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-D)	**Trade Name:** 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
Formula: Mixture of $C_2H_2Br_4$, CH_2Br_2, & $C_{18}H_{16}N_2O$	**Chemical Family:** Not applicable

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. Composition/Information on Ingredients

See section 16 for important information about mixtures.

INGREDIENT	CAS NUMBER	CONCEN-TRATION	OSHA PEL	ACGIH TLV-TWA (2004)
Acetylene tetrabromide	79-27-6	80%*	1 ppm	1 ppm
Methylene bromide	74-95-3	20%*	None currently established	None currently established
Sudan red dye	3118-97-6	0.02%*	None currently established	None currently established

**Percentages are approximate.*

3. Hazards Identification

EMERGENCY OVERVIEW

Suspect cancer hazard.
DANGER! Toxic, corrosive liquid and vapor.
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.
Odor: Sweet, chloroform-like in high concentrations

THRESHOLD LIMIT VALUE: TLV-TWA, 1 ppm, acetylene tetrabromide (ACGIH, 2004). TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

Revised

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, incoordination, 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.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: 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.

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

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. See a physician, preferably an ophthalmologist, immediately.

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.*

5. Fire Fighting Measures

FLASH POINT (test method)**:**	Not applicable	
AUTOIGNITION TEMPERATURE:	Above 635°F (335°C)	
FLAMMABLE LIMITS IN AIR, % by volume**:**	**LOWER:** Not applicable	**UPPER:** Not applicable

EXTINGUISHING MEDIA: This solution cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: 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.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Heat of fire can build pressure in container, causing rupture. Toxic, irritating vapors may spread from spill. Contact may burn skin and eyes. (See section 4). No part of a container should be subjected to temperatures above 125°F (51.1°C). Toxic fumes may result from thermal decomposition. (See section 10.)

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

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: DANGER! Toxic, corrosive liquid and vapor. Immediately evacuate all personnel from danger area. Toxic, irritating vapors may spread from spill. Contact may burn skin and eyes. (See section 4). Wear suitable respiratory protection and protective clothing. (See section 8.) 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.

WASTE DISPOSAL METHOD: 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 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.

PRECAUTIONS TO BE TAKEN IN HANDLING: Handle and use only with appropriate personal protective equipment. (See section 8.) Keep container closed when not in use.

OTHER CONDITIONS OF STORAGE AND HANDLING: The odor of this product does not provide adequate warning of its presence. Some means of detection other than smell should be readily available.

8. Exposure Controls/Personal Protection

VENTILATION/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

RESPIRATORY PROTECTION: Use an air-supplied respirator or a full-face, positive-pressure, self-contained breathing apparatus. Respiratory protection must conform to OSHA 29 CFR 1910.134. Select per OSHA 29 CFR 1910.134 and ANSI Z88.2.1910.134.

SKIN PROTECTION: Wear chemically protective gloves, treated to be impervious to the hazardous ingredients listed in section 2. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

EYE PROTECTION: Safety glasses or protective goggles and full face shield. Select in accordance with OSHA 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENT: 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.

9. Physical and Chemical Properties

SPECIFIC GRAVITY (H_2O = 1) at 68° (20°C)**:**	2.87
SPECIFIC GRAVITY (Air = 1) at 68° (20°C) and 1 atm**:**	9.6
VAPOR PRESSURE at 68° (20°C)**:**	0.00193 psig (0.0133 kPa) (<0.01 mm Hg)*
SOLUBILITY IN WATER at 68° (20°C)**:**	Negligible
PERCENT VOLATILES BY VOLUME:	100
EVAPORATION RATE (Butyl Acetate = 1)**:**	Very low
BOILING POINT at 1 atm**:**	644°F (340°C)
FREEZING POINT at 1 atm**:**	-31°F (-34°C)

APPEARANCE, ODOR, AND STATE: Red liquid; sweet, chloroform-like odor. Odor does not give adequate warning of hazardous concentrations.

**The symbol < means "less than."*

10. Stability and Reactivity

STABILITY: ☐ Unstable ☒ Stable

INCOMPATIBILITY (materials to avoid): 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.

HAZARDOUS POLYMERIZATION: ☐ May Occur ☒ Will Not Occur

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

11. Toxicological Information

See section 3.

12. Ecological Information

This solution does not contain any Class I or Class II ozone-depleting chemicals. The acetylene tetrabromide component is listed as a marine pollutant by DOT.

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: 6.1	**PACKING GROUP:** II	**IDENTIFICATION NUMBER:** UN 2927	**PRODUCT RQ:** None
SHIPPING LABEL(s):	POISON, CORROSIVE		
PLACARD (when required):	POISON, CORROSIVE		

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: 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	**PRESSURE:** No
DELAYED: Yes	**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 is listed in Appendix A as a highly hazardous chemical.

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

Be sure to read and understand all labels and instructions supplied with all containers of this product.

NOTE: *This product is used as the visible working fluid in manometers and gauges. Users must be familiar with the operation and hazards associated with the equipment used with this liquid.*

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE: ***DANGER! Toxic, corrosive liquid and vapor.*** Harmful or fatal if inhaled or ingested. Do not breathe vapor. Do not get liquid or vapor in eyes, on skin, or on clothing. (See section 3.) Have safety showers and eyewash fountains immediately available to exposed workers. ***Store and use with adequate ventilation at all***

times. (See section 8.) Keep container closed when not in use, even when empty. ***Use only with piping and equipment compatible with components.*** (See section 10.)

NOTE: *Prior to using any plastics, rubber, or coated materials, confirm their compatibility with the components of this mixture.*

MIXTURES: When you mix two or more gases or liquefied gases, 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, gases and liquids have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:		**HMIS RATINGS:**	
HEALTH	= 2	HEALTH	= 2
FLAMMABILITY	= 0	FLAMMABILITY	= 0
INSTABILITY	= 0	PHYSICAL HAZARD	= 0
SPECIAL	= None		

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.

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