

EMS CATALOG NO: 23400  
EMS PRODUCT: Xylene  
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**MATERIAL SAFETY DATA SHEET**

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**ELECTRON MICROSCOPY SCIENCES  
321 MORRIS ROAD  
P.O. BOX 251**

**FORT WASHINGTON, PA 19034  
(215) 646-1566**

**24 HOUR EMERGENCY PHONE NUMBER  
CHEMTREC: (800) 424-9300**

**FOR PRODUCT AND SALES INFORMATION**

CONTACT ELECTRON MICROSCOPY SCIENCES OFFICE ABOVE.

**PRODUCT IDENTIFICATION**

PRODUCT NAME: Xylene

CAS NUMBER: 1330-20-7

TRADE NAMES/SYNONYMS:

Benzene, Dimethyl-; Dilan; Dimethylbenzene; Xylol; Humised Thinner No. 33 (Humised Div.); Humised Thinner No. SP 420 (Humised Div.); Solvesso Xylene (Humble Oil and Refining Company); TT-X-9166 Reducer (Advanced Coatings and Chemicals); Dynachem (R) Developer DCR (Thickol/Dynachem Corporation); Thinner 2000 (KOP-Coat); Sol 9050 Xylene (Chemtech Industries, Inc.); Humised Thinner No. 521 (M.W. Riedel and Company); RCRA U239; STCC 4904350; UN 1307; C8H10; OHS25150

CHEMICAL FAMILY: Hydrocarbon, aromatic

MOLECULAR FORMULA: C<sub>6</sub>H<sub>4</sub>(C-H<sub>3</sub>)<sub>2</sub>

MOLECULAR WEIGHT: 106.16

CERCLA RATINGS (SCALE 0-3):		NFPA RATINGS (SCALE 0-4):	
HEALTH:	2	HEALTH:	2
FIRE:	3	FIRE:	3
REACTIVITY:	0	REACTIVITY:	0
PERSISTENCE:	1		

### COMPONENTS AND CONTAMINANTS

COMPONENT: Xylene (O-, M-, P-Isomers)  
PERCENT: 100  
OTHER CONTAMINANTS: None  
EXPOSURE LIMITS:

100 ppm (434 mg/m<sup>3</sup>) OSHA TWA; 150 ppm (651 mg/m<sup>3</sup>) OSHA STEL  
100 ppm (434 mg/m<sup>3</sup>) ACGIH TWA; 150 ppm (651 mg/m<sup>3</sup>) ACGIH STEL  
100 ppm (434 mg/m<sup>3</sup>) NIOSH recommended TWA  
150 ppm (651 mg/m<sup>3</sup>) NIOSH recommended STEL  
100 ppm (434 mg/m<sup>3</sup>) DFG MAK TWA  
200 ppm (868 mg/m<sup>3</sup>) DFG MAK 30 minute peak, average value, 4 times/shift

1000 pounds CERCLA Section 103 Reportable Quantity subject to SARA Section 313 annual Toxic Chemical Release reporting.

\*\* OSHA limits adopted January 19, 1989 are subject to the decision of the 11th circuit court of appeals (ALF-COV. OSHA as of July 8, 1992.\*\*

### PHYSICAL DATA

DESCRIPTION: Light colored or colorless mobile liquid with an aromatic odor.

BOILING POINT: 280-291oF (138-144oC)  
MELTING POINT: -54-55oF (-48-13oC)  
SPECIFIC GRAVITY: 0.8611-0.8802  
VOLATILITY: 100%  
VAPOR PRESSURE: 7-9 mm Hg at 20oC  
EVAPORATION RATE: 0.6 (Butyl Acetate= 1)  
SOLUBILITY IN WATER: 0.00003%  
ODOR THRESHOLD: 0.3 ppm  
VAPOR DENSITY: 3.7  
SOLVENT SOLUBILITY: Soluble in alcohol, ether, acetone, petroleum ether, benzene, carbon tetrachloride, organic solvents.

## FIRE AND EXPLOSION DATA

### FIRE AND EXPLOSION HAZARD:

Dangerous fire hazard when exposed to heat or flame. Due to low electroconductivity of the substance, flow or agitation may generate electrostatic charges resulting in sparks with possible ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor-air mixtures are explosive.

FLASH POINT: 81-90°F (27-32°C) (CC)

UPPER EXPLOSIVE LIMIT: 7%

LOWER EXPLOSIVE LIMIT: 1%

AUTOCIGNITION TEMP.: 867-984°F (464-529°C)

FLAMMABILITY CLASS (OSHA): 1C

### FIREFIGHTING MEDIA:

Dry chemical, carbon dioxide, water spray or standard foam (1987 Emergency Response Guidebook, DOT P 5800.4).

