA, 40 CFR Part 311), first responders must be trained regarding the use of this guidebook.

## GUIDEBOOK CONTENTS

**1-Yellow-bordered pages:** Index list of dangerous goods in numerical order of ID number. This section quickly identifies the guide to be consulted from the ID Number of the material involved. This list displays the 4-digit ID number of the material followed by its assigned emergency response guide and the material name.

<b>For example:</b>	<b>ID No.</b>	<b>GUIDE No.</b>	<b>Name of Material</b>
	1090	127	Acetone

**2-Blue-bordered pages:** Index list of dangerous goods in alphabetical order of material name. This section quickly identifies the guide to be consulted from the name of the material involved. This list displays the name of the material followed by its assigned emergency response guide and 4-digit ID number.

<b>For example:</b>	<b>Name of Material</b>	<b>GUIDE No.</b>	<b>ID No.</b>
	Sulfuric acid	137	1830

**3-Orange-bordered pages:** This section is the most important section of the guidebook because it is where all safety recommendations are provided. It comprises a total of 62 individual guides, presented in a two-page format. Each guide provides safety recommendations and emergency response information to protect yourself and the public. The left hand page provides safety related information whereas the right hand page provides emergency response guidance and activities for fire situations, spill or leak incidents and first aid. Each guide is designed to cover a group of materials which possess similar chemical and toxicological characteristics.

The guide title identifies the general hazards of the dangerous goods covered.

**For example:**     **GUIDE 124** - Gases-Toxic and/or Corrosive-Oxidizing.

Each guide is divided into three main sections: the first section describes **potential hazards** that the material may display in terms of fire/explosion and health effects upon exposure. The highest potential is listed first. The emergency responder should consult this section first. This allows the responder to make decisions regarding the protection of the emergency response team as well as the surrounding population.

The second section outlines suggested **public safety** measures based on the situation at hand. It provides general information regarding immediate isolation of the incident site, recommended type of protective clothing and respiratory protection. Suggested evacuation distances are listed for small and large spills and for fire situations (fragmentation hazard). It also directs the reader to consult the tables listing Toxic Inhalation Hazard (TIH) materials, chemical warfare agents and water-reactive materials (green-bordered pages) when the material is highlighted in the yellow-bordered and blue-bordered pages.

The third section covers **emergency response** actions, including first aid. It outlines special precautions for incidents which involve fire, spill or chemical exposure. Several recommendations are listed under each part which will further assist in the decision making process. The information on first aid is general guidance prior to seeking medical care.

**4-Green-bordered pages:** This section contains three tables.

**Table 1** lists, by ID number order, TIH materials, including certain chemical warfare agents, and water-reactive materials which produce toxic gases upon contact with water. This table provides two different types of recommended safe distances which are "Initial isolation distances" and "Protective action distances". The materials are highlighted in green for easy identification in both numeric (yellow-bordered pages) and alphabetic (blue-bordered pages) lists of the guidebook. This table provides distances for both small (approximately 208 liters (55 US gallons) or less for liquids and 300 kilograms (660 pounds) or less for solids when spilled in water) and large spills (more than 208 liters (55 US gallons) for liquids and more than 300 kilograms (660 pounds) for solids when spilled in water) for all highlighted materials. The list is further subdivided into daytime and nighttime situations. This is necessary due to varying atmospheric conditions which greatly affect the size of the hazardous area. The distances change from daytime to nighttime due to different mixing and dispersion conditions in the air. During the night, the air is generally calmer and this causes the material to disperse less and therefore create a toxic zone which is greater than would usually occur during the day. During the day, a more active atmosphere will cause a greater dispersion of the material resulting in a lower concentration of the material in the surrounding air. The actual area where toxic levels are reached will be smaller (due to increased dispersion). In fact, it is the quantity or concentration of the material vapor that poses problems not its mere presence.

The "Initial Isolation Distance" is a distance within which all persons should be considered for evacuation in all directions from the actual spill/leak source. It is a distance (radius) which defines a circle (Initial Isolation Zone) within which persons may be exposed to dangerous concentrations upwind of the source and may be exposed to life threatening concentrations downwind of the source. For example, in the case of Compressed gas, toxic, n.o.s., ID No. 1955, Inhalation Hazard Zone A, the isolation distance for small spills is 100 meters (300 feet), therefore, representing an evacuation circle of 200 meters (600 feet) in diameter.

For the same material, the "Protective Action Distance" for a small spill is 0.5 kilometers (0.3 mile) for a daytime incident and 2.2 kilometers (1.4 miles) for a nighttime incident, these distances represent a downwind distance from the spill/leak source within which Protective Actions could be implemented. Protective Actions are those steps taken to preserve the health and safety of emergency responders and the public. People in this area could be evacuated and/or sheltered in-place. For more information, consult pages 285 to 291.

**What is a TIH?** It is a gas or volatile liquid which is known to be so toxic to humans as to pose a hazard to health during transportation, or in the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has a Lethal Concentration 50 (LC50) value of not more than 5000 ppm.

It is important to note that even though the term zone is used, the hazard zones do not represent any actual area or distance. The assignment of the zones is strictly a function of their Lethal Concentration 50 (LC50); for example, TIH Zone A is more toxic than Zone D. All distances which are listed in the green-bordered pages are calculated by the use of mathematical models for each TIH material. For the assignment of hazard zones refer to the glossary.



**Table 2** lists, by ID number order, materials that produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced. These Water Reactive materials are easily identified in **Table 1** as their name is immediately followed by (**when spilled in water**). Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material is NOT a TIH and this material is NOT spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange-bordered guide.

**Table 3** provides, by alphabetical order of material name, initial isolation and protective action distances for six Toxic Inhalation Hazard materials that may be more commonly encountered. The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The table provides Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

### **ISOLATION AND EVACUATION DISTANCES**

Isolation or evacuation distances are shown in the guides (orange-bordered pages) and in the Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages). This may confuse users not thoroughly familiar with ERG2012.

It is important to note that some guides refer only to non-TIH materials (36 guides), some refer to both TIH and non-TIH materials (21 guides) and some (5 guides) refer only to TIH or Water-reactive materials (WRM). A guide refers to both TIH and non-TIH materials (for example see GUIDE 131) when the following sentence appears under the title EVACUATION-Spill: "See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under 'PUBLIC SAFETY.'" A guide refers only to TIH or WRM materials (for example see GUIDE 124) when the following sentence appears under the title EVACUATION-Spill: "See Table 1 - Initial Isolation and Protective Action Distances". If the previous sentences do not appear in a guide, then this particular guide refers only to non-TIH materials (for example see GUIDE 128).

In order to identify appropriate isolation and protective action distances, use the following:

If you are dealing with a **TIH/WRM/Chemical warfare** material (highlighted entries in the index lists), the isolation and evacuation distances are found directly in the green-bordered pages. The guides (orange-bordered pages) also remind the user to refer to the green-bordered pages for evacuation specific information involving highlighted materials.

If you are dealing with a **non-TIH material but the guide refers to both TIH and non-TIH materials**, an immediate isolation distance is provided under the heading PUBLIC SAFETY as a precautionary measure to prevent injuries. It applies to the non-TIH materials only. In addition, for evacuation purposes, the guide informs the user under the title EVACUATION-Spill to increase, for non-highlighted materials, in the downwind direction, if necessary, the immediate isolation distance listed under "PUBLIC SAFETY". For example, GUIDE 131 – Flammable Liquids-Toxic, instructs the user to: "As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions." In case of a large spill, the isolation area could be expanded from 50 meters (150 feet) to a distance deemed as safe by the On-scene commander and emergency responders.

