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**PHARMCO-AAPER**

AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

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# MATERIAL SAFETY DATA SHEETS

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## XYLENES

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Xylenes

Synonyms: Dimethylbenzene, xylol, methyltoluene

Chemical Formula: C<sub>6</sub>H<sub>4</sub>(CH<sub>3</sub>)<sub>2</sub>

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

### 2. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Xylenes	1330-20-7	75 - 85%	Yes
Ethyl Benzene	100-41-4	15 - 25%	Yes

### 3. HAZARDS IDENTIFICATION

WARNING! HIGHLY FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO EYES, SKIN, AND RESPIRATORY TRACT. ASPIRATION HAZARD IF SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN OR IF INHALED. MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. TARGET ORGANS: CENTRAL NERVOUS SYSTEM, RESPIRATORY SYSTEM, EYES, AND SKIN.

Acute Exposure Hazards:

Inhalation Hazard: High concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness, and coma. Prolonged exposures may result in dizziness and general weakness. Irritation may lead to pneumonitis and pulmonary edema. May cause liver and kidney damage. Causes irritation of the mucous membranes. Odor is not an adequate warning of exposure to xylene. Reversible liver and kidney damage has been reported in cases of extreme overexposure. Industrial fatalities due to severe overexposure have been described.

Ingestion Hazard: Aspiration hazard. May cause irritation of the digestive tract. May cause central nervous system depression characterized by excitement followed by nausea, headache, dizziness, and unconsciousness. Advanced stages

may cause collapse, loss of consciousness, coma, and death from respiratory failure. May cause effects similar to acute inhalation.

**Skin Contact Hazard:** May be harmful if absorbed through the skin. Causes skin irritation, defatting, cracking, and dryness. Blistering may occur, particularly if exposure is concentrated and the exposed area is covered. Liquid and vapor can be absorbed through the skin, but not as easily as inhalation or ingestion. Absorption is reported to be slow and significant health effects are not expected by this route of exposure.

**Eye Contact Hazard:** Contact with eyes generally causes transient, superficial injury. Based on animal studies with mixed xylene isomers, it is probably a mild irritant.

**Chronic Exposure Hazards:** Prolonged or repeated exposure to xylene may cause defatting and dermatitis, reversible eye damage, labored breathing, confusion, dizziness, apprehension, memory loss, headache, tremors, weakness, anorexia, nausea, ringing in the ears, irritability, thirst, mild changes in liver function, kidney impairment, anemia, and hyperplasia (but not destruction) of bone marrow.

#### 4. FIRST-AID MEASURES

**Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, give supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

**Ingestion:** Aspiration hazard if swallowed. Get medical attention immediately. DO NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation persists. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:** Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Notes to Physician:** Treat symptomatically and supportively.

#### 5. FIRE FIGHTING MEASURES

**Flammability:** Flammable liquid and vapor

**Auto-ignition Temperature:** 527° C (980° F)

**Flash Point:** 25-32° C (77-90° F)

**Flammable Limits:** Lower Limit – 1.1 vol %, Upper Limit – 7.0 vol %

**Products of Combustion:** May decompose into carbon monoxide and carbon dioxide in fire conditions.

**Specific Fire Hazards:** As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Liquid is lighter than water and may travel to a source of ignition and spread fire. May accumulate static electricity.

**Specific Explosion Hazards:** Not available.

**Fire Fighting Media:** Water streams may be ineffective and spread the fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Special Remarks:** None

#### 6. ACCIDENTAL RELEASE MEASURES

Use water spray to dilute into a non-flammable mixture. Avoid run-off into storm sewers and ditches which lead to waterways. Provide ventilation to the affected area and remove all ignition sources. Vapor suppressing foam may be used. Water spray may reduce vapors but may not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

#### 7. HANDLING AND STORAGE

**Precautions:** Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated

clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist. Storage: Keep away from heat, sparks, and flame in a flammables area. Keep container closed when not in use. Keep from contact with oxidizing materials and strong acids. Store in a cool, dry, well-ventilated space and avoid contact with incompatible materials.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear chemical splash goggles. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 100 ppm TWA; 150 ppm STEL

