

MATERIAL SAFETY DATA SHEET

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TRICHLOROETHYLENE

Revision D

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SECTION I. MATERIAL IDENTIFICATION					
<p>MATERIAL NAME: TRICHLOROETHYLENE OTHER DESIGNATIONS: TCE, Trichloroethylene, Ethylene Trichloride, Ethenyl Trichloride, CHCl=CCl₂, GE Material D5B56, CAS# 000 079 016 MANUFACTURER & TRADE NAMES: BLACO-TRI (Baron-Blakeslee); ALK-TRI, HI-TRI and NEU-TRI (Dow); KAYNIDE (Kraft); PERM-A-CLOR and TRIAD (Detrex); TRICHLOR (PPG); TRICLENED & MD (Diamond Shamrock)</p>					
SECTION II. INGREDIENTS AND HAZARDS			%	HAZARD DATA	
Trichloroethylene + Stabilizer*			ca 100	TLV 100 ppm with 200 ppm Ceiling level** Human, Oral LDLo 857 mg/kg Human, Inhal. TCLO 160 ppm/83 min (central nervous system)	
<p>*Stabilizers such as amines or epoxy compounds are usually added at low levels to increase resistance to oxidation and to polymerization. Vapor degreasing grades require higher stabilizer levels. **ACGIH (1979 Intended Changes List) proposes an 8-hr TWA of 50 ppm with STEL 150 ppm. NIOSH (1978) reviewed TCE as a suspected carcinogen and suggested a TWA of 25 ppm as readily attainable. <u>Unresolved controversy</u> on TCE carcinogenicity at present.</p>					
SECTION III. PHYSICAL DATA					
Boiling point, 1 atm, deg F (C)	---- 188 (87)	Specific gravity 20 C	----	1.45-1.47*	
Vapor pressure @ 20°C, mm Hg	----- 58	Volatiles %	-----	ca 100	
Vapor density (Air = 1)	----- 4.54	Evaporation rate (CCl ₄ =1)	-	0.69	
Water solubility @ 25°C, %	----- 0.1	Freezing point, deg C	----	-73 to -86*	
		Molecular weight	-----	131.39	
<p>Appearance & Odor: Colorless, mobile liquid with a characteristic, sweet, ether-like odor whose recognition threshold is 21.4 ppm in air (unfatigued, 100% of test panel). *Depends on stabilizer and level used.</p>					
SECTION IV. FIRE AND EXPLOSION DATA				LOWER	UPPER
Flash Point and Method	Autoignition Temp.	Flammability Limits @ 57C		15	40
None	770 F (410 C)	in air, Vol %	@100C	2.5	90%
<p>Extinguishing Media: Use that which is appropriate for surrounding fire. Trichloroethylene is normally considered noncombustible. However, when 15% vapor in air at 33 C is exposed to intense heat (electric arc) or to ordinary flame at vapor-air temperatures exceeding 50 C, it can be made to burn mildly. Combustibility increases in O₂-enriched air. Self-contained breathing apparatus should be used for protection against TCE vapors and their toxic and corrosive decomposition products in a fire situation.</p>					
SECTION V. REACTIVITY DATA					
<p>TCE is considered to be a stable compound under normal conditions of storage and handling. However, when it is heated (as in a vapor degreaser) or exposed to sunlight, it requires stabilization against oxidation, degradation and polymerization. When it is exposed to high temperatures, hydrogen chloride and phosgene (highly toxic) can be produced as decomposition products. It is slowly decomposed by light when moist. TCE can react with NaOH, KOH, or other strong alkali to form explosive mixtures of chloroacetylenes. Soda ash does not react. Polymerization of TCE is catalyzed by aluminum chloride. Magnesium or aluminum powder can react with TCE.</p>					

SECTION VI. HEALTH HAZARD INFORMATION TLV 100 ppm or 535 mg/m³ (See Sect II)

Inhalation of TCE above the TLV can irritate nose and throat, with dizziness, drowsiness, headache, nausea, unconsciousness, and even death resulting from excessive exposure. Eye irritation and lacrymation can result from exposure to vapor or liquid. Skin contact causes irritation and, when prolonged or repeated, dermatitis. Ingestion irritates the digestive tract and may cause nausea and rapid drowsiness partial paralysis, unconsciousness and kidney failure can result in severe cases.

FIRST AID:

- Eye contact: Wash immediately with plenty of running water. Continue washing to minimize discomfort. Get prompt medical attention.
- Skin contact: Remove contaminated clothing. Wash with soap and warm water.
- Inhalation: Remove to fresh air; restore breathing if required. Keep at rest and warm. Immediately contact physician; advise him not to give adrenalin.
- Ingestion: Get immediate medical help! Do not induce vomiting unless directed by a physician. (Authorities differ; professional decision required). Physician should be warned not to use adrenalin for treatment.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Inform safety personnel and evacuate area for large spills. Clean-up personnel should use respiratory and liquid contact protection. Provide ventilation. Confine spill to as small an area as possible. Do not allow run off to the sewer. Pick up spill with vacuum or on an absorbent and store in closed container for disposal.

DISPOSAL: Waste can be processed to recover TCE, or it can be burned in an appropriately equipped, high temperature incinerator (fume scrubbing system required to remove HCl). Disposal through a licensed waste disposal company should also be considered. Scrap solvent and distillation residues must be handled as toxic wastes. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

- Provide general ventilation and exhaust ventilation to keep workplace vapor levels within TLV requirements
- Approved respiratory equipment should be available for emergency and nonroutine use. Use self-contained breathing equipment above 1000 ppm; use full facepiece cartridge or canister respirators for limited exposures above ceiling limit or TLV. (Cartridge, 1-2 hrs max.)
- Use neoprene gloves, aprons etc. to prevent liquid contact with the skin and splash-proof goggles for eye protection. Gas-tight goggles should be used by maintenance and emergency personnel.
- An eyewash station should be available where splashing is probable.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Avoid breathing vapors. Avoid skin contact. Store in a cool, well-ventilated area and use with adequate ventilation, including floor level ventilation. Avoid contact of vapors with high temperature (toxic and corrosive decomposition products from TCE above 700 C). No smoking in use or storage areas.

Avoid collecting aluminum fines or chips in vapor degreaser. Regularly monitor TCE stabilizer level. Only trained personnel should operate vapor degreaser.

TCE has produced liver cancer in test animals. Exercise due caution in use. Evidence of cancer hazard with TCE is greater than with perchloroethylene or 1,1,1-trichloroethane. (OSHA Reporter 1978, 1565). However, observed effects may be due to stabilizers used (not TCE itself).

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