If you are dealing with a **non-TIH material and the guide refers only to non-TIH materials**, the immediate isolation and evacuation distances are specified as actual distances in the guide (orange-bordered pages) and are not referenced in the green-bordered pages.

**Note 1:** If an entry is highlighted in green in either the yellow-bordered or blue-bordered pages AND THERE IS NO FIRE, go directly to Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) and look up the ID number and name of material to obtain initial isolation and protective action distances. IF THERE IS A FIRE, or IF A FIRE IS INVOLVED, ALSO CONSULT the assigned guide (orange-bordered pages) and apply as appropriate the evacuation information shown under PUBLIC SAFETY.

**Note 2:** If the name in **Table 1** is shown with "**When Spilled In Water**", these materials produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water. Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material is **NOT** a TIH and this material is **NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange-bordered guide.

## PROTECTIVE CLOTHING

**Street Clothing and Work Uniforms.** These garments, such as uniforms worn by police and emergency medical services personnel, provide almost no protection from the harmful effects of dangerous goods.

**Structural Fire Fighters' Protective Clothing (SFPC).** This category of clothing, often called turnout or bunker gear, means the protective clothing normally worn by fire fighters during structural fire fighting operations. It includes a helmet, coat, pants, boots, gloves and a hood to cover parts of the head not protected by the helmet and facepiece. This clothing must be used with full-facepiece positive pressure self-contained breathing apparatus (SCBA). This protective clothing should, at a minimum, meet the OSHA Fire Brigades Standard (29 CFR 1910.156). Structural fire fighters' protective clothing provides limited protection from heat and cold, but may not provide adequate protection from the harmful vapors or liquids that are encountered during dangerous goods incidents. Each guide includes a statement about the use of SFPC in incidents involving those materials referenced by that guide. Some guides state that SFPC provides limited protection. In those cases, the responder wearing SFPC and SCBA may be able to perform an expedient, that is quick "in-and-out", operation. However, this type of operation can place the responder at risk of exposure, injury or death. The incident commander makes the decision to perform this operation only if an overriding benefit can be gained (i.e., perform an immediate rescue, turn off a valve to control a leak, etc.). The coverall-type protective clothing customarily worn to fight fires in forests or wildlands is not SFPC and **is not** recommended nor referred to elsewhere in this guidebook.

**Positive Pressure Self-Contained Breathing Apparatus (SCBA).** This apparatus provides a constant, positive pressure flow of air within the facepiece, even if one inhales deeply while doing heavy work. Use apparatus certified by NIOSH and the Department of Labor/Mine Safety and Health Administration in accordance with 42 CFR Part 84. Use it in accordance with the requirements for respiratory protection specified in OSHA 29 CFR 1910.134 (Respiratory Protection) and/or 29 CFR 1910.156 (f) (Fire Brigades Standard). Chemical-cartridge respirators or other filtering masks are not acceptable substitutes for positive pressure self-contained breathing apparatus. Demand-type SCBA does not meet the OSHA 29 CFR 1910.156 (f)(1)(i) of the Fire Brigades Standard. If it is suspected that a Chemical Warfare Agent (CW) is involved, the use of NIOSH-certified respirators with CBRN protection are highly recommended.

**Chemical Protective Clothing and Equipment.** Safe use of this type of protective clothing and equipment requires specific skills developed through training and experience. It is generally not available to, or used by, first responders. This type of special clothing may protect against one chemical, yet be readily permeated by chemicals for which it was not designed. Therefore, protective clothing should not be used unless it is compatible with the released material. This type of special clothing offers little or no protection against heat and/or cold. Examples of this type of equipment have been described as (1) Vapor Protective Suits (NFPA 1991), also known as Totally-Encapsulating Chemical Protective (TECP) Suits or Level A\* protection (OSHA 29 CFR 1910.120, Appendix A & B), and (2) Liquid-Splash

Protective Suits (NFPA 1992 & 1993), also known as Level B\* or C\* protection (OSHA 29 CFR 1910.120, Appendix A & B) or suits for chemical/biological terrorism incidents (NFPA 1994), class 1, 2 or 3 Ensembles and Standard CAN/CGSB/CSA-Z1610-11 – Protection of first responders from chemical, biological, radiological, and nuclear (CBRN) events (2011). No single protective clothing material will protect you from all dangerous goods. Do not assume any protective clothing is resistant to cold and/or heat or flame exposure unless it is so certified by the manufacturer (NFPA 1991 5-3 Flammability Resistance Test and 5-6 Cold Temperature Performance Test).

\* Consult glossary for additional protection levels under the heading “Protective Clothing”.

## **FIRE AND SPILL CONTROL**

### **FIRE CONTROL**

Water is the most common and generally most available fire extinguishing agent. Exercise caution in selecting a fire extinguishing method since there are many factors to be considered in an incident. Water may be ineffective in fighting fires involving some materials; its effectiveness depends greatly on the method of application.

Fires involving a spill of flammable liquids are generally controlled by applying a fire fighting foam to the surface of the burning material. Fighting flammable liquid fires requires foam concentrate which is chemically compatible with the burning material, correct mixing of the foam concentrate with water and air, and careful application and maintenance of the foam blanket. There are two general types of fire fighting foam: regular and alcohol-resistant. Examples of regular foam are protein-base, fluoroprotein, and aqueous film forming foam (AFFF). Some flammable liquids, including many petroleum products, can be controlled by applying regular foam. Other flammable liquids, including polar solvents (flammable liquids which are water soluble) such as alcohols and ketones, have different chemical properties. A fire involving these materials cannot be easily controlled with regular foam and requires application of alcohol-resistant foam. Polar-solvent fires may be difficult to control and require a higher foam application rate than other flammable liquid fires (see NFPA/ANSI Standards 11 and 11A for further information). Refer to the appropriate guide to determine which type of foam is recommended. Although it is impossible to make specific recommendations for flammable liquids which have subsidiary corrosive or toxic hazards, alcohol-resistant foam may be effective for many of these materials. The emergency response telephone number on the shipping document, or the appropriate emergency response agency, should be contacted as soon as possible for guidance on the proper fire extinguishing agent to use. The final selection of the agent and method depends on many factors such as incident location, exposure hazards, size of the fire, environmental concerns, as well as the availability of extinguishing agents and equipment at the scene.

### **WATER REACTIVE MATERIALS**

Water is sometimes used to flush spills and to reduce or direct vapors in spill situations. Some of the materials covered by the guidebook can react violently or even explosively with water. In these cases, consider letting the fire burn or leaving the spill alone (except to prevent its spreading by diking) until additional technical advice can be obtained. The applicable guides clearly warn you of these potentially dangerous reactions. These materials require technical advice since

- (1) water getting inside a ruptured or leaking container may cause an explosion;
- (2) water may be needed to cool adjoining containers to prevent their rupturing (exploding) or further spread of the fires;

- (3) water may be effective in mitigating an incident involving a water-reactive material only if it can be applied at a sufficient flooding rate for an extended period; and
- (4) the products from the reaction with water may be more toxic, corrosive, or otherwise more undesirable than the product of the fire without water applied.

When responding to an incident involving water-reactive materials, take into account the existing conditions such as wind, precipitation, location and accessibility to the incident, as well as the availability of the agents to control the fire or spill. Because there are variables to consider, the decision to use water on fires or spills involving water-reactive materials should be based on information from an authoritative source; for example, a producer of the material, who can be contacted through the emergency response telephone number or the appropriate emergency response agency.

