

XYLENE

ChemWatch Material Safety Data Sheet (REVIEW) Issue Date: Thu 22-Aug-2002 CHEMWATCH 1307-3 CD 2004/2 Page 1 of 13

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

XYLENE

STATEMENT OF HAZARDOUS NATURE

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation.

SUPPLIER

Company: Glasscorp Ltd

Address: 124 Bush Road, Albany, Auckland

Telephone: 09 415 6338 Emergency Telephone: 0800 764 766 Fax: 09 415 6339

HAZARD RATINGS



PRODUCT USE

A strong solvent for general use in the manufacture of paints, varnishes, lacquers, thinners, inks, rubber, pesticides, herbicides and paint strippers.

SYNONYMS

C8-H10	C6H4 (CH3) 2
xylol	xylene (mixed isomers)
methyltoluene	methyl toluene
dimethylbenzene	dimethyl benzene
zylene (sic)	12660
xylene, pronalys	

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS		
NAME xylene exact composition varies with source, but may contain mixed isomers, ortho-xylene approx.10-20%, and meta-xylene approx.40-50% and para-xylene approx.20-30%	CAS RN 1330-20-7	% > 93
ethylbenzene toluene	100-41-4 108-88-3	5-15 1

Section 3 - HAZARDS IDENTIFICATION



EMERGENCY OVERVIEW

HAZARD

- 3.1C Flammable liquid
- 6.1D Harmful by inhalation
- 6.1D Harmful by skin contact
- 6.1E Slightly harmful if swallowed
- 6.3A Irritating to skin.
- 6.4A Irritating to eyes.
- 6.7B Limited evidence of a carcinogenic effect.
- 6.8A May cause harm to the unborn child.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual; animal experiments indicate that ingestion of less than 150 gram may be fatal.

HARMFUL-May cause lung damage if swallowed.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce

Section 3 - HAZARDS IDENTIFICATION ...

significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

SKIN

Skin contact with the material may be harmful; systemic effects may result following absorption.

Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

INHALED

Harmful by inhalation.

Limited evidence exists, or practical experience predicts, that the material produces irritation of the respiratory system in a significant number of individuals following inhalation.

Vapours potentially cause drowsiness and dizziness*.

CHRONIC HEALTH EFFECTS

Cumulative effects may

result following exposure*.

On the basis, primarily, of animal experiments, concern has been expressed by at least one classification body that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Principal routes of exposure are usually by skin contact/absorption and inhalation of vapour

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS]

Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.

Women exposed to xylene in the first 3 months of pregnancy showed a slightly increased risk of miscarriage and birth defects. Evaluation of workers chronically exposed to xylene has demonstrated lack of genetic toxicity. Exposure to xylene has been associated with increased rates of blood cancer, but this may be complicated by exposure to other substances, including benzene. Animal testing found no evidence of cancer-causing activity.

Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

Section 4 - FIRST AID MEASURES

SWALLOWED

If poisoning occurs, contact a doctor or Poisons Information Centre.

- If swallowed do NOT induce vomiting.

- If vomiting occurs, lean patient forward or place on left side (head-down

position, if possible) to maintain open airway and prevent aspiration.

- Observe the patient carefully.

- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconsciousness

- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.

- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.

- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

- Transport to hospital or doctor without delay.

- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.

- Lay patient down. Keep warm and rested.

- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.

- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to xylene:

- Gastro-intestinal absorption is significant with ingestions. For ingestions exceeding 1-2 ml (xylene)/kg, intubation and lavage with cuffed endotracheal tube is recommended. The use of charcoal and cathartics is equivocal.

- Pulmonary absorption is rapid with about 60-65% retained at rest.

- Primary threat to life from ingestion and/or inhalation, is respiratory failure.

Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen.
Patients with inadequate tidal volumes or poor arterial blood gases (pO2 < 50 mm Hg or pCO2 > 50 mm Hg) should be intubated.

- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously

Section 4 - FIRST AID MEASURES ...

symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance. - A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax. - Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice. BIOLOGICAL EXPOSURE INDEX - BEI These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant Methylhippu-ric acids in urine

Index 1.5 gm/gm creatinine 2 mg/min Sampling Time Comments End of shift Last 4 hrs of shift

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Alcohol stable foam. Dry chemical powder. Carbon dioxide. Water spray or fog - Large fires only.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.

