

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Toxic liquids, corrosive, organic, n.o.s. (tetrabromoethane, dibromomethane) (MSDS No. P-4894-E)	Trade Names: Red Gauge Glass Liquid
Chemical Name: Mixture of acetylene tetrabromide, methylene bromide, and Sudan red dye	Synonyms: Oxygen gauge glass liquid, part no. 5724-4000
Chemical Family: Not applicable.	Product Grades: None assigned.
Telephone: Emergencies: 1-800-645-4633* CHEMTREC: 1-800-424-9300* Routine: 1-800-PRAXAIR	Company Name: Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

2. Hazards Identification

EMERGENCY OVERVIEW



DANGER! Toxic, corrosive liquid and vapor.
Suspect cancer hazard.
May cause liver, kidney, lung, and eye damage.
Irritates the eyes, skin, and respiratory tract.
Self-contained breathing apparatus and protective clothing must be worn by rescue workers.
Under ambient conditions this is a liquid with a sweet, chloroform-like odor in high concentrations.



OSHA REGULATORY STATUS: The components of this mixture are considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

POTENTIAL HEALTH EFFECTS:

Effects of a Single (Acute) Overexposure

Inhalation. Vapor irritates the lungs and upper respiratory tract, producing coughing, breathing difficulty, nausea, headache, and abdominal pain. May depress the central nervous system, producing tremors, narcosis, in coordination, and unconsciousness. May also damage the liver and kidneys, and cause pulmonary edema (fluid in the lungs).

Skin Contact. May irritate the skin causing pain and a burning sensation. Harmful amounts of material may be absorbed if skin contact is prolonged or widespread.

Swallowing. May irritate the mouth and throat, causing nausea, headache, vomiting, abdominal pain, dizziness, tremors, stupor, and coma. May also damage the liver and kidneys.

Eye Contact. May irritate the skin causing pain, redness, and excessive tearing. Can cause permanent eye injury.

Effects of Repeated (Chronic) Overexposure. May cause liver and kidney damage.

Other Effects of Overexposure. At high concentrations, may cause cardiac arrhythmias or arrest due to sensitization of the heart to adrenaline and noradrenalin.

Medical Conditions Aggravated by Overexposure. Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease. The irritating properties of the material may aggravate an existing dermatitis. Methylene bromide is metabolized to carbon monoxide and bromine, raising blood levels of carboxyhemoglobin. The higher concentration may be detrimental to those with existing anemia or cardiovascular disease.

CARCINOGENICITY: The IARC lists Sudan II (CAS 3118-97-6) as Group 3, unclassifiable as to carcinogenicity to humans.

POTENTIAL ENVIRONMENTAL EFFECTS: None known. For further information, see section 12, Ecological Information.

3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Acetylene tetrabromide	79-27-6	80%*
Methylene bromide	74-95-3	20%*
Sudan red dye	3118-97-6	0.02%*

* Percentages are approximate.

4. First Aid Measures

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse; discard shoes. Call a physician.

SWALLOWING: Have victim, if conscious and alert, rinse mouth with water. Give at least two glasses of milk or water. Do not induce vomiting. Never give anything by mouth to an unconscious, convulsive, or unresponsive person. Call a physician.

EYE CONTACT: Immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Immediately see a physician, preferably an ophthalmologist.

NOTES TO PHYSICIAN: Do not administer adrenaline; methylene bromide has a sensitizing effect on the myocardium. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Methylene bromide is metabolized to carbon monoxide and bromine and, depending on the magnitude of exposure, high carboxyhemoglobin levels may be found.

Contact the Poison Control Center in your area for additional information on patient management and follow-up.

5. Fire Fighting Measures

FLAMMABLE PROPERTIES: This solution cannot catch fire.

SUITABLE EXTINGUISHING MEDIA: Use media appropriate for surrounding fire.

PRODUCTS OF COMBUSTION: Not applicable. (See section 10 for products of thermal decomposition.)

PROTECTION OF FIREFIGHTERS: DANGER! Toxic, corrosive liquid and vapor.