For larger fires, use water spray, fog or standard foam (1987 Emergency Response Guidebook, DOT P, 5800.4).

### FIREFIGHTING

Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from storage tank ends. Use unmanned hose holder or monitor nozzles, if this is possible withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire (1987 Emergency Response Guidebook, DOT P 5800.4, Guide Page 27).

Extinguish only if flow can be stopped; use water in flooding amounts as fog, solid streams may spread fire. Cool containers with flooding quantities of water, apply from as far a distance as possible. Avoid breathing toxic vapors, keep upwind. Water may be ineffective (NFPA 325m, Fire Properties of flammable liquids, gases, and volatile solids, 1991.)

## TRANSPORTATION DATA

DOT HAZARD CLASSIFICATION 49CFR172.101: Flammable liquid

DOT LABELING REQUIREMENTS 49CFR172.101 AND SUBPART E: Flammable liquid

DOT PACKAGING REQUIREMENTS: 49CFR173.119 EXCEPTIONS: 49CFR173.118

Find rule on hazardous materials regulations (HMR, 49CFR Parts 171-180). Docket numbers HM-181, HM-181A, HM-1818, HM-181C, HM-181D and HM-204. Effective date October 1, 1991. However, Compliance with the regulations is authorized on and after January 1, 1991. (55 FR 52402. 12/21/90).

Except for explosives, Inhalation Hazards and Infectious Substances, the effective date for Hazard Communication requirements is extended to October 1, 1993.

DOT ID NO: UN 1307  
DOT HAZARD CLASS: 3 - Flammable Liquid  
DOT PACKAGING GROUP: PG II  
DOT LABELING REQ: Flammable Liquid

DOT PACKAGING AUTHORIZATIONS: EXCEPTIONS 49CFR173.150  
NON BULK PACKAGING 49CFR173.202  
BULK PACKAGING 49CFR173.242

US DOT QUANTITY LIMITATIONS 49CFR172.101: PASSENGER AIRCRAFT OR  
RAILCAR: 6 L  
CARGO AIRCRAFT ONLY: 60 L

<b>TOXICITY</b>
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IRRITATION DATA:

Eye-Rabbit Severe; 100% Skin-Rabbit Moderate; 500 mg/24 hours Skin-Rabbit Moderate.

TOXICITY DATA:

10000 ppm/6 hours inhalation-man LCLO; 200 ppm inhalation-human T CLO; 5000 ppm/4 hours inhalation-rat LC50; 450 ppm inhalation- guinea pig LCLO; 50 mg/kg oral-human LDLO; 4300 mg/kg oral-rat LD50; 1700 mg/kg subcutaneous-rat LD50; 2000 mg/kg intraperitoneal-mammal LDLO; 2459 mg/kg intraperitoneal-rat LD50; 1548 mg/kg intraperitoneal-mouse LD50; 2000 mg/kg intraperitoneal-guinea pig LDLO; reproductive effects data (RTECS).

CARCINOGEN STATUS: Human inadequate evidence, animal inadequate evidence (IARC Group-3).

LOCAL EFFECTS: Irritant - Inhalation, skin, eye.

ACUTE TOXICITY LEVEL: Moderately toxic by inhalation, ingestion.

TARGET EFFECTS: Central nervous system depressant. Poisoning may also affect the nervous system, liver and kidneys.

AT INCREASED RISK FROM EXPOSURE: Pregnant women

ADDITIONAL DATA: Alcohol may enhance the toxic effects. Stimulants such as epinephrine or ephedrine may induce ventricular fibrillation.

### HEALTH EFFECTS AND FIRST AID

INHALATION: Irritant/Narcotic

1000 ppm immediately dangerous to life or health.

