Material Safety Data Sheet of mixed xylene

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : **mixed Xylene**

Uses : Solvent. Raw material for use in the chemical industry.

Product Code : Q9151, T1404, Q9156, Q5891, Q9306

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material Formal Name : Benzene, dimethyl

Synonyms : Dimethyl benzenes

Xylene S

Mixed xylenes

CAS No. : 1330-20-7

INDEX No. : 601-022-00-9

EINECS No. : 215-535-7

Hazardous Components

Chemical Name	CAS	EINECS	Symbol(s)	R-phrase(s)	Conc.
Ethylbenzene	100-41-4	202-849-4	F, Xn	R11; R20	10.00 - <= 30.00 %W
Xylene, Mixed Isomers	1330-20-7	215-535-7	Xn	R10; R20/21; R38	75.00 - 80.00 %W

3. HAZARDS IDENTIFICATION :

Health Hazards : Harmful by inhalation and contact with skin. Vapors may cause drowsiness and dizziness. Slightly irritating to the respiratory system. Irritating to skin. Moderately irritating to the eyes. Harmful: may cause lung damage if swallowed. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Central nervous system (CNS).
Kidney. Liver.

Signs and Symptoms : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. If material enters the lungs, signs and symptoms may include coughing, choking, wheezing, difficulty breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea, and loss of coordination. Continued inhalation may result in unconsciousness and death.

Aggravated Medical Condition : Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Central nervous system (CNS). Kidney. Liver. Skin.

Safety Hazards : Highly flammable. In use, may form a flammable/explosive vapor-air mixture. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.

Environmental Hazards : Toxic to aquatic organisms.

4. FIRST AID MEASURES

General Information : Keep the victim calm. Obtain medical treatment immediately.

Inhalation : DO NOT DELAY. Remove to fresh air. If rapid recovery does not occur, transport to the nearest medical facility for additional treatment.

Skin Contact : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain, and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

Ingestion	: If swallowed, do not induce vomiting: transport to the nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep the head below the hips to prevent aspiration.
Advice to Physician	: Potential for chemical pneumonitis. Consider gastric lavage with a protected airway, and administration of activated charcoal. Potential for cardiac sensitization, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects. Consider oxygen therapy.

5. FIRE-FIGHTING MEASURES

Clear the fire area of all non-emergency personnel.

Specific Hazards	: The vapor is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water. Carbon monoxide may evolve if incomplete combustion occurs.
Extinguishing Media	: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	: Do not use water in a jet.
Protective Equipment for Firefighters	: Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	: Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Immediately remove all contaminated clothing.

For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe all relevant local and international regulations.

Protective measures	: Isolate hazard areas and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire-fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate the contaminated area thoroughly.
Clean Up Methods	: For large liquid spills (> 1 drum), transfer by mechanical means such as a vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of them safely. Remove contaminated soil and dispose of it safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of them safely. Remove contaminated soil and dispose of it safely.
Additional Advice	: Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapor is heavier than air, spreads along the ground and distant ignition is possible. Vapor may form an explosive mixture with air. See Chapter 13 for information on disposal.

7. HANDLING AND STORAGE

General Precautions	: Avoid breathing or contact with the material. Only use in well-ventilated areas. Wash thoroughly after handling. For guidance on the selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for the safe handling, storage, and disposal of this material.
Handling	Avoid inhaling vapor and/or mists. Avoid contact with skin,

		eyes, and clothing. Extinguish any naked flames. Do Not smoke. Remove ignition sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handling Temperature: Ambient.
Storage	:	Bulk storage tanks should be diked (bunded). Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Storage Temperature: Ambient.
Product Transfer	:	Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.
Recommended Materials	:	For containers, or container linings use mild steel, stainless steel.
Unsuitable Materials	:	Natural, butyl, neoprene or nitrile rubbers.
Container Advice	:	Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
Additional Information	:	Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

UK Workplace Exposure Limits

Ethylbenzene	EH40 WEL	TWA	100 ppm	441 mg/m3	
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.
Xylene, Mixed Isomers	EH40 WEL	TWA	50 ppm	220 mg/m3	
	EH40 WEL	STEL	100 ppm	441 mg/m3	
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.

Additional Information : Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.

Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN141. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Hand Protection : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following

materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

Eye Protection : Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166.

Protective Clothing : Chemical resistant gloves/gauntlets, boots, and apron. Where

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colourless. Liquid.
Odour	Aromatic.
Odour threshold	0.27 ppm
pH	Not applicable.
Boiling point	Typical 102 - 145 °C / 277 - 293 °F
Flash point	Typical 21 - 27 °C / 70 - 81 °F (Abel)
Explosion / Flammability limits in air	1 - 7.1 %(V)
Auto-ignition temperature	432 - 530 °C / 810 - 986 °F (ASTM E-659)
Vapour pressure	Typical 4.5 kPa at 50 °C / 122 °F Typical 0.8 - 1.2 kPa at 20 °C / 68 °F Typical 0.2 kPa at 0 °C / 32 °F
Density	Typical 810 kg/m3 at 15 °C / 59 °F (ASTM D-1298)
Water solubility	0.175 kg/m3
Solubility in other solvents	Miscible.
n-octanol/water partition coefficient (log Pow)	3.12 - 3.2
Kinematic viscosity	< 0.9 mm2/s at 20 °C / 68 °F
Vapour density (air=1)	3.7
Dielectric constant	Typical 2.6
Evaporation rate (nBuAc=1)	13.5 (DIN 53170, di-ethyl ether=1) 0.76 (ASTM D 3539, nBuAc=1)
Surface tension	Typical 28.7 mN/m at 20 °C / 68 °F (ASTM D-971)