Immediately evacuate all personnel from danger area. Toxic fumes may be given off when red gauge glass liquid is heated to decomposition. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately spray container with water from maximum distance until cool; then move it away from fire area if without risk. Reduce vapors with fog or fine water spray. Do not allow runoff to drain into sewers and waterways. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

Specific Physical and Chemical Hazards. Heat of fire can build pressure in container, causing rupture. Toxic, irritating vapors may spread from spill. Contact may burn skin and eyes. No part of a container should be subjected to temperatures above 125°F (51.1°C). Toxic fumes may result from thermal decomposition.

Protective Equipment and Precautions for Firefighters. Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

DANGER! Toxic, corrosive liquid and vapor.

Personal Precautions. Immediately evacuate all personnel from danger area. Toxic, irritating vapors may spread from spill. Contact may burn skin and eyes. Use self-contained breathing apparatus and protective clothing. Reduce vapors with fog or fine water spray. Ventilate area of spill or move leaking container to a well-ventilated area. Prevent runoff from contaminating surrounding environment.

Environmental Precautions. Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING: Harmful or fatal if inhaled or ingested. Do not breathe vapor. Do not get liquid or vapor in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available to exposed workers. Store and use with adequate ventilation at all times. Keep container closed when not in use, even when empty. Handle and use only with appropriate personal protective equipment. Keep container closed when not in use.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in a cool, dry, well-ventilated area, away from direct sunlight. Keep container closed when not in use and when empty. Protect containers against physical damage. Wash thoroughly after handling.

8. Exposure Controls/Personal Protection

COMPONENT	OSHA PEL	ACGIH TLV-TWA (2009)
Acetylene tetrabromide	1 ppm	0.1 ppm
Methylene bromide	None currently established	None currently established
Sudan red dye	None currently established	None currently established

*(c) – ceiling. Ceiling values are not Time-Weighted-Average (TWA).

**N.E.–Not Established.

TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

IDLH = Not available.

ENGINEERING CONTROLS:

Local Exhaust. Use local exhaust ventilation with sufficient air flow velocity to control worker's exposure.

Mechanical (General). Not recommended as a primary ventilation system to control worker's exposure.

Special. None.

Other. None.

PERSONAL PROTECTIVE EQUIPMENT:

Skin Protection. Wear chemically protective gloves, selected in accordance with OSHA 29 CFR 1910.132 and 1910.133. Protective clothing where needed. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. Regardless of protective equipment, never touch live electrical parts.

Eye/Face Protection. Safety glasses or protective goggles and full face shield. Select in accordance with OSHA 29 CFR 1910.133.

Respiratory Protection. A respiratory protection program that meet OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus.

9. Physical and Chemical Properties

APPEARANCE:	Red liquid
ODOR:	Sweet, chloroform-like odor
ODOR THRESHOLD:	Not available.
PHYSICAL STATE:	Liquid at normal temperature and pressure
pH:	Not available.
FREEZING POINT at 1 atm:	-31°F (-34°C)
BOILING POINT at 1 atm:	644°F (340°C)
FLASH POINT (test method):	Not applicable.

EVAPORATION RATE (Butyl Acetate = 1):	Very low
FLAMMABILITY:	Nonflammable
FLAMMABLE LIMITS IN AIR , % by volume:	LOWER: Not applicable. UPPER: Not applicable.
VAPOR PRESSURE at 68°F (20°C):	0.00193 psig (0.0133 kPa) (<0.01 mm Hg)*
VAPOR DENSITY at 70°F (21.1°C) and 1 atm:	Not available.
SPECIFIC GRAVITY (H ₂ O = 1) at 68° (20°C):	2.87
SPECIFIC GRAVITY (Air = 1) at 68° (20°C) and 1 atm:	9.6
SOLUBILITY IN WATER 68°F (20°C):	Negligible
PARTITION COEFFICIENT: n-octanol/water:	Not available.
AUTOIGNITION TEMPERATURE:	Above 635°F (335°C)
DECOMPOSITION TEMPERATURE:	Not available.
PERCENT VOLATILES BY VOLUME:	100
MOLECULAR WEIGHT:	Not available.
MOLECULAR FORMULA:	Mixture of C ₂ H ₂ Br ₄ , CH ₂ Br ₂ , & C ₁₈ H ₁₆ N ₂ O