## **VAPOR CONTROL**

Limiting the amount of vapor released from a pool of flammable or corrosive liquids is an operational concern. It requires the use of proper protective clothing, specialized equipment, appropriate chemical agents, and skilled personnel. Before engaging in vapor control, get advice from an authoritative source as to the proper tactics.

There are several ways to minimize the amount of vapors escaping from pools of spilled liquids, such as special foams, adsorbing agents, absorbing agents, and neutralizing agents. To be effective, these vapor control methods must be selected for the specific material involved and performed in a manner that will mitigate, not worsen, the incident.

Where specific materials are known, such as at manufacturing or storage facilities, it is desirable for the dangerous goods response team to prearrange with the facility operators to select and stockpile these control agents in advance of a spill. In the field, first responders may not have the most effective vapor control agent for the material available. They are likely to have only water and only one type of fire fighting foam on their vehicles. If the available foam is inappropriate for use, they are likely to use water spray. Because the water is being used to form a vapor seal, care must be taken not to churn or further spread the spill during application. Vapors that do not react with water may be directed away from the site using the air currents surrounding the water spray. Before using water spray or other methods to safely control vapor emission or to suppress ignition, obtain technical advice, based on specific chemical name identification.

## **BLEVE (Boiling Liquid Expanding Vapor Explosion)**

The following section presents, in a two-page format, background information on BLEVEs and includes a chart that provides important safety-related information to consider when confronted with this type of situation involving Liquefied Petroleum Gases (LPG), UN1075. LPGs include the following flammable gases; Butane, UN1011; Butylene, UN1012; Isobutylene, UN1055; Propylene, UN2077; Isobutane, UN1969; and Propane, UN1978.

### **What are the main hazards from a BLEVE?**

The main hazards from a propane or LPG BLEVE are:

- fire
- thermal radiation from the fire
- blast
- projectiles

The danger from these decreases as you move away from the BLEVE centre. The furthest reaching hazard is projectiles.

This information was prepared for Transport Canada, the Canadian Association of Fire Chiefs and the Propane Gas Association of Canada Inc. by Dr. A. M. Birk, Queen's University, Kingston (Ontario) Canada.

For a free download or to order a DVD of the video ***BLEVE Response and Prevention***, please visit <<http://www.tc.gc.ca/eng/tdg/bleve-1119.htm>> or contact us at 1-888-830-4911, or by Email: [MPS@tc.gc.ca](mailto:MPS@tc.gc.ca).

To download a free copy, first click on the green "View/Download" button and then left-click the video link to view the video or right-click to download a copy by selecting "Save target as" to save to your computer.

## **BLEVE – SAFETY PRECAUTIONS**

**Use with caution.** The following table gives a summary of tank properties, critical times, critical distances and cooling water flow rates for various tank sizes. This table is provided to give responders some guidance but it should be used with caution.

**Tank dimensions are approximate** and can vary depending on the tank design and application.

**Minimum time to failure** is based on **severe torch fire impingement** on the vapour space of a tank in good condition, and is approximate. Tanks may fail earlier if they are damaged or corroded. Tanks may fail minutes or hours later than these minimum times depending on the conditions. It has been assumed here that the tanks are not equipped with thermal barriers or water spray cooling.

**Minimum time to empty** is based on an engulfing fire with a properly sized pressure relief valve. If the tank is only partially engulfed then time to empty will increase (i.e., if tank is 50% engulfed then the tanks will take twice as long to empty). Once again, it has been assumed that the tank is not equipped with a thermal barrier or water spray.

**Tanks equipped with thermal barriers or water spray cooling** significantly increase the times to failure and the times to empty. A thermal barrier can reduce the heat input to a tank by a factor of ten or more. This means it could take ten times as long to empty the tank through the Pressure Relief Valve (PRV).

**Fireball radius and emergency response distance** is based on mathematical equations and is approximate. They assume spherical fireballs and this is not always the case.

**Two safety distances for public evacuation.** The minimum distance is based on tanks that are launched with a small elevation angle (i.e., a few degrees above horizontal). This is most common for horizontal cylinders. The preferred evacuation distance has more margin of safety since it assumes the tanks are launched at a 45 degree angle to the horizontal. This might be more appropriate if a vertical cylinder is involved.

It is understood that these distances are very large and may not be practical in a highly populated area. However, it should be understood that the risks increase rapidly the closer you are to a BLEVE. Keep in mind that the furthest reaching projectiles tend to come off in the zones 45 degrees on each side of the tank ends.

**Water flow rate is based on  $^5\sqrt{\text{capacity (USgal)}}$  = usgal/min needed to cool tank metal.**

**Warning:** the data given are approximate and should only be used with extreme caution. For example, where times are given for tank failure or tank emptying through the pressure relief valve – these times are typical but they can vary from situation to situation. Therefore, never risk life based on these times.



BLEVE (USE WITH CAUTION)										
Capacity	Diameter	Length	Propane Mass	Minimum time to failure for severe torch	Approximate time to empty for engulfing fire	Fireball radius	Emergency response distance	Minimum evacuation distance	Preferred evacuation distance	Cooling water flow rate
Litres (Gallons)	Meters (Feet)	Meters (Feet)	Kilograms (Lbs)	Minutes	Minutes	Meters (Feet)	Meters (Feet)	Meters (Feet)	Meters (Feet)	Litres/min USgal/min
100 (38.6)	0.3 (1)	1.5 (4.9)	40 (88)	4	8	10 (33)	90 (295)	154 (505)	307 (1007)	94.6
400 (154.4)	0.61 (2)	1.5 (4.9)	160 (353)	4	12	16 (53)	90 (295)	244 (801)	488 (1601)	188.3
2000 (772)	0.96 (3.2)	3 (9.8)	800 (1764)	5	18	28 (92)	111 (364)	417 (1368)	834 (2736)	424
4000 (1544)	1 (3.3)	4.9 (16.1)	1600 (3527)	5	20	35 (115)	140 (459)	525 (1722)	1050 (3445)	598
8000 (3088)	1.25 (4.1)	6.5 (21.3)	3200 (7055)	6	22	44 (144)	176 (577)	661 (2169)	1323 (4341)	848
22000 (8492)	2.1 (6.9)	6.7 (22)	8800 (19400)	7	28	62 (203)	247 (810)	926 (3038)	1852 (6076)	1404
42000 (16212)	2.1 (6.9)	11.8 (38.7)	16800 (37037)	7	32	77 (253)	306 (1004)	1149 (3770)	2200 (7218)	1938
82000 (31652)	2.75 (9)	13.7 (45)	32800 (72310)	8	40	96 (315)	383 (1257)	1435 (4708)	2200 (7218)	2710
140000 (54040)	3.3 (10.8)	17.2 (56.4)	56000 (123457)	9	45	114 (374)	457 (1499)	1715 (5627)	2200 (7218)	3539

## **CRIMINAL/TERRORIST USE OF CHEMICAL/BIOLOGICAL/RADIOLOGICAL AGENTS**

The following is intended to supply information to first responders for use in making a preliminary assessment of a situation that they suspect involves criminal/terrorist use of chemical, biological agents and/or radioactive materials (CBRN). To aid in the assessment, a list of observable indicators of the use and/or presence of a CB agent or radioactive material is provided in the following paragraphs. This section ends with a Safe Standoff Distance Chart for various threats when Improvised Explosive Devices are involved.

### **DIFFERENCES BETWEEN A CHEMICAL, BIOLOGICAL AND RADIOLOGICAL AGENT**

Chemical and biological agents as well as radioactive materials can be dispersed in the air we breathe, the water we drink, or on surfaces we physically contact. Dispersion methods may be as simple as opening a container, using conventional (garden) spray devices, or as elaborate as detonating an improvised explosive device.