NIOSH – 100 ppm TWA 435 mg/m<sup>3</sup> TWA; 160 ppm ST; 655 mg/m<sup>3</sup> ST; 900 ppm IDLH

OSHA Final PELs – 100 ppm TWA 435 mg/m<sup>3</sup> TWA

Eye Protection: Wear protective chemical goggles or appropriate eye protection.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: aromatic odor

Odor Threshold: 1 ppm

Taste: Not available

Molecular Formula: C<sub>6</sub>H<sub>4</sub>(CH<sub>3</sub>)<sub>2</sub>

Molecular Weight: 106.17

pH: Not available.

Boiling Point: 136-140° C @ 760 mm Hg

Freezing/Melting Point: -34° C

Decomposition Temperature: Not available

Specific Gravity: 0.865 g/cm<sup>3</sup>

Vapor Density (Air=1): 3.66

Vapor Pressure: 8.29 mm Hg @ 25° C.

Evaporation Rate (Butyl acetate = 1): 0.7

Viscosity: <32.6 SUS

Solubility: Insoluble

## 10. STABILITY AND REACTIVITY

Stability: Under normal storage conditions, temperature and pressure.

Conditions to Avoid: Ignition sources and excess heat.

Incompatibility With Various Substances: Strong oxidizing agents, strong acids, acetic acid, and nitric acid.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

Hazardous Polymerization: Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Animal Toxicity(Xylenes):

Draize test, rabbit, eye; 87 mg Mild;

Draize test, rabbit, eye; 5 mg/24H Severe;

Draize test, rabbit, skin; 100% Moderate;  
Draize test, rabbit, skin; 500 mg/24H Moderate;  
Inhalation, rat: LC50 = 5000 ppm/4H;  
Oral, mouse: LD50 = 2119 mg/kg;  
Oral, rat: LD50 = 4300 mg/kg;  
Skin, rabbit: LD50 = >1700 mg/kg;

**Animal Toxicity(Ethylbenzene):**

Draize test, rabbit, eye; 500 mg Severe;  
Inhalation, rat: LC50 = 55,000 mg/m<sup>3</sup>/2H;  
Oral, mouse: LC50 = 35,000 mg/m<sup>3</sup>/2H;  
Oral, rat: LD50 = 3500 mg/kg;  
Skin, rabbit: LD50 = 17800 uL/kg;

**Carcinogenicity (Xylenes):**

ACGIH: A4, not classifiable as a human carcinogen  
IARC: Group 3 – not classifiable.

**Carcinogenicity (Ethylbenzene):**

ACGIH: A3, confirmed animal carcinogen with unknown relevance to humans  
California: carcinogen, initial date 6/11/04  
NTP: Not listed  
IARC: Group 2B carcinogen.

**Epidemiology:** 175 workers were 3xposed to 21 ppm of xylene for 7 years. Subjective symptoms, such as anxiety, forgetfulness, inability to concentrate, and dizziness were reported. Xylenes accounted for 70% of the total exposure. Liver and kidney effects were reported..

**Teratogenicity:** No increased evidence of birth defects was reported in a study of lab workers exposed to xylene during early pregnancy. Exposure to other solvents and chemicals also occurred. An increased incidence of spontaneous abortions was reported. Animal information suggests that xylene is not teratogenic or embryotoxic at levels that are not harmful to the mother.

**Reproductive Effects:** An increase in menstrual disorders has been reported in women exposed to organic solvents such as benzene, toluene, and xylenes. It is not possible to attribute these effects to xylene in particular.

