

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

HOW TO USE THE ORANGE GUIDES

GUIDE 117 GASES - TOXIC - FLAMMABLE (EXTREME HAZARD)

GASES - TOXIC - FLAMMABLE (EXTREME HAZARD) GUIDE 117

POTENTIAL HAZARDS

- **HEALTH:** 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 or dilution water may cause environmental contamination.

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.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- 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 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.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Many gases are heavier than air and will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer **when there is NO RISK OF FIRE.**
- Structural fire-fighters' protective clothing provides thermal protection but **only limited chemical protection.**

EVACUATION

- **Immediate precautionary measure**
 - Isolate spill or leak area for at least 100 meters (330 feet) in all directions.

Spill

- See **Spill 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.



In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the ERAP Program Section (page 391).

FIRE

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

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Damaged cylinders should be handled only by specialists.
- **Fire Involving Tanks**
 - Fight fire from maximum distance or use unmanned master stream devices 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; long 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, flames, sparks or flames) from 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.
- 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

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- **Do not perform mouth-to-mouth resuscitation if victim ingested or inhaled the substance; wash face and mouth before giving artificial respiration. Use 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 frostbitten 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 calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.

Page 156

ERG 2020

ERG 2020

Page 160

GUIDE NUMBER AND TITLE

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

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.

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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” indicates people should be removed from inside this zone, if it can be done safely. If removal is too risky, sheltering-in-place can also be considered in this zone. Evacuation aims to protect as many people as possible, and applies mainly to the public.
- Materials **highlighted in green** in the yellow-bordered and blue-bordered pages direct the reader to consult Table 1, detailing specific response distances for toxic inhalation hazard materials, water-reactive materials and chemical warfare agents (green-bordered pages).



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.

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 general guidance prior to seeking expert medical care.