**Chemical Incidents** are characterized by the rapid onset of medical symptoms (minutes to hours) and easily observed signatures (colored residue, dead foliage, pungent odor, dead insects and animals).

**Biological Incidents** are characterized by the onset of symptoms in hours to days. Typically, there will be no characteristic signatures because biological agents are usually odorless and colorless. Because of the delayed onset of symptoms in a biological incident, the area affected may be greater due to the movement of infected individuals.

**Radiological Incidents** are characterized by the onset of symptoms, if any, in days to weeks or longer. Typically, there will be no characteristic signatures because radioactive materials are usually odorless and colorless. Specialized equipment is required to determine the size of the affected area, and whether the level of radioactivity presents an immediate or long-term health hazard. Because radioactivity is not detectable without special equipment, the affected area may be greater due to the migration of contaminated individuals.

At the levels created by most probable sources, not enough radiation would be generated to kill people or cause severe illness. In a radiological incident generated by a “dirty bomb”, or Radiological Dispersal Device (RDD), in which a conventional explosive is detonated to spread radioactive contamination, the primary hazard is from the explosion. However, certain radioactive materials dispersed in the air could contaminate up to several city blocks, creating fear and possibly panic, and requiring potentially costly cleanup.

### **INDICATORS OF A POSSIBLE CHEMICAL INCIDENT**

#### **Dead animals/birds/fish**

Not just an occasional road kill, but numerous animals (wild and domestic, small and large), birds, and fish in the same area.

#### **Lack of insect life**

If normal insect activity (ground, air, and/or water) is missing, check the ground/water surface/shore line for dead insects. If near water, check for dead fish/aquatic birds.

## **INDICATORS OF A POSSIBLE CHEMICAL INCIDENT (Continued)**

<b>Unexplained odors</b>	Smells may range from fruity to flowery to sharp/pungent to garlic/ horseradish-like to bitter almonds/peach kernels to new mown hay. It is important to note that the particular odor is completely out of character with its surroundings.
<b>Unusual numbers of dying or sick people (mass casualties)</b>	Health problems including nausea, disorientation, difficulty in breathing, convulsions, localized sweating, conjunctivitis (reddening of eyes/nerve agent symptoms), erythema (reddening of skin/vesicant symptoms) and death.
<b>Pattern of casualties</b>	Casualties will likely be distributed downwind, or if indoors, by the air ventilation system.
<b>Blisters/rashes</b>	Numerous individuals experiencing unexplained water-like blisters, weals (like bee stings), and/or rashes.
<b>Illness in confined area</b>	Different casualty rates for people working indoors versus outdoors dependent on where the agent was released.
<b>Unusual liquid droplets</b>	Numerous surfaces exhibit oily droplets/film; numerous water surfaces have an oily film. (No recent rain.)
<b>Different looking areas</b>	Not just a patch of dead weeds, but trees, shrubs, bushes, food crops, and/or lawns that are dead, discolored, or withered. (No current drought.)
<b>Low-lying clouds</b>	Low-lying cloud/fog-like condition that is not consistent with its surroundings.
<b>Unusual metal debris</b>	Unexplained bomb/munitions-like material, especially if it contains a liquid.

## **INDICATORS OF A POSSIBLE BIOLOGICAL INCIDENT**

<b>Unusual numbers of sick or dying people or animals</b>	Any number of symptoms may occur. Casualties may occur hours to days after an incident has occurred. The time required before symptoms are observed is dependent on the agent used.
<b>Unscheduled and unusual spray being disseminated</b>	Especially if outdoors during periods of darkness.
<b>Abandoned spray devices</b>	Devices may not have distinct odors.

## **INDICATORS OF A POSSIBLE RADIOLOGICAL INCIDENT**

<b>Radiation Symbols</b>	Containers may display a “propeller” radiation symbol.
<b>Unusual metal debris</b>	Unexplained bomb/munitions-like material.

## **INDICATORS OF A POSSIBLE RADIOLOGICAL INCIDENT (continued)**

<b>Heat-emitting material</b>	Material that is hot or seems to emit heat without any sign of an external heat source.
<b>Glowing material</b>	Strongly radioactive material may emit or cause radioluminescence.
<b>Sick people/animals</b>	In very improbable scenarios there may be unusual numbers of sick or dying people or animals. Casualties may occur hours to days or weeks after an incident has occurred. The time required before symptoms are observed is dependent on the radioactive material used, and the dose received. Possible symptoms include skin reddening or vomiting.

## **PERSONAL SAFETY CONSIDERATIONS**

When approaching a scene that may involve CB agents or radioactive materials, the most critical consideration is the safety of oneself and other responders. Protective clothing and respiratory protection of appropriate level of safety must be used. In incidents where it is suspected that CBRN materials have been used as weapons, NIOSH-certified respirators with CBRN protection are highly recommended. Be aware that the presence and identification of CB agents or radioactive materials may not be verifiable, especially in the case of biological or radiological agents. The following actions/measures to be considered are applicable to either a chemical, biological or radiological incident. The guidance is general in nature, not all encompassing, and its applicability should be evaluated on a case-by-case basis.

**Approach and response strategies.** Protect yourself and use a safe approach (minimize any exposure time, maximize the distance between you and the item that is likely to harm you, use cover as protection and wear appropriate personal protective equipment and respiratory protection). Identify and estimate the hazard by using indicators as provided above. Isolate the area and secure the scene; potentially contaminated people should be isolated and decontaminated as soon as possible. To the extent possible, take measures to limit the spread of contamination. In the event of a chemical incident, the fading of chemical odors is not necessarily an indication of reduced vapor concentrations. Some chemicals deaden the senses giving the false perception that the chemical is no longer present.

If there is any indication that an area may be contaminated with radioactive materials, including the site of any non-accidental explosion, responder personnel should be equipped with radiation detection equipment that would alert them if they are entering a radiologically compromised environment, and should have received adequate training in its use. This equipment should be designed in such a way that it can also alert the responders when an unacceptable ambient dose rate or ambient dose has been reached.

**Initial actions** to consider in a potential CBRN/Hazmat Terrorism Event:

- Avoid using cell phones, radios, etc. within 100 meters (300 feet) of a suspect device
- NOTIFY your local police by calling 911.
- Set up Incident command upwind and uphill of the area.
- Do NOT touch or move suspicious packages/containers.
- Be cautious regarding potential presence of secondary devices (e.g. Improvised Explosive Devices, IEDs).
- Avoid contamination.
- Limit access to only those responsible for rescue of victims or assessment of unknown materials or devices.
- Evacuate and isolate individuals potentially exposed to dangerous goods/hazardous materials.
- Isolate contaminated areas and secure the scene for analysis of material.

**Decontamination measures.** Emergency responders should follow standard decontamination procedures (flush-strip-flush). Mass casualty decontamination should begin as soon as possible by stripping (all clothing) and flushing (soap and water). If biological agents are involved or suspected, careful washing and use of a brush are more effective. If chemical agents are suspected, the most important and effective decontamination will be the one done within the first one or two minutes. If possible, further decontamination should be performed using a 0.5% hypochlorite solution (1 part household bleach mixed with 9 parts water). If biological agents are suspected, a contact time of 10 to 15 minutes should be allowed before rinsing. The solution can be used on soft tissue wounds, but must not be used in eyes or open wounds of the abdomen, chest, head, or spine. For further information contact the agencies listed in this guidebook.