10. Stability and Reactivity

CHEMICAL STABILITY: Unstable Stable

CONDITIONS TO AVOID: Heat. Mixture is stable at normal temperatures and pressures. Acetylene tetrabromide begins to decompose at 374°F (190°C).

INCOMPATIBLE MATERIALS: Chemically active metals; strong alkalies; contact with hot iron, aluminum, or zinc in the presence of steam. Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce hydrogen bromide, carbonyl bromide, carbon monoxide, carbon dioxide, and highly toxic fumes of bromides.

POSSIBILITY OF HAZARDOUS REACTIONS: May Occur Will Not Occur

Thermal decomposition may produce hydrogen bromide, carbonyl bromide, carbon monoxide, carbon dioxide, and highly toxic fumes of bromides.

11. Toxicological Information

ACUTE DOSE EFFECTS: None known.

STUDY RESULTS: Sudan red dye has been shown to cause cancer in experimental animals (NTP), indicating that it is a potential human carcinogen. Acetylene tetrabromide has been shown to be mutagenic to bacteria.

12. Ecological Information

ECOTOXICITY: No known effects.

OTHER ADVERSE EFFECTS: This solution does not contain any Class I or Class II ozone-depleting chemicals.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Dispose of this product in an environmentally acceptable manner in full compliance with federal, state, and local regulations. Do not pour down drains, into sewers, or otherwise release into the environment. Place into lab packs for pickup by a licensed hazardous waste disposal service or use other authorized means. See section 6 for disposal following spills.

14. Transport Information

DOT/IMO SHIPPING NAME: Toxic liquids, corrosive, organic, n.o.s. (tetrabromoethane, dibromomethane)

HAZARD CLASS:	PACKING GROUP/Zone:	IDENTIFICATION NUMBER:	PRODUCT RQ:
6.1	II	UN2927	None
SHIPPING LABEL(s): POISON, CORROSIVE			
PLACARD (when required): POISON, CORROSIVE			

MARINE POLLUTANTS: The acetylene tetrabromide component is listed as a marine pollutant by DOT.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): 1000 lb (454 kg) (methylene bromide)

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

SECTIONS 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

TPQ: None

EHS RQ (40 CFR 355): None

SECTIONS 311/312: Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

IMMEDIATE: Yes

DELAYED: Yes

PRESSURE: No

REACTIVITY: No

FIRE: No

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

The methylene bromide and Sudan red dye (C.I. solvent orange) components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372.

40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

None of the components of this solution is listed as a regulated substance.

TSCA: TOXIC SUBSTANCES CONTROL ACT: The components of this solution are listed on the TSCA inventory.

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

None of the components of this solution are listed in Appendix A as highly hazardous chemicals.

STATE REGULATIONS:

CALIFORNIA: This product is not listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

PENNSYLVANIA: This product is subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

16. Other Information

Read and understand all labels and instructions supplied with all containers of this product.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE: *Toxic, corrosive liquid and vapor.* Use only with piping and equipment compatible with components.

Mixtures. When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Remember, chemicals have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:

HEALTH = 2
FLAMMABILITY = 0
INSTABILITY = 0
SPECIAL = None

HMIS RATINGS:

HEALTH = 2
FLAMMABILITY = 0
PHYSICAL HAZARD = 0

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair MSDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current MSDSs for these products, contact your Praxair sales representative or local distributor or supplier, or download from www.praxair.com. If you have questions regarding Praxair MSDSs, would like the form number and date of the latest MSDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (**Phone:** 1-800-PRAXAIR; **Address:** Praxair Call Center, Praxair, Inc., PO Box 44, Tonawanda, NY 14151-0044).

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