

MATERIAL SAFETY DATA SHEET

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TOLUENE

Revision C

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SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: TOLUENE
OTHER DESIGNATIONS: Toluol, Methylbenzene, Phenylmethane, CH₃C₆H₅, GE Material D5B11, ASTM D362 and D841, CAS# 000 108 883
MANUFACTURER: Available from many suppliers, including Shell Chemical Co. and Sun Oil Co.

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Toluene	ca 100	8-hr TWA 100 ppm (skin)* or 375 mg/m ³ Human, inhalation TCLo 200 ppm (central nervous syst.) Rat, inhalation LCLo 4000 ppm/4 hr Rat, oral LD ₅₀ 5000 mg/kg

*ACGIH (1978); (skin) notation indicates a potential contribution to overall exposure via skin absorption. OSHA/NIOSH (1976) proposed an 8-hr TWA of 100 ppm, with a 15-minute ceiling of 200 ppm, and an action level of 50 ppm. Current OSHA TLV is 200 ppm.

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg F (C) ---	231 (110.6)	Specific gravity (Water=1) --	0.866
Vapor pressure @ 25 C, mm Hg -----	28	Volatiles, % -----	100
Vapor density (Air=1) -----	3.2	Evaporation rate (BuAc=1) --	1.9
Solubility in water, % -----	0.05	Molecular weight -----	92.15

Appearance & Odor: Water white liquid with a characteristic aromatic odor, whose recognition threshold (unfatigued) is 2-5 ppm (100% of test panel). Odor detection is unsatisfactory for safety because of fatigue.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
40 F (4.4 C) Closed cup	(536 C) 997 F	% by volume	1.2	7

Extinguishing Media: Carbon dioxide, dry chemical, foam, and water fog. Water may be ineffective for putting out fire, but use spray to cool fire-exposed containers.
At room temperature, toluene emits vapors that can form flammable mixtures with air. It is a dangerous fire hazard and a moderate explosion hazard when exposed to heat and flame. Vapors can flow along surfaces to distant ignition sources, then flash back. Firefighters should wear self-contained breathing apparatus and eye protection when fighting toluene fires.

SECTION V. REACTIVITY DATA

Toluene is a stable material under normal storage and handling. It does not undergo hazardous polymerization.
Since toluene is a flammable liquid, avoid contact with heat, sparks or open flames. Avoid contact with strong oxidizing agents. Nitric acid and toluene, especially in combination with sulfuric acid, will produce nitrated compounds which are dangerously explosive.
Oxidation in air can form oxides of carbon and nitrogen.

<p>SECTION VI. HEALTH HAZARD INFORMATION</p>	<p>TLV 100 ppm (skin) (See Sect. II)</p>
<p>Vapor inhalation can produce headache and slight drowsiness at 100 ppm, fatigue, nausea and itching skin at 100-200 ppm, anesthetic effects and respiratory tract and eye irritation above 200 ppm. Absorption can occur through the skin, and liquid contact will cause defatting of the skin, with possible dermatitis from repeated or prolonged contact. Eye contact is irritating and can be damaging (corneal burns). Ingestion irritates the digestive tract and results in systemic effects from absorption.</p> <p>FIRST AID: <u>Eye Contact:</u> Immediately irrigate with water for 15 minutes. Get medical help. <u>Skin Contact:</u> Wash area with soap & water; remove contaminated clothing promptly. Get medical help if irritation persists or if large areas of skin were exposed. <u>Inhalation:</u> Remove to fresh air; restore breathing and give oxygen if needed. Get medical help! <u>Ingestion:</u> Get medical help as soon as possible! When victim is conscious, give USP mineral oil to drink. (Aspiration is a potential hazard if vomiting occurs!)</p>	
<p>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</p> <p>Report large spills to safety personnel. Remove ignition sources; provide explosion-proof ventilation. Those involved in clean-up must use protection against liquid contact and vapor inhalation. Pick up liquid when feasible, or absorb on vermiculite or sand and scoop up with nonsparking tools into a metal container with cover. Liquid can be flushed with a water spray to an open holding area for handling. Do not flush to sewer, to a confined space, or to a watercourse!</p> <p>DISPOSAL: Consider reclaiming by distillation or disposal via a licensed waste disposal company. Scrap may be incinerated under properly controlled conditions. Follow Federal, State and local regulations.</p>	
<p>SECTION VIII. SPECIAL PROTECTION INFORMATION</p> <p>Provide general and exhaust ventilation to meet TLV requirements. Ventilation fans & other electrical service must be nonsparking and explosion proof. Exhaust hoods should have >100 lfm face velocity and be designed to capture heavy vapors. Exposure above the TLV for nonroutine and emergency situations requires use of an organic chemical cartridge respirator up to 200 ppm; above 200 ppm a full face piece is required with an approved canister-type gas mask or self-contained breathing equipment. Safety goggles or glasses should be worn in areas of use. Impermeable (neoprene has been recommended) gloves and apron, face shield, and other protective clothing may be needed to prevent skin contact during use, especially where splashing may occur. An eyewash station should be available if splashing is possible. A safety shower and washing facilities should be available.</p>	
<p>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</p> <p>Store in cool, clean, well-ventilated area away from sources of heat and ignition and away from oxidizing agents. Area must meet requirements of OSHA Class IB liquid. No smoking in areas of storage or use. Nonsparking tools should be used near toluene. Use safety cans for handling small amounts. Ground and bond metal containers for liquid transfers to prevent static sparks. Protect containers from physical damage. Preplacement and periodic medical exams emphasizing the liver, kidneys, nervous system, lungs, heart and blood should be provided. At least an annual exam is recommended for workers exposed above the <u>action level</u> (50 ppm). Use of alcohol can aggravate the narcotic effect and blood effects of toluene.</p>	
<p>DATA SOURCE(S) CODE: 1-9,12,20,21,24,26</p>	<p>APPROVALS: MIS, CRD <i>J. M. Nelson</i></p>
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