For persons contaminated with radioactive material, remove them to a low radiation area if necessary. Remove their clothing and place it in a clearly marked sealed receptacle, such as a plastic bag, for later testing. Use decontamination methods described above, but avoid breaking the skin, e.g., from shaving, or overly vigorous brushing. External radiological contamination on intact skin surface rarely causes a high enough dose to be a hazard to either the contaminated person or the first responders. For this reason, except in very unusual circumstances, an injured person who is also radiologically contaminated should be medically stabilized, taking care to minimize the spread of the contamination to the extent possible, before decontamination measures are initiated.

**Note:** The above information was developed in part by the Department of National Defence (Canada), the U.S. Department of the Army, Aberdeen Proving Ground and the Federal Bureau of Investigation (FBI).

## Improvised Explosive Device (IED) SAFE STAND OFF DISTANCE

	Threat Description	Explosives Mass (TNT equivalent) <sup>1</sup>		Building Evacuation Distance <sup>2</sup>		Outdoor Evacuation Distance <sup>3</sup>	
High Explosives (TNT Equivalent)	Pipe Bomb	5 lbs	2.3 kg	70 ft	21 m	850 ft	259 m
	Suicide Belt	10 lbs	4.5 kg	90 ft	27 m	1,080 ft	330 m
	Suicide Vest	20 lbs	9 kg	110 ft	34 m	1,360 ft	415 m
	Briefcase/Suitcase Bomb	50 lbs	23 kg	150 ft	46 m	1,850 ft	564 m
	Compact Sedan	500 lbs	227 kg	320 ft	98 m	1,500 ft	457 m
	Sedan	1,000 lbs	454 kg	400 ft	122 m	1,750 ft	534 m
	Passenger/Cargo Van	4,000 lbs	1 814 kg	640 ft	195 m	2,750 ft	838 m
	Small Moving Van/ Delivery Truck	10,000 lbs	4 536 kg	860 ft	263 m	3,750 ft	1 143 m
	Moving Van/Water Truck	30,000 lbs	13 608 kg	1,240 ft	375 m	6,500 ft	1 982 m
Semitrailer	60,000 lbs	27 216 kg	1,570 ft	475 m	7,000 ft	2 134 m	

	Threat Description	LPG Mass/ Volume <sup>1</sup>		Fireball Diameter <sup>4</sup>		Safe Distance <sup>5</sup>			
Liquefied Petroleum Gas (LPG - Butane or Propane)	Small LPG Tank	20 lbs/5 gal		9 kg/19 L		40 ft	12 m	160 ft	48 m
	Large LPG Tank	100 lbs/25 gal		45 kg/95 L		69 ft	21 m	276 ft	84 m
	Commercial/ Residential LPG Tank	2,000 lbs/500 gal		907 kg/1 893 L		184 ft	56 m	736 ft	224 m
	Small LPG Truck	8,000 lbs/2,000 gal		3 630 kg/7 570 L		292 ft	89 m	1,168 ft	356 m
	Semitanker LPG	40,000 lbs/10,000 gal		18 144 kg/37 850 L		499 ft	152 m	1,996 ft	608 m

<sup>1</sup> Based on the maximum amount of material that could reasonably fit into a container or vehicle. Variations possible.

<sup>2</sup> Governed by the ability of an unreinforced building to withstand severe damage or collapse.

<sup>3</sup> Governed by the greater of fragment throw distance or glass breakage/falling glass hazard distance. These distances can be reduced for personnel wearing ballistic protection. Note that the pipe bomb, suicide belt/vest, and briefcase/suitcase bomb are assumed to have a fragmentation characteristic that requires greater standoff distances than an equal amount of explosives in a vehicle.

<sup>4</sup> Assuming efficient mixing of the flammable gas with ambient air.

<sup>5</sup> Determined by U.S. firefighting practices wherein safe distances are approximately 4 times the flame height. Note that an LPG tank filled with high explosives would require a significantly greater standoff distance than if it were filled with LPG.

## NOTES

## Glossary

<b>AEGL(s)</b>	Acute Exposure Guideline Level(s), AEGLs represent threshold exposure limits for the general public after a once-in-a-lifetime, or rare, exposure and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. Three levels AEGL-1, AEGL-2 and AEGL-3 are developed for each of five exposure periods (10 and 30 minutes, 1 hour, 4 hours, and 8 hours) and are distinguished by varying degrees of severity of toxic effects; see AEGL-1, AEGL-2 and AEGL-3.
<b>AEGL-1</b>	AEGL-1 is the airborne concentration (expressed as parts per million or milligrams per cubic meter [ppm or mg/m <sup>3</sup> ]) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic, non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
<b>AEGL-2</b>	AEGL-2 is the airborne concentration (expressed as ppm or mg/m <sup>3</sup> ) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
<b>AEGL-3</b>	AEGL-3 is the airborne concentration (expressed as ppm or mg/m <sup>3</sup> ) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
<b>Alcohol resistant foam</b>	A foam that is resistant to “polar” chemicals such as ketones and esters which may break down other types of foam.
<b>Biological agents</b>	Living organisms that cause disease, sickness and mortality in humans. Anthrax and Ebola are examples of biological agents. <b>Refer to GUIDE 158.</b>
<b>Blister agents (vesicants)</b>	Substances that cause blistering of the skin. Exposure is through liquid or vapor contact with any exposed tissue (eyes, skin, lungs). Mustard (H), Distilled Mustard (HD), Nitrogen Mustard (HN) and Lewisite (L) are blister agents. <b>Symptoms:</b> Red eyes, skin irritation, burning of skin, blisters, upper respiratory damage, cough, hoarseness.



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<b>Blood agents</b>	Substances that injure a person by interfering with cell respiration (the exchange of oxygen and carbon dioxide between blood and tissues). Hydrogen cyanide (AC) and Cyanogen chloride (CK) are blood agents.  <b>Symptoms:</b> Respiratory distress, headache, unresponsiveness, seizures, coma.
<b>Burn</b>	Refers to either a chemical or thermal burn, the former may be caused by corrosive substances and the latter by liquefied cryogenic gases, hot molten substances, or flames.
<b>CBRN</b>	Chemical, biological, radiological or nuclear warfare agent.
<b>Choking agents</b>	Substances that cause physical injury to the lungs. Exposure is through inhalation. In extreme cases, membranes swell and lungs become filled with liquid (pulmonary edema). Death results from lack of oxygen; hence, the victim is “choked”. Phosgene (CG) is a choking agent.  <b>Symptoms:</b> Irritation to eyes/nose/throat, respiratory distress, nausea and vomiting, burning of exposed skin.
<b>CO<sub>2</sub></b>	Carbon dioxide gas.
<b>Cold zone</b>	Area where the command post and support functions that are necessary to control the incident are located. This is also referred to as the clean zone, green zone or support zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472)
<b>Combustible liquid</b>	Liquids which have a flash point greater than 60°C (140°F) and below 93°C (200°F). U.S. regulations permit a flammable liquid with a flash point between 38°C (100°F) and 60°C (140°F) to be reclassified as a combustible liquid.
<b>Compatibility Group</b>	Letters identify explosives that are deemed to be compatible. The definition of these Compatibility Groups in this Glossary are intended to be descriptive. Please consult the transportation of dangerous goods/hazardous materials or explosives regulations of your jurisdiction for the exact wording of the definitions. Class 1 materials are considered to be “compatible” if they can be transported together without significantly increasing either the probability of an incident or, for a given quantity, the magnitude of the effects of such an incident.  A Substances which are expected to mass detonate very soon after fire reaches them.