ACUTE EXPOSURE:

Irritation of the upper respiratory tract may occur at 200 ppm. Exposure to higher concentrations may cause more severe irritation and initial central nervous system excitation followed by depression. Signs and symptoms may include respiratory difficulty and substernal pain, transient euphoria and emotional lability, headache, nausea, vomiting, anorexia, abdominal pain, dizziness, drowsiness, ataxia, and staggering. There may be salivation, slurred speech, blurred vision, nystagmus, tinnitus, tremors, confusion, and flushing of the face and a feeling of increased body heat. In severe exposures, there may be stupor, anesthesia, unconsciousness, and coma which may be punctuated by episodes of neuroirritability, but rarely frank convulsions, except in terminal asphyxia. Liver and kidney damage may occur, but are usually mild and transient. A group of subjects who inhaled 12.3 umol/l of xylene while exercising became significantly impaired on 3 neuropsychological tests. Exposure of 3 painters to approximately 10,000 ppm for 18.5 hours resulted in 1 death from pulmonary edema and petechial brain hemorrhage. Both survivors were unconscious for 19-24 hours and experienced retrograde amnesia, hypothermia, and lung congestion. Renal and hepatic impairment also developed. Complete recovery took 15 days. High concentrations may cause death from sudden ventricular fibrillation, but more frequently death occurs from respiratory arrest.

CHRONIC EXPOSURE:

Repeated or prolonged inhalation of vapors above 200 ppm may cause nausea, vomiting, abdominal pain, and anorexia. Other common complaints include headache, fatigue, lassitude, irritability, breathing difficulties, and flatulence. Effects on the nervous system may result in excitation, followed by depression, paresthesias, tremors, apprehension, impaired memory, insomnia, vertigo, and tinnitus. Effects on reaction time, manual coordination, body balance and EEG occurred with repeated exposure to 90 ppm of M-Xylene. Sweetish taste in the mouth, dry nose and throat, strong thirst, mucosal hemorrhage, and anemia have been reported. Effects on the liver, kidney, cardiovascular system, and the bone marrow have been reported, although the latter has been questioned. Exposure of rabbits to 1150 ppm for 40-55 days resulted in a reversible decrease in the red and white cell counts and an increase in the platelets. One case of an apparent epileptiform seizure following a relatively brief exposure has occurred.

Women may develop menstrual disorders, such as menorrhagia or metrorrhagia, infertility, and pathological pregnancy conditions including toxicosis, danger of miscarriage, and hemorrhaging during delivery. Repeated exposure of pregnant mice, rats and rabbits to the individual or the mixed isomers has resulted in maternal effects

and effects on fertility, on the embryo or fetus, and specific developmental abnormalities. Included among these effects are fetal death, fetotoxicity, pre- and post-implantation mortality, abortion, craniofacial and musculoskeletal abnormalities, and extra embryonic structures.

#### FIRST AID:

Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

SKIN CONTACT: Irritant

#### ACUTE EXPOSURE:

Liquid xylene is a defatting agent and may cause a burning sensation, drying, vasodilation, erythema, and possibly blistering. The liquid is readily absorbed through intact or broken skin at a rate of approximately 4-10 mg/cm<sup>2</sup>/hour, but systemic effects have not been reported.

#### CHRONIC EXPOSURE:

Repeated or prolonged contact may cause defatting of the skin with drying, erythema, cracking, thickening and blistering. Repeated application of 95% xylene to rabbit skin caused moderate to marked irritation from erythema and moderate necrosis. One case of allergic contact urticaria has been reported.

#### FIRST AID:

Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.

EYE CONTACT: Irritant

#### ACUTE EXPOSURE:

200 ppm has caused conjunctival irritation in humans; at higher concentrations, irritation may be severe. Vapor exposure has also caused tearing and photophobia. An accidental splash in the human eye caused transient superficial damage with rapid recovery, although reversible corneal burns have also been reported.

#### CHRONIC EXPOSURE:

Repeated or prolonged exposure to high vapor concentrations may cause a burning sensation, conjunctivitis and blurred vision; reversible vascular, epithelial keratopathy has been reported in some workers.

FIRST AID:

Wash eyes immediately with large amounts of water or normal saline occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.

INGESTION: Narcotic

ACUTE EXPOSURE:

May cause a burning sensation in the mouth and stomach, salivation, severe gastrointestinal distress with nausea and vomiting, possibly hematemesis, and toxic effects including signs of central nervous system depression and other symptoms as in acute inhalation, including ventricular fibrillation and liver and kidney injury. Ingestion of small quantities of 90% xylene plus toluene produced urinary dextrose and urobilinogen excretion with toxic hepatitis, which was reversible in 20 days. A dose of 15-30 milliliters (about 1/2-1 ounce) is the expected human lethal dose. With aspiration or even a few milliliters into the lungs, severe coughing, distress, chemical pneumonitis, rapidly developing pulmonary edema, and hemorrhage may occur.