**Mutagenicity:** Xylene does not appear to be a mutagen.

**Neurotoxicity:** Xylene may damage hearing or enhance sensitivity to noise in chronic occupational exposures, probably from a neurotoxic mechanism.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity:**

Fish: rainbow trout: LC50 = 13.5 mg/L; 96 Hr; unspecified;  
Fish: rainbow trout: LC50 = 8.5 mg/L; 96 Hr; static conditions;  
Fish: goldfish: LD50 = 13 mg/L; 24 Hr; unspecified;  
Fish: fathead minnow: LC50 = 46 mg/L; 1 Hr; Static bioassay;  
Fish: fathead minnow: LC50 = 16.1 mg/L; 96 Hr; flow-through conditions;  
Fish: bluegill: EC50 = 16.1 mg/L; 48 Hr; flow-through conditions;  
Water flea: EC50 = 3.82 mg/L; 24 Hr; flow-through conditions;  
Photobacterium phosphoreum: EC50 = 0.0084 mg/L; 24 Hr; microtox test

**Environmental Fate:** Atmosphere): According to a model of gas/particulate partitioning of semi volatile organic compounds in the atmosphere, xylene, which has an experimental vapor pressure of 7.99 mm Hg at 25° C, will exist solely as a vapor in the ambient atmosphere. Vapor-phase xylene is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals. The atmospheric lifetime of xylene is about 14-26 hours. Ambient levels of xylene are detected in the atmosphere due to large emissions of this compound. Soil: In soil, it will volatilize and leach into groundwater. Little bioconcentration is expected.

## 13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded acetonitrile is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is not a "P" listed waste under 40 CFR 261.33. It is not a "U" listed waste.

#### 14. TRANSPORT INFORMATION

##### US DOT

Proper Shipping Name: Xylenes

Hazard Class: 3

UN Number: UN1307

Packing Group: III

##### Canada TDG

Proper Shipping Name: Xylenes

Hazard Class: 3 (9.2)

UN Number: UN1307

Packing Group: II

Additional Information: Flashpoint 27 C

##### International (Water, I.M.O.)

Proper Shipping Name: Xylenes

Hazard Class: 3

UN Number: UN1307

Packing Group: III

##### International (Air, I.C.A.O.)

Proper Shipping Name: Xylenes

Hazard Class: 3

UN Number: UN1307

Packing Group: III

#### 15. REGULATORY INFORMATION

##### US Federal Regulations:

TSCA: CAS# 1330-20-7 and CAS# 100-41-4 are listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 100-41-4 – Effective 6/19/97, Sunset 6/19/97.

Chemical Test Rules: Not listed.

Section 12b: Not listed.

TSCA Significant New Use Rule: Not listed.

CERCLA Hazardous Substances: CAS# 1330-20-7 – 1000 lb final RQ; 454 kg final RQ; CAS# 100-41-4 – 1000 lb final RQ; 454 kg final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 1330-20-7 – immediate, delayed, fire; CAS# 100-41-4 – immediate, delayed, fire

Section 313: Xylenes (CAS# 1330-20-7) and ethylbenzene (CAS# 100-41-4) are reportable under Section 313 and 40 CFR 373..

Clean Air Act: CAS# 1330-20-7 and CAS# 100-41-4 are listed as hazardous air pollutants (HAP). Neither is a Class 1 Ozone Depleter. Neither is a Class 2 Ozone Depleter.

Clean Water Act: CAS# 1330-20-7 and CAS# 100-41-4 are listed as listed as a Hazardous Substance. CAS# 100-41-4 is a Priority Pollutant. CAS# 100-41-4 is a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

##### US State Regulations:

CAS# 1330-20-7 and CAS# 100-41-4 are on the following state right-to-know lists: California, New Jersey, Pennsylvania, and Massachusetts

California Prop 65: WARNING: This product contains Ethylbenzene, a chemical known to the state of California to cause cancer. California No Significant Risk Level: Not listed

##### Canada:

DSL/NDL: CAS# 1330-20-7 and CAS# 100-41-4 are listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2, D2B, D2A. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 100-41-4 is listed on Canada's Ingredient Disclosure List. CAS# 1330-20-7 is not listed.

**DSCG (EEG):**

Hazard Symbols: Xn

Risk Phrases: R10 – Flammable; R20/21 – Harmful by inhalation and in contact with skin; R36/38 – Irritating to eyes and skin.

Safety Phrases: S25: Avoid contact with eyes.

WGK (Water Danger/protection): CAS# 1330-20-7: 2; CAS# 100-41-4: 1

**National Fire Protective Association (Estimated):** Health - 2, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

## 16. OTHER INFORMATION

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.