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- B Articles which are expected to mass detonate very soon after fire reaches them.
- C Substances or articles which may be readily ignited and burn violently without necessarily exploding.
- D Substances or articles which may mass detonate (with blast and/or fragment hazard) when exposed to fire.
- E&F Articles which may mass detonate in a fire.
- G Substances and articles which may mass explode and give off smoke or toxic gases.
- H Articles which in a fire may eject hazardous projectiles and dense white smoke.
- J Articles which may mass explode.
- K Articles which in a fire may eject hazardous projectiles and toxic gases.
- L Substances and articles which present a special risk and could be activated by exposure to air or water.
- N Articles which contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental ignition or propagation.
- S Packaged substances or articles which, if accidentally initiated, produce effects that are usually confined to the immediate vicinity.

### **Control zones**

Designated areas at dangerous goods incidents, based on safety and the degree of hazard. Many terms are used to describe control zones; however, in this guidebook, these zones are defined as the hot/exclusion/red/restricted zone, warm/contamination reduction/yellow/limited access zone, and cold/support/green/clean zone. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472)

### **Cryogenic liquid**

A refrigerated, liquefied gas that has a boiling point colder than -90°C (-130°F) at atmospheric pressure.

### **Dangerous Water Reactive Material**

Produces significant toxic gas when it comes in contact with water.

**Decomposition products** Products of a chemical or thermal break-down of a substance.

## Glossary

<b>Decontamination</b>	The removal of dangerous goods from personnel and equipment to the extent necessary to prevent potential adverse health effects. Always avoid direct or indirect contact with dangerous goods; however, if contact occurs, personnel should be decontaminated as soon as possible. Since the methods used to decontaminate personnel and equipment differ from one chemical to another, contact the chemical manufacturer, through the agencies listed on the inside back cover, to determine the appropriate procedure. Contaminated clothing and equipment should be removed after use and stored in a controlled area (warm/contamination reduction/yellow/limited access zone) until cleanup procedures can be initiated. In some cases, protective clothing and equipment cannot be decontaminated and must be disposed of in a proper manner.
<b>Dry chemical</b>	A preparation designed for fighting fires involving flammable liquids, pyrophoric substances and electrical equipment. Common types contain sodium bicarbonate or potassium bicarbonate.
<b>Edema</b>	The accumulation of an excessive amount of watery fluid in cells and tissues. Pulmonary edema is an excessive buildup of water in the lungs, for instance, after inhalation of a gas that is corrosive to lung tissue.
<b>ERPG(s)</b>	Emergency Response Planning Guideline(s). Values intended to provide estimates of concentration ranges above which one could reasonably anticipate observing adverse health effects; see ERPG-1, ERPG-2 and ERPG-3.
<b>ERPG-1</b>	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor.
<b>ERPG-2</b>	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.
<b>ERPG-3</b>	The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.
<b>Flammable liquid</b>	A liquid that has a flash point of 60°C (140°F) or lower.

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<b>Flash point</b>	Lowest temperature at which a liquid or solid gives off vapor in such a concentration that, when the vapor combines with air near the surface of the liquid or solid, a flammable mixture is formed. Hence, the lower the flash point, the more flammable the material.
<b>Hazard zones (Inhalation Hazard Zones)</b>	<b>HAZARD ZONE A:</b> Gases: LC50 of less than or equal to 200 ppm, Liquids: V equal to or greater than 500 LC50 and LC50 less than or equal to 200 ppm, <b>HAZARD ZONE B:</b> Gases: LC50 greater than 200 ppm and less than or equal to 1000 ppm, Liquids: V equal to or greater than 10 LC50; LC50 less than or equal to 1000 ppm and criteria for Hazard Zone A are not met. <b>HAZARD ZONE C:</b> LC50 greater than 1000 ppm and less than or equal to 3000 ppm, <b>HAZARD ZONE D:</b> LC50 greater than 3000 ppm and less than or equal to 5000 ppm.
<b>Hot zone</b>	Area immediately surrounding a dangerous goods incident which extends far enough to prevent adverse effects from released dangerous goods to personnel outside the zone. This zone is also referred to as exclusion zone, red zone or restricted zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472)
<b>IED</b>	See "Improvised Explosive Device".
<b>Immiscible</b>	In this guidebook, means that a material does not mix readily with water.
<b>Improvised Explosive Device</b>	A bomb that is manufactured from commercial, military or homemade explosives.
<b>Large spill</b>	A spill that involves quantities that are greater than 208 liters (55 US gallons) for liquids and greater than 300 kilograms (660 pounds) for solids.
<b>LC50</b>	Lethal concentration 50. The concentration of a material administered by inhalation that is expected to cause the death of 50% of an experimental animal population within a specified time. (Concentration is reported in either ppm or mg/m <sup>3</sup> )

## Glossary

<b>Mass explosion</b>	Explosion which affects almost the entire load virtually instantaneously.
<b>mg/m<sup>3</sup></b>	Milligrams of a material per cubic meter of air.
<b>Miscible</b>	In this guidebook, means that a material mixes readily with water.
<b>mL/m<sup>3</sup></b>	Milliliters of a material per cubic meter of air. (1 mL/m <sup>3</sup> equals 1 ppm)
<b>Nerve agents</b>	<p>Substances that interfere with the central nervous system. Exposure is primarily through contact with the liquid (via skin and eyes) and secondarily through inhalation of the vapor. Tabun (GA), Sarin (GB), Soman (GD) and VX are nerve agents.</p> <p><b>Symptoms:</b> Pinpoint pupils, extreme headache, severe tightness in the chest, dyspnea, runny nose, coughing, salivation, unresponsiveness, seizures.</p>
<b>Non-polar</b>	See "Immiscible".
<b>n.o.s.</b>	These letters refer to "not otherwise specified". The entries which use this description are generic names such as "Corrosive liquid, n.o.s." This means that the actual chemical name for that corrosive liquid is not listed in the regulations; therefore, a generic name must be used to describe it on shipping papers.
<b>Noxious</b>	In this guidebook, means that a material may be harmful or injurious to health or physical well-being.
<b>Oxidizer</b>	A chemical which supplies its own oxygen and which helps other combustible material burn more readily.
<b>P</b>	The letter ( <b>P</b> ) following a guide number in the yellow-bordered and blue-bordered pages identifies a material which may polymerize violently under high temperature conditions or contamination with other products. It is used to identify materials that have a strong potential for polymerization in the absence of an inhibitor or due to the inhibitor depletion caused by the accident conditions. This polymerization will produce heat and high pressure buildup in containers which may explode or rupture. (See polymerization below)
<b>Packing Group</b>	<p>The Packing Group (PG) is assigned based on the degree of danger presented by the hazardous material:</p> <p>PG I : Great danger PG II : Medium danger PG III : Minor danger</p>

## Glossary

<b>PG</b>	See Packing Group
<b>pH</b>	pH is a value that represents the acidity or alkalinity of a water solution. Pure water has a pH of 7. A pH value below 7 indicates an acid solution (a pH of 1 is extremely acidic). A pH above 7 indicates an alkaline solution (a pH of 14 is extremely alkaline). Acids and alkalis (bases) are commonly referred to as corrosive materials.
<b>PIH</b>	Poison Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled. (Same as TIH)
<b>Polar</b>	See "Miscible".
<b>Polymerization</b>	This term describes a chemical reaction which is generally associated with the production of plastic substances. Basically, the individual molecules of the chemical (liquid or gas) react with each other to produce what can be described as a long chain. These chains can be formed in many useful applications. A well known example is the styrofoam (polystyrene) coffee cup which is formed when liquid molecules of styrene react with each other or polymerize forming a solid, therefore changing the name from styrene to polystyrene (poly means many).
<b>ppm</b>	Parts per million. (1 ppm equals 1 mL/m <sup>3</sup> )
<b>Protective clothing</b>	<p>Includes both respiratory and physical protection. One cannot assign a level of protection to clothing or respiratory devices separately. These levels were accepted and defined by response organizations such as U.S. Coast Guard, NIOSH, and U.S. EPA.</p> <p>Level A: SCBA plus totally encapsulating chemical resistant clothing (permeation resistant).</p> <p>Level B: SCBA plus hooded chemical resistant clothing (splash suit).</p> <p>Level C: Full or half-face respirator plus hooded chemical resistant clothing (splash suit).</p> <p>Level D: Coverall with no respiratory protection.</p>
<b>Pyrophoric</b>	A material which ignites spontaneously upon exposure to air (or oxygen).