CHRONIC EXPOSURE:

No data available on the ortho-isomer. Repeated ingestion of the mixed, meta-, or para-isomers by pregnant mice resulted in effects on fertility, on the embryo or fetus, or specific developmental abnormalities. Included among these effects were fetotoxicity, litter size, craniofacial and musculoskeletal system abnormalities, and post-implantation mortality.

FIRST AID:

Extreme care must be used to prevent aspiration. Gastric lavage with a cuffed endotracheal tube in place to prevent further aspiration should be done within 15 minutes. In the absence of depression or convulsions or impaired gag reflex, emesis can also be induced using syrup or Ipecac without increasing the hazard of aspiration (Dreisbach, Handbook of Poisoning, 12th Ed.). Treat symptomatically and supportively. Gastric lavage should be performed by qualified medical personnel. Get medical attention immediately.

ANTIDOTE: No specific antidote. Treat symptomatically and supportively.

<b>REACTIVITY</b>
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REACTIVITY: Stable under normal temperatures and pressures.

INCOMPATIBILITIES:

NITRIC ACID: Exothermic reaction.  
OXIDIZERS (STRONG): Fire and explosion hazard.

PLASTICS, RUBBER, COATINGS: May be attacked.  
SULFURIC ACID: Exothermic reaction.

DECOMPOSITION: Thermal decomposition products may include toxic oxides of carbon.

POLYMERIZATION: Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

### **STORAGE AND DISPOSAL**

Observe all Federal, State and local regulations when storing or disposing of this substance. For assistance, contact the district director of the Environmental Protection Agency.

STORAGE: Store in accordance with 29 CFR 1910.106.

#### **BONDING AND GROUNDING**

Substances with low electroconductivity, which may be ignited by electrostatic sparks, should be stored in containers which meet the bonding and grounding guidelines specified in NFPA 77-1983, Recommended Practice on Static Electricity. Protect against physical damage. Outside or detached storage is preferable. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials (NFPA 49, Hazardous Chemicals Data, 1975). Store away from incompatible substances.

#### **DISPOSAL:**

Disposal must be in accordance with standards applicable to generators of hazardous waste, 40CFR 262. EPA Hazardous Waste Number U239.

### **CONDITIONS TO AVOID**

Avoid contact with heat, sparks, flames, or other sources of ignition. Vapors may be explosive. Avoid overheating of containers; containers may violently rupture in heat of fire. Avoid contamination of water sources.

### **SPILL AND LEAK PROCEDURES**

#### **SOIL SPILL:**

Dig a holding area such as a pit, pond or lagoon to contain spill and dike surface flow using barrier of soil, sandbags, foamed polyurethane or foamed concrete. Absorb liquid mass with fly ash or cement powder. Immobilize spill with universal gelling agent. Reduce vapor and fire hazard with appropriate foam.

AIR SPILL: Knock down vapors with water spray. Keep upwind.

WATER SPILL:

Limit spill motion and dispersion with natural barriers or oil spill control booms. Apply detergents, soaps, alcohols or another surface active agent. Apply universal gelling agent to immobilize trapped spill and increase efficiency of removal. If dissolved, at a concentration of 10 ppm or greater, apply activated carbon at ten times the amount that has been spilled. Use suction hoses to remove trapped spill material. Use mechanical dredges or lifts to extract immobilized masses of pollution and precipitates.

OCCUPATIONAL SPILL:

Shut off ignition sources. Stop leak if you can do it without risk. Use water spray to reduce vapors. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area. Keep unnecessary people away; isolate hazard area and restrict entry.

REPORTABLE QUANTITY (RQ): 1000 pounds

The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

<b>PROTECTIVE EQUIPMENT</b>
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VENTILATION:

Provide local exhaust or general dilution ventilation to meet published exposure limits. Ventilation equipment must be explosion-proof.

RESPIRATOR:

The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH Criteria Documents or by the U.S. Department of Labor, 29 CFR 1910 Subpart Z.

The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

1000 ppm:

Any chemical cartridge respirator with organic vapor cartridge(s). Any powered air-purifying respirator with organic vapor cartridge(s). Any supplied-air respirator. Any self-contained breathing apparatus.

ESCAPE: Any air-purifying full facepiece respirator (gas mask) with a chin-style or front- or back-mounted organic vapor canister. Any appropriate escape-type self-contained breathing apparatus.

FOR FIRE FIGHTING AND OTHER IMMEDIATELY TO LIFE OR DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode. Supplied-air respirator with full facepiece and operated in pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode.

CLOTHING: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES: Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION: Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

EMERGENCY EYE WASH: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.