

# SUGGESTED OPERATIONS SHOULD ONLY BE PERFORMED BY ADEQUATELY TRAINED AND EQUIPPED PERSONNEL

## HOW TO USE THE ORANGE GUIDES

1

### GUIDE 117 GASES - TOXIC - FLAMMABLE (EXTREME HAZARD)

### GASES - TOXIC - FLAMMABLE (EXTREME HAZARD) GUIDE 117

POTENTIAL HAZARDS
<b>HEALTH</b> <ul style="list-style-type: none"><li>• TOXIC; Extremely Hazardous.</li><li>• May be fatal if inhaled or absorbed through skin.</li><li>• Initial odor may be irritating or foul and may deaden your sense of smell.</li><li>• Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.</li><li>• Fire will produce irritating, corrosive and/or toxic gases.</li><li>• Runoff from fire control or dilution water may cause environmental contamination.</li></ul> <b>FIRE OR EXPLOSION</b> <ul style="list-style-type: none"><li>• These materials are extremely flammable.</li><li>• May form explosive mixture with air.</li><li>• May be ignited by heat, sparks or flames.</li><li>• Vapors from liquefied gas are initially heavier than air and spread along ground.</li><li>• Vapors may travel to source of ignition and flash back.</li><li>• Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.</li><li>• Runoff may create fire or explosion hazard.</li><li>• Cylinders exposed to fire may vent and release toxic and flammable gas through pressure relief devices.</li><li>• Containers may explode when heated.</li><li>• Ruptured cylinders may rocket.</li></ul> <b>PUBLIC SAFETY</b> <ul style="list-style-type: none"><li>• CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.</li><li>• Keep unauthorized personnel away.</li><li>• Stay upwind, uphill and/or upstream.</li><li>• Many gases are heavier than air and will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).</li><li>• Ventilate closed spaces before entering, but only if properly trained and equipped.</li></ul> <b>PROTECTIVE CLOTHING</b> <ul style="list-style-type: none"><li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li><li>• Wear chemical protective clothing that is specifically recommended by the manufacturer <b>when there is NO RISK OF FIRE</b>.</li><li>• Structural firefighting protective clothing provides thermal protection but only limited chemical protection.</li></ul> <b>EVACUATION</b> <p><b>Immediate precautionary measure</b></p> <ul style="list-style-type: none"><li>• Isolate spill or leak area for at least 100 meters (330 feet) in all directions.</li></ul> <p><b>Spill</b></p> <ul style="list-style-type: none"><li>• See <b>Table 1: Initial Isolation and Protective Action Distances</b>.</li></ul> <p><b>Fire</b></p> <ul style="list-style-type: none"><li>• If tank, rail tank car or highway tank 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.</li></ul>

EMERGENCY RESPONSE
<b>FIRE</b> <ul style="list-style-type: none"><li>• DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.</li></ul> <p><b>Small Fire</b></p> <ul style="list-style-type: none"><li>• Dry chemical, CO<sub>2</sub>, water spray or regular foam.</li></ul> <p><b>Large Fire</b></p> <ul style="list-style-type: none"><li>• Water spray, fog or regular foam.</li><li>• If it can be done safely, move undamaged containers away from the area around the fire.</li><li>• Damaged cylinders should be handled only by specialists.</li></ul> <p><b>Fire Involving Tanks</b></p> <ul style="list-style-type: none"><li>• Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.</li><li>• Cool containers with flooding quantities of water until well after fire is out.</li><li>• Do not direct water at source of leak or safety devices; doing may occur.</li><li>• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.</li><li>• ALWAYS stay away from tanks in direct contact with flames.</li></ul> <p><b>SPILL OR LEAK</b></p> <ul style="list-style-type: none"><li>• ELIMINATE all ignition sources (no smoking, flames, sparks or flames) from immediate area.</li><li>• All equipment used when handling the product must be grounded.</li><li>• Do not touch or walk through spilled material.</li><li>• Stop leak if you can do it without risk.</li><li>• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.</li><li>• Do not direct water at spill or source of leak.</li><li>• If possible, sum leaking containers so that gas escapes rather than liquid.</li><li>• Prevent entry into waterways, sewers, basements or confined areas.</li><li>• Isolate area until gas has dispersed.</li><li>• Consider igniting spill or leak to eliminate toxic gas concerns.</li></ul> <p><b>FIRST AID</b></p> <p>Refer to the "General First Aid" section.</p> <p><b>Specific First Aid:</b></p> <ul style="list-style-type: none"><li>• In case of contact with liquefied gas, only medical personnel should attempt thawing frostbitten parts.</li><li>• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.</li></ul>

3

4

1

## GUIDE NUMBER AND TITLE

- The guide title identifies the general hazards associated with the materials in this Guide.

2

## POTENTIAL HAZARDS

- Emergency responders should consult this section first!
- Describes the material hazard in terms of **FIRE OR EXPLOSION** and **HEALTH** effects upon exposure.
- The primary potential hazard is listed first.
- Allows the responders to make decisions to protect the emergency response team, and the surrounding population.



In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the TERAP<sup>®</sup> Section.

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## 3

### PUBLIC SAFETY

- This section is divided into three subsections:
  - › **General Information:** describes initial precautionary measures to be taken by those first on the scene.
  - › **PROTECTIVE CLOTHING:** provides general guidance on personal protective equipment requirements including respiratory protection. The protective clothing information is general and correct selection is situation dependent, after considering the physical and chemical properties of the material, weather conditions, spill versus fire, topography, etc.
  - › **EVACUATION:** suggests protective distances for immediate precautionary measures defined for small and large spills, including suggested guidance for conditions where fire is present or likely (potential fragmentation hazard).
    - The term “isolate” indicates a zone of no entry that applies to the public and first responders who are not equipped, trained, and prepared to mitigate the incident.
    - The term “evacuate” aims to protect as many people as possible by removing persons from inside a zone safely. If removal is too risky, sheltering-in-place can also be considered in this zone.
- Materials **highlighted in green** in the yellow and blue sections direct the reader to consult Table 1, detailing specific response distances for toxic inhalation hazard materials and water-reactive materials (green section).

## 4

### EMERGENCY RESPONSE

- This section is divided into three subsections:
  - › **FIRE:** provides extinguishing procedures for **Small Fire, Large Fire, and/or Fire Involving Tanks or Car/Trailer Loads**
  - › **SPILL OR LEAK:** includes general recommendations, and may describe the response procedure for **Small Spill** and **Large Spill**
  - › **FIRST AID:** provides specific first aid guidance to use for a product or a guide in addition to the general first aid guidance for hazardous materials/dangerous goods incidents. General first aid guidance is found in the “General First Aid” section situated immediately after the “How to use the Orange Guides” section.



If a Canadian flag appears in this section, and the incident is located in Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product.

# GENERAL FIRST AID

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.
- Move victim to fresh air if it can be done safely.
- Administer oxygen if breathing is difficult.
- If victim is not breathing:
  - DO NOT perform mouth-to-mouth resuscitation; the victim may have ingested or inhaled the substance.
  - If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).
  - If no pulse detected or no respiratory medical device available, provide continuous compressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.
- Remove and isolate contaminated clothing and shoes.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.
- For severe burns, immediate medical attention is required.
- Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.
- Keep victim calm and warm.
- Keep victim under observation.
- For further assistance, contact your local Poison Control Center.
- **Note:** Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.

## NOTES