Organic

School Material Safety Data Sheet

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GENIUM PUBLISHING CORP.

No. 170

XYLENE
(MIXED ISOMERS)
February 1987

SECTION 1. INTRODUCTORY INFORMATION

NFPA FIRE HAZARD SYMBOL
(See Glossary for details)

MATERIAL NAME AND FORMULA: XYLENE (MIXED ISOMERS); $C_6H_4(CH_3)_2$
SYNONYMS: Xylol, Dimethylbenzene
CAS NUMBER: 1330-20-7
INGREDIENTS: Xylene (o, m and p-Isomers), >90%; Other C_7-C_9 Hydrocarbons, <10%. Material may contain ethylbenzene [TWA 100 ppm] and traces of toluene and C_9 aromatic and aliphatic hydrocarbons. Some commercial products may contain over 10% nonxylene hydrocarbons, mostly ethylbenzene.
DOT CLASSIFICATION: Flammable Liquid; **OSHA CLASSIFICATION:** Class IC Flammable Liquid
EPA CLASSIFICATION: Hazardous Substance; Hazardous Waste
MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency telephone numbers.
DESCRIPTION: Xylene is a light-colored or colorless mobile liquid with an aromatic odor. The recognition threshold (100% of test panel) is about 0.3 ppm in air (unfatigued).
PRELIMINARY INFORMATION: Xylene can be a dangerous fire hazard and moderate explosion hazard if exposed to heat or flame. This material is an irritant to body tissues and toxic by ingestion. Xylene may be used in the biology area for cleaning microscope lenses. It also has uses in a chemistry lab and may be found in some cleaning fluids in the custodial area. This material should not be used in schools if alternatives can be found to meet the necessary educational objectives. If its use is deemed necessary, keep amounts used to a minimum and use with great caution (ref. #511).

SECTION 2. USE AND STORAGE INFORMATION

-- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- **Always provide for safe disposal of all chemical waste generated in the lab.** Check applicable regulations prior to use.
- Provide adequate ventilation or restrict use to fume hood. Heavier-than-air vapors may collect in low areas if ventilation is not adequate.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- Whenever possible, substitute less hazardous materials.
- Buna-N rubber gloves are recommended when working with this material.
- This flammable liquid can form explosive mixtures with air.
- Review sections 3, 5, and 6 to be prepared for possible emergencies.

-- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- **For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb irritants and all lenses may concentrate them.**
- After working with this material always wash hands and face before eating, drinking, or smoking.
- Clean up spills promptly.
- Do not breathe vapors -- use only in a fume hood unless ventilation is adequate and amounts used are small.
- Keep away from strong oxidizing agents and sources of heat or ignition.
- Prevent skin contact; remove contaminated clothing promptly.
- Toxic; do not taste or swallow xylene.

-- ADDITIONAL INFORMATION --

- Xylene does not polymerize. It is stable in closed containers under normal conditions of storage.
- Incompatible with strong oxidizing agents.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs.
- Should be stored in approved FLAMMABLES cabinet, away from oxidizing agents and sources of heat or ignition.
- No smoking in storage or use area.
- Not recommended for use or storage in schools without an absolute need being determined.
- Metal safety cans are recommended for storage purposes, grounded and bonded for transfers of liquid to avoid static sparks.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Evacuate unnecessary personnel. Cleanup personnel should have protection against inhalation of vapors or skin contact.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- Provide maximum explosion-proof ventilation. Use nonsparking tools for cleanup.
- Cover material with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into an appropriate container (with secure lid) for disposal in accordance with existing regulations. Dike with inert absorbent material, as needed, to contain and limit spill area.

DISPOSAL OF SMALL QUANTITIES:

- Burn waste in open pit (with supervision) in a secure area, or small quantities of waste material may be burned in an incinerator if approved methods and applicable regulations are followed.
- Absorb on paper and allow solvent to evaporate in fume hood. **Do not flush to drains** (explosion hazard).
- If the above methods are not practical, feasible, or in accord with existing regulations, contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.
FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL

SECTION 4: HEALTH HAZARDS

Xylene is not listed as a known or suspected carcinogen by the NTP, IARC, or OSHA.

Current OSHA PEL and ACGIH TLV: 8-hr. TWA: 100 ppm. (435 mg/m^3) (skin)*. STEL is 150 ppm (655 mg/m^3).
- NIOSH has proposed a 10-hr. TWA of 100 ppm with a 200-ppm ceiling level (10-min. sample).
* Skin notation added to indicate the possibility of skin absorption.
- TLV set to prevent irritant effects and CNS depression.

- Human, Inhalation, TCLo: 200 ppm (irritation effects)
- Rat, Oral, LD_{50}: 4.3 g/kg
- Human, Oral, LDLo: 50 mg/kg

- Inhalation of xylene at the TLV may cause mild irritation and dizziness in sensitive persons. Concentrations from 100 to 200 ppm may cause headache, nausea, and depression. Vapor levels >200 ppm can have an anesthetic effect.
- Skin contact may produce mild irritation and skin defatting.
- Eye contact may cause burning and irritation.
- Ingestion of xylene may cause poisoning. One ounce or more may be fatal. Aspiration can be a hazard if this material is swallowed.

SECTION 5: FIRST AID PROCEDURES

Eye contact:
- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:
- Wash exposed areas of skin with soap and water. Replace lost skin oils with lotions or creams.
- Remove contaminated clothing promptly.
- Get medical help when area of skin exposure is large or if irritation persists.*

Inhalation:
- Remove victim to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty or if nausea or collapse has occurred.*

Ingestion:
- Get immediate medical attention.*
- Give white mineral oil demulcent and saline cathartic, but do not induce vomiting unless directed by a physician.
- Maintain observation of patient for possible delayed onset of pulmonary edema.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- OSHA Class IC flammable liquid. Remove containers of xylene from fire area if this can be done safely.
- Dangerous fire hazard and moderate explosion hazard when exposed to heat or flame.
- Extinguishing media: carbon dioxide, dry chemical, alcohol type of foam, water, fog, or steam to provide a smothering effect on the fire.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- Use of a direct stream of water may scatter the fire.
- A water spray may be used to cool fire-exposed containers and disperse vapors.
- The heavier-than-air vapors may flow along surfaces to distant sources of ignition and flash back.

THERMAL OXIDATIVE DEGRADATION PRODUCTS: Toxic vapors including carbon monoxide and oxides of nitrogen.

FLASH POINT AND METHOD(S) ... >77°F (25°C) (TCC)

AUTOIGNITION TEMPERATURE ... 867°F (463°C)

FLAMMABILITY LIMITS IN AIR (vol. %) : Lower ... 1 Upper ... 7

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm) ... 275-293°F (135-145°C)*
VAPOR PRESSURE (@ 20°C, mm Hg) ... ca 6
VAPOR DENSITY (air = 1) ... 3.7
SOLUBILITY IN WATER ... Negligible
SPECIFIC GRAVITY (H_2O = 1) ... 0.86 - 0.87
MOLECULAR WEIGHT ... 106.18
EVAPORATION RATE (BuAc = 1) ... 0.6
% VOLATILE ... ca 100
* Wider and narrower boiling range materials are commercially available.

DATA SOURCES: Genium's Industrial MSDS #318 (11/80) and references 1-12, 19-21, 23, 26, 31, 34, 37-39, 82, 501, 503, 505, 509, 511.
(see glossary for titles)

Approvals: Author J. Bantin
Indust. Hygiene/Safety
Medical Review May 87