## Glossary

<b>Radiation Authority</b>	As referred to in GUIDES 161 through 166 for radioactive materials, the Radiation Authority is either a Federal, state/provincial agency or state/province designated official. The responsibilities of this authority include evaluating radiological hazard conditions during normal operations and during emergencies. If the identity and telephone number of the authority are not known by emergency responders, or included in the local response plan, the information can be obtained from the agencies listed on the inside back cover. They maintain a periodically updated list of radiation authorities.
<b>Radioactivity</b>	The property of some substances to emit invisible and potentially harmful radiation.
<b>Refrigerated liquid</b>	See “Cryogenic liquid”.
<b>Small spill</b>	A spill that involves quantities that are less than 208 liters (55 U.S. Gallons) for liquids and less than 300 kilograms (660 pounds) for solids.
<b>Straight (solid) stream</b>	Method used to apply or distribute water from the end of a hose. The water is delivered under pressure for penetration. In an efficient straight (solid) stream, approximately 90% of the water passes through an imaginary circle 38 cm (15 inches) in diameter at the breaking point. Hose (solid or straight) streams are frequently used to cool tanks and other equipment exposed to flammable liquid fires, or for washing burning spills away from danger points. However, straight streams will cause a spill fire to spread if improperly used or when directed into open containers of flammable and combustible liquids.
<b>TIH</b>	Toxic Inhalation Hazard. Term used to describe gases and volatile liquids that are toxic when inhaled. (Same as PIH)
<b>V</b>	Saturated vapor concentration in air of a material in mL/m <sup>3</sup> (volatility) at 20°C and standard atmospheric pressure.
<b>Vapor density</b>	Weight of a volume of pure vapor or gas (with no air present) compared to the weight of an equal volume of dry air at the same temperature and pressure. A vapor density less than 1 (one) indicates that the vapor is lighter than air and will tend to rise. A vapor density greater than 1 (one) indicates that the vapor is heavier than air and may travel along the ground.
<b>Vapor pressure</b>	Pressure at which a liquid and its vapor are in equilibrium at a given temperature. Liquids with high vapor pressures evaporate rapidly.

## Glossary

<b>Viscosity</b>	Measure of a liquid's internal resistance to flow. This property is important because it indicates how fast a material will leak out through holes in containers or tanks.
<b>Warm zone</b>	Area between Hot and Cold zones where personnel and equipment decontamination and hot zone support take place. It includes control points for the access corridor and thus assists in reducing the spread of contamination. Also referred to as the contamination reduction corridor (CRC), contamination reduction zone (CRZ), yellow zone or limited access zone in other documents. (EPA Standard Operating Safety Guidelines, OSHA 29 CFR 1910.120, NFPA 472)
<b>Water-sensitive</b>	Substances which may produce flammable and/or toxic decomposition products upon contact with water.
<b>Water spray (fog)</b>	<p>Method or way to apply or distribute water. The water is finely divided to provide for high heat absorption. Water spray patterns can range from about 10 to 90 degrees. Water spray streams can be used to extinguish or control the burning of a fire or to provide exposure protection for personnel, equipment, buildings, etc. <b>(This method can be used to absorb vapors, knock-down vapors or disperse vapors. Direct a water spray (fog), rather than a straight (solid) stream, into the vapor cloud to accomplish any of the above).</b></p> <p>Water spray is particularly effective on fires of flammable liquids and volatile solids having flash points above 37.8°C (100°F).</p> <p>Regardless of the above, water spray can be used successfully on flammable liquids with low flash points. The effectiveness depends particularly on the method of application. With proper nozzles, even gasoline spill fires of some types have been extinguished when coordinated hose lines were used to sweep the flames off the surface of the liquid. Furthermore, water spray carefully applied has frequently been used with success in extinguishing fires involving flammable liquids with high flash points (or any viscous liquids) by causing frothing to occur only on the surface, and this foaming action blankets and extinguishes the fire.</p>



## **PUBLICATION DATA**

The 2012 Emergency Response Guidebook (ERG2012) was prepared by the staff of Transport Canada, the U.S. Department of Transportation, and the Secretariat of Communications and Transport of Mexico with the assistance of many interested parties from government and industry including the collaboration of CIQUIME of Argentina. The principal authors of the ERG are Transport Canada's Michel Cloutier and U.S. DOT's George Cushmac. Printing and publication services are provided through U.S. DOT's Pipeline and Hazardous Materials Safety Administration, (PHMSA) Outreach, Training, and Grants Division.

ERG2012 is based on earlier Transport Canada, U.S. DOT, and Secretariat of Communications and Transport emergency response guidebooks. ERG2012 is published in three languages: English, French and Spanish. The Emergency Response Guidebook has been translated and printed in other languages, including Chinese, German, Hebrew, Japanese, Portuguese, Korean, Hungarian, Polish, Turkish and Thai.

We encourage countries that wish to translate this Guidebook to please contact any of the websites or telephone numbers in the next paragraph.

## **DISTRIBUTION OF THIS GUIDEBOOK**

The primary objective is to place one copy of the ERG2012 in each publicly owned emergency service vehicle through distribution to Federal, state, provincial and local public safety authorities. The distribution of this guidebook is being accomplished through the voluntary cooperation of a network of key agencies. Emergency service organizations that have not yet received copies of ERG2012 should contact the respective distribution center in their country, state or province. In the U.S., information about the distribution center for your location may be obtained from the Office of Hazardous Materials Safety web site at <http://hazmat.dot.gov> or call 202-366-4900. In Canada, contact CANUTEC at 613-992-4624 or via the web site at < <http://www.canutec.gc.ca> for information >. In Mexico, call SCT at 52-55-5684-1275 or 684-0188 or via email at [iflores@sct.gob.mx](mailto:iflores@sct.gob.mx). In Argentina, call CIQUIME at 011-4613-1100, or via the web site at <http://www.ciquime.org.ar>, or via email at [gre2012@ciquime.org.ar](mailto:gre2012@ciquime.org.ar)

## **REPRODUCTION AND RESALE**

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Constructive comments concerning ERG2012 are solicited; in particular, comments concerning its use in handling incidents involving dangerous goods. Comments should be addressed to:

**In Canada:**

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Transport Dangerous Goods  
Transport Canada  
Ottawa, Ontario  
Canada K1A 0N5

Phone: 613-992-4624 (information)

Fax: 613-954-5101

Email: [canutec@tc.gc.ca](mailto:canutec@tc.gc.ca)

**In the U.S.:**

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Pipeline and Hazardous Materials Safety Administration  
Outreach, Training, and Grants Division (PHH-50)  
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The Emergency Response Guidebook is normally revised and reissued every four years. However, in the event of a significant mistake, omission or change in the state of knowledge, special instructions to change the guidebook (in pen-and-ink, with paste-over stickers, or with a supplement) may be issued.