10. **STABILITY AND REACTIVITY**

Stability	Stable under normal conditions of use. Reacts violently with strong oxidising agents.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation.
Materials to Avoid	Strong oxidizing agents.

Hazardous Decomposition Products	Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing.

Acute Oral Toxicity : Low toxicity: LD50 >2000 mg/kg , Rat

Acute Dermal Toxicity : Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Acute Inhalation Toxicity : Low toxicity: LD50 >2000 mg/kg Classified as harmful under EC criteria. , Rabbit
Low toxicity: LC50 >20 mg/l / 4 hours, Rat Classified as harmful under EC criteria.
High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Skin Irritation : Irritating to skin.

Eye Irritation : Moderately irritating to eyes (but insufficient to classify). Inhalation of vapors or mists may cause irritation to the respiratory system.

Respiratory Irritation : Not expected to be a skin sensitiser.

Sensitization : Liver: can cause liver damage.
Kidney: can cause kidney damage.
Central nervous system: repeated exposure affects the nervous system.
Auditory system: prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss. Not mutagenic.

Repeated Dose Toxicity :

Mutagenicity : Not carcinogenic in animal studies. (Xylene, Mixed Isomers) Mixed xylenes contain ethylbenzene, which has shown limited evidence of a carcinogenic effect.

Carcinogenicity :

Reproductive and Developmental Toxicity : Does not impair fertility.

Causes fetotoxicity in animals at doses that are maternally toxic.

Additional Information: Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

TRANSPORT INFORMATION

ADR

Class	:	3
Packing group	:	III
Classification code Hazard	:	F1
indentification no.	:	30
UN No.	:	1307
Danger label (primary risk)	:	3
Proper shipping name	:	Mixed Xylenes

RID

Class	:	3

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish : Toxic: 1 < LC/EC/IC50 <= 10 mg/l

Aquatic Invertebrates : Toxic: 1 < LC/EC/IC50 <= 10 mg/l

Algae : Toxic: 1 < LC/EC/IC50 <= 10 mg/l

Mobility : If product enters soil, it will be highly mobile and may contaminate groundwater.
Floats on water.

Persistence/degradability : Readily biodegradable.
Oxidises rapidly by photo-chemical reactions in air.

Bioaccumulation : Does not bioaccumulate significantly.

Other Adverse Effects : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

Container Disposal : Drain the container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

AICS	:	Listed.	
DSL	:	Listed.	
INV (CN)	:	Listed.	
ENCS (JP)	:	Listed.	(3)-3
TSCA	:	Listed.	
EINECS	:	Listed.	215-535-7
KECI (KR)	:	Listed.	97-1-275
KECI (KR)	:	Listed.	KE-35427
PICCS (PH)	:	Listed.	
National Legislation OE_HPV	:	Listed.	

Packing group	:	III
Classification code	:	F1
Hazard indentification no.	:	30
UN No.	:	1307
Danger label (primary risk)	:	3
Proper shipping name	:	Xylenes

IMDG

Identification number	UN 1307
Proper shipping name	XYLENES
Class / Division	3
Packing group	III
Marine pollutant:	No

IATA (Country variations may apply)

UN No.	: 1307
Proper shipping name	: Xylenes
Class / Division	: 3
Packing group	: III

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Label Name	:	XYLENE, A MIXTURE OF ISOMERS.
EC label/EC Number	:	215-535-7
EC Classification	:	Flammable. Harmful.
EC Annex I Number	:	601-022-00-9
EC Symbols	:	Xn Harmful.
EC Risk Phrases	:	R10 Flammable. R20/21 Harmful by inhalation and in contact with skin. R38 Irritating to skin.
EC Safety Phrases	:	S25 Avoid contact with eyes.

16. OTHER INFORMATION

R-phrase(s)

R10	Flammable.
R11	Highly flammable.
R20	Harmful by inhalation.
R20/21	Harmful by inhalation and in contact with skin.
R38	Irritating to skin.

MSDS Version Number	:	2.
MSDS Effective Date	:	13.09.2005
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this safety data sheet is in accordance with Commission Directive 2001/58/EC of 27 July 2001, amending for the second time Commission Directive 91/155/EEC.
Uses and Restrictions	:	Solvent.
MSDS Distribution	:	Raw material for use in the chemical industry.
Disclaimer	:	The information in this document should be made available to all who may handle the product This information is based on our current knowledge and is intended to describe the product for health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.