- May be violently or explosively reactive.

- Wear breathing apparatus plus protective gloves.

- Prevent, by any means available, spillage from entering drains or water course.

- If safe, switch off electrical equipment until vapour fire hazard removed.

- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are flammable.
- Moderate fire hazard when exposed to heat or flame.
- Vapour forms an explosive mixture with air.
- Moderate explosion hazard when exposed to heat or flame.
- Vapour may travel a considerable distance to source of ignition.

- Heating may cause expansion or decomposition leading to violent rupture of containers.

- On combustion, may emit toxic fumes of carbon monoxide (CO).

Other combustion products include carbon dioxide (CO2)

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb small quantities with vermiculite or other absorbent material.
- Wipe up.
- wipe up.
- Collect residues in a flammable waste container.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Contain spill with sand, earth or vermiculite.
- Use only spark-free shovels and explosion proof equipment.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction

Section 6 - ACCIDENTAL RELEASE MEASURES ...

confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
- 3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
- 4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".

LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

- 5 Guide 130 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC Transport Canada.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of overexposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid generation of static electricity.
- DO NOT use plastic buckets.
- Earth all lines and equipment.
- Use spark-free tools when handling.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

SUITABLE CONTAINER

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

Plastic containers may only be used if approved for flammable liquids.

Section 7 - HANDLING AND STORAGE ...

STORAGE INCOMPATIBILITY

Avoid storage with oxidisers

STORAGE REQUIREMENTS

- Store in original containers in approved flammable liquid storage area.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed.
- Store away from incompatible materials in a cool, dry, well-ventilated area.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

TLV TWA: 100 ppm A4;BEI [ACGIH] TLV STEL: 150 ppm A4;BEI [ACGIH] PEL TWA: 100 ppm, 435 ma/m³ [OSHA Z1] TLV TWA: 100 ppm, 434 mg/m³; STEL: 150 ppm, 651 mg/m³ A4 NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans ES TWA: 80 ppm, 350 mg/m³; STEL: 150 ppm, 655 mg/m³ (Under review) OES TWA: 100 ppm, 441 mg/m³; STEL: 150 ppm, 662 mg/m³ skin Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eves and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard. IDLH Level: 900 ppm Odour Threshold Value: 20 ppm (detection), 40 ppm (recognition) NOTE: Detector tubes for o-xylene, measuring in excess of 10 ppm, are

available commercially. (m-xylene and p-xylene give almost the same response)

Xylene vapour is an irritant to the eyes, mucous membranes and skin and causes narcosis at high concentrations. Exposure to doses sufficiently high to produce intoxication and unconsciousness also produces transient liver and kidney toxicity. Neurologic impairment is NOT evident amongst volunteers inhaling up to 400 ppm though complaints of ocular and upper respiratory tract irritation occur at 200 ppm for 3 to 5 minutes. Exposure to xylene at or below the recommended TLV-TWA and STEL is thought to minimise the risk of irritant effects and to produce neither significant narcosis or chronic injury. An earlier skin notation was deleted because percutaneous absorption is gradual and protracted and does not substantially contribute to the dose received by inhalation.

PERSONAL PROTECTION

XYLENE

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...



EYE

- Safety glasses with side shields; or as required,

- Chemical goggles.

- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

- Barrier cream with polyethylene gloves Butyl rubber gloves or Neoprene gloves or PVC gloves Safety footwear DO NOT use this product to clean the skin

RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone	Maximum Protection	Half-face	Full-Face
Level ppm (volume)	Factor	Respirator	Respirator
1000	10	a-AUS	-
1000	50	-	a-AUS
5000	50	Airline *	-
5000	100	-	a-2
10000	100	-	a-3
	100+		Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand

OTHER

Overalls

- Impervious protective clothing
- Eyewash unit.

Ensure there is ready access to an emergency shower

ENGINEERING CONTROLS

Use in a well-ventilated area or Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.

CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant: solvent, vapours, degreasing etc., evaporating from tank (in still air).	Air Speed: 0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or	1: Disturbing room air currents
favourable to capture	
2: Contaminants of low toxicity or of	2: Contaminants of high toxicity
nuisance value only.	
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in	4: Small hood-local control only
motion	

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid. Does not mix with water. Floats on water.

Molecular Weight: 106.18 Melting Range (°C): -48 to 13 Solubility in water (g/L): Immiscible pH (1% solution): Not applicable. Volatile Component (%vol): 100 Relative Vapour Density (air=1): 3.66 @ 15 C Lower Explosive Limit (%): 1.1 Autoignition Temp (°C): 495-516 State: Liquid Boiling Range (°C): 138 to 143 Specific Gravity (water=1): 0.87 @ 15 C pH (as supplied): Not applicable Vapour Pressure (kPa): 0.5 @ 15 C Evaporation Rate: 0.7 Bu Ac=1 Flash Point (°C): 27 Upper Explosive Limit (%): 7.7 Decomposition Temp (°C):

APPEARANCE

Clear colourless flammable liquid with a strong aromatic odour; floats on water. Mixes with most organic solvents. Moderate to highly volatile; vapour is heavier than air.

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

xylene

TOXICITYIRRITATIONOral (human) LDLo: 50 mg/kgSkin (rabbit):500 mg/24h moderateOral (rat) LD50: 4300 mg/kgEye (human): 200 ppmirritantEye (rabbit): 87 mg mildInhalation (man) LCLo: 10000 ppm/6hEye (rabbit): 5 mg/24h SEVEREInhalation (rat) LC50: 5000 ppm/4hEye (rabbit): 5 mg/24h SEVEREReproductive effector in ratsThe substance is classified by IARC as Group 3:NOT classifiable as to its carcinogenicity to humans.Evidence of carcinogenicity may be inadequate or limited in animal testing.

Section 12 - ECOLOGICAL INFORMATION

Hazardous Air Pollutant: No Fish LC50 (96hr.) (mg/l): 13.5

Section 12 - ECOLOGICAL INFORMATION ...

BCF<100: 2.14-2.20 log Kow (Prager 1995): 3.12-3.20 Half-life Soil - High (hours): 672 Half-life Soil - Low (hours): 168 Half-life Air - High (hours): 44 Half-life Air - Low (hours): 2.6 Half-life Surface water - High (hours): 672 Half-life Surface water - Low (hours): 168 Half-life Ground water - High (hours): 8640 Half-life Ground water - Low (hours): 336 Aqueous biodegradation - Aerobic - High (hours): 672 Aqueous biodegradation - Aerobic - Low (hours): 168 Aqueous biodegradation - Anaerobic - High (hours): 8640 Aqueous biodegradation - Anaerobic - Low (hours): 4320 Photolysis maximum light absorption - High (nano-m): 269.5 Photolysis maximum light absorption - Low (nano-m): 265 Photooxidation half-life water - High (hours): 2.70E+08 Photooxidation half-life water - Low (hours): 3.90E+05 Photooxidation half-life air - High (hours): 44 Photooxidation half-life air - Low (hours): 2.6

DSection 13 - DISPOSAL CONSIDERATIONS

- Consult manufacturer for recycling options and recycle where possible .

- Consult State Land Waste Management Authority for disposal.

- Incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



ГΙ

Shipping Name: XYLENES XYLOLS Hazard Class: 3 UN/NA Number: 1307 ADR Number: 33 Packing Group: III Labels Required: flammable liquid Additional Shipping Information: International Transport Regulations: IMO: 3

Section 15 - REGULATORY INFORMATION

SAFETY

Keep away from sources of ignition. No smoking. Avoid exposure - obtain special instructions before use. Do not empty into drains. To clean the floor and all objects contaminated by this material, use water and detergent. Keep away from food, drink and animal feeding stuffs. Take off immediately all contaminated clothing. In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre. If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label). If you feel unwell contact Doctor or Poisons Information Centre (show the label if possible).

Section 16 - OTHER INFORMATION

NEW ZEALAND POISONS INFORMATION CENTRE 0800 POISON (0800 764 766) NZ EMERGENCY SERVICES: 111

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