Users of this guidebook should check periodically (about every 6 months) to make sure their version is current. Changes should be annotated below. Contact:

**DOT/PHMSA**

<http://hazmat.dot.gov/pubs/erg/guidebook.htm>

**TRANSPORT CANADA**

<http://www.tc.gc.ca/eng/canutec/guide-guide-338.htm>

**CIQUIME**

<http://www.ciquime.org.ar>

*This guidebook incorporates changes dated:*

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## CANADA AND UNITED STATES NATIONAL RESPONSE CENTERS

### **CANADA**

#### 1. CANUTEC

**CANUTEC** is the **Canadian Transport Emergency Centre** operated by the Transport Dangerous Goods Directorate of Transport Canada.

**CANUTEC** provides a national bilingual (French and English) advisory service and is staffed by professional scientists experienced and trained in interpreting technical information and providing emergency response advice.

**In an emergency, CANUTEC may be called collect at 613-996-6666 (24 hours)  
\*666 cellular (Press Star 666, Canada only)**

In a non-emergency situation, please call the information line at 613-992-4624 (24 hours).

#### 2. PROVINCIAL/TERRITORIAL AGENCIES

Although technical information and emergency response assistance can be obtained from **CANUTEC**, there are federal, provincial and territorial regulations requiring the reporting of dangerous goods incidents to certain authorities.

The following list of provincial/territorial agencies is supplied for your convenience.

Province	Emergency Authority and/or Telephone Number
Alberta .....	Local Police and Provincial Authorities 1-800-272-9600 or 780-422-9600
British Columbia .....	Local Police and Provincial Authorities 1-800-663-3456
Manitoba.....	Provincial Authority 204-945-4888 and Local Police or fire brigade, as appropriate
New Brunswick.....	Local Police or 1-800-565-1633 or 902-426-6030
Newfoundland and Labrador .....	Local Police and 709-772-2083
Northwest Territories .....	867-920-8130
Nova Scotia .....	Local Police or 1-800-565-1633 or 902-426-6030
Nunavut.....	Local Police and 867-920-8130 or 1-800-693-1666
Ontario.....	Local Police
Prince Edward Island.....	Local Police or 1-800-565-1633 or 902-426-6030
Quebec.....	Local Police
Saskatchewan.....	Local Police or 1-800-667-7525
Yukon Territory.....	867-667-7244

## **NOTE:**

1. The appropriate federal agency must be notified in the case of rail, air or marine incidents.
2. The nearest police department must be notified in the case of lost, stolen or misplaced explosives, radioactive materials or infectious substances.
3. **CANUTEC** must be notified in the case of:
  - a. lost, stolen or unlawfully interfered with dangerous goods (except Class 9);
  - b. an incident involving infectious substances;
  - c. an accidental release from a cylinder that has suffered a catastrophic failure;
  - d. an incident where the shipping documents display **CANUTEC's** telephone number 613-996-6666 as the emergency telephone number; or
  - e. a dangerous goods incident in which a railway vehicle, a ship, an aircraft, an aerodrome or an air cargo facility is involved.

## **UNITED STATES**

### **NATIONAL RESPONSE CENTER (NRC)**

The NRC, which is operated by the U.S. Coast Guard, receives reports required when dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On-Scene Coordinator and concerned Federal agencies. Federal law requires that anyone who releases into the environment a reportable quantity of a hazardous substance (including oil when water is, or may be affected) or a material identified as a marine pollutant, must **immediately** notify the NRC. When in doubt as to whether the amount released equals the required reporting levels for these materials, the NRC should be notified.

**CALL NRC (24 hours)**

**1-800-424-8802**

(Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

**202-267-2675** in the District of Columbia

Calling the emergency response telephone number, CHEMTREC®, CHEMTEL, INC., INFOTRAC or 3E COMPANY, does not constitute compliance with regulatory requirements to call the NRC.

## **EMERGENCY RESPONSE TELEPHONE NUMBERS**

### **MEXICO**

#### **1. SETIQ**

**01-800-00-214-00** in the Mexican Republic  
For calls originating in Mexico City and the Metropolitan Area  
**5559-1588**  
For calls originating elsewhere, call  
**+52-55-5559-1588**

#### **2. CENACOM**

**01-800-00-413-00** in the Mexican Republic  
For calls originating in Mexico City and the Metropolitan Area  
**5128-0000 exts. 11470, 11471, 11472, 11473, 11474, 11475 and 11476**  
For calls originating elsewhere, call  
**+52-55-5128-0000 exts. 11470, 11471, 11472, 11474, 11475 and 11476**

### **ARGENTINA**

#### **1. CIQUIME**

**0-800-222-2933** in the Republic of Argentina  
For calls originating elsewhere, call  
**+54-11-4613-1100**

### **BRAZIL**

#### **1. PRÓ-QUÍMICA**

**0-800-118270**  
(Toll-free in Brazil)  
For calls originating elsewhere, call  
**+55-11-232-1144**  
(Collect calls are accepted)

### **COLOMBIA**

#### **1. CISPROQUIM**

**01-800-091-6012** in Colombia  
For calls originating in Bogotá, Colombia call  
**288-6012**  
For calls originating elsewhere call  
**+57-1-288-6012**

# EMERGENCY RESPONSE TELEPHONE NUMBERS

## CANADA

1. **CANUTEC**, provides a 24 hour national bilingual (French and English) emergency response advisory service:

**613-996-6666 \***

**\*666 (STAR 666) cellular** (in Canada only)

## UNITED STATES

1. **CHEMTREC®**, a 24 hour emergency response communication service:

**1-800-424-9300 \***

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

**703-527-3887** For calls originating elsewhere

2. **CHEMTEL, INC.**, a 24 hour emergency response communication service:

**1-888-255-3924 \***

(Toll-free in the U.S., Canada, Puerto Rico and the U.S. Virgin Islands)

**813-248-0585** For calls originating elsewhere

3. **INFOTRAC**, a 24 hour emergency response communication service:

**1-800-535-5053 \***

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

**352-323-3500** For calls originating elsewhere

4. **3E COMPANY**, a 24 hour emergency response communication service:

**1-800-451-8346 \***

(Toll-free in the U.S., Canada and the U.S. Virgin Islands)

**760-602-8703** For calls originating elsewhere

The emergency response information services shown above have requested to be listed as providers of emergency response information and have agreed to provide emergency response information to all callers. They maintain periodically updated lists of state and Federal radiation authorities who provide information and technical assistance on handling incidents involving radioactive materials.

5. **MILITARY SHIPMENTS**, for assistance at incidents involving materials being shipped by, for, or to the Department of Defense (DOD), call one of the following numbers (24 hours):

**703-697-0218 \*** - Explosives/ammunition incidents

(U.S. Army Operations Center)

**1-800-851-8061** (Toll-free in the U.S.) - All other dangerous goods incidents

(Defense Logistics Agency)

6. **NATIONWIDE POISON CONTROL CENTER** (United States only)

**1-800-222-1222** (Toll-free in the U.S.)

\* Collect calls are accepted

**THIS DOCUMENT SHOULD NOT BE USED TO  
DETERMINE COMPLIANCE WITH THE  
DANGEROUS GOODS REGULATIONS  
OR  
TO CREATE WORKER SAFETY DOCUMENTS  
FOR SPECIFIC CHEMICALS**

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