Product Name:

# xylenes(mixed)

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

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| **Identification of the substance or preparation:** | **Xylene (mixed)** |
| **Country of origin:** | **Iran (Islamic Republic of Iran)** |
| **CAS Number:** | **1330-20-7** |
| **Synonyms:** | **Xylol**<br>**Dimethyl benzenes** |
| **Company/undertaking identification** | **National Petrochemical Company**<br>**Iran Petrochemical Commercial Company (IPCC)** |
| **Manufacturer subcontractor:** | **None** |
| **Emergency phone number:** | **00982188881735** |
| **Contact email:** | **msds@petrochem-ir.net** |
| **Fax:** | **00982188839511** |
| **Association/Organization:** | **None** |
| **Use of the substance/Preparation:** | **Solvent; row material for production of benzoic acid, phthalic anhydride, isophthalic and terephthelic acids as well as their dimethyl esters used in the manufacture of polyester fibbers; manufacture of dyes and other organics; sterilizing catgut; cleaning agent in microscope techniques.** |

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

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| **Hazardous substances:** | **Ethyl benzene Risk phrase : R20**<br>**Ortho-xylene Risk phrase : R20/21**<br>**Harmful by inhalation and in contact with Skin**<br>**R 38 Irritating to skin**<br>**NIOSH Registry Number: ZE2100000** |
| **Hazardous label(s):** | **XN F**<br>**FLAMMABLE LIQUID AND VAPOR.**<br>**May cause liver and kidney damage .Aspiration hazard if swallowed. Can enter lungs and cause damage .cause respiratory tract irritation.**<br>**WARNING! Cause eye irritation and skin irritation. May be harmful if absorbed through the skin or inhaled.** |
| **Toxicological characteristics:** | **See section 11** |
| **Substances present at a concentration below the minimum danger:** | **Not available** |
| **Other component:** | **Mixed of ortho-para-metha xylenes.** |

## 3. IDENTIFICATION OF HAZARDS

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| **Risk phrases:** | **R 38 ; R20/21 ; R38 ; R 11**<br>**Respiratory tract irritation, skin irritation, eye irritation, and central nervous system depression.**<br>**Flammable liquid and vapour. Vapour may cause flash fire. Electrostatic charges may be generated by flow, agitation, etc.** |
| **Skin contact:** | **Causes skin irritation.**<br>**May be harmful if absorbed through the skin.**<br>**SHORT TERM EXPOSURE: irritation blisters**<br>**LONG TERM EXPOSURE: same as effects reported in short term exposure, rash.** |
| **Inhalation :** | **Short term exposure: irritation low body temperature, ringing in the ears, nausea, vomiting, stomach pain, headache, drowsiness, symptoms of drunkenness, visual disturbances, lung congestion, kidney damage, liver damage, coma.**<br>**LONG TERM EXPOSURE: same as effects reported in short term exposure, tingling sensation, infertility, menstrual disorders, blood disorders, reproductive effects** |
| **Eye contact:** | **Causes eye irritation.**<br>**SHORT TERM EXPOSURE: irritation (possibly severe), tearing.**<br>**LONG TERMS EXPOSURE: same as effects reported in short term exposure, blurred vision.** |
| **If swallowed:** | **Harmful if liquid is aspirated into longs.**<br>**See toxicological information –section 11.**<br>**SHORT TERM EXPOSURE: same as effects reported in short term inhalation, digestive disorders, aspiration hazard**<br>**LONG TERM EXPOSURE: reproductive effects.** |
| **Other information:** | **Inhalation of high concentration may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma.**<br>**CARCINOGEN STATUS:**<br>**OSHA: NO**<br>**NTP: NO**<br>**IARC: NO** |

## 4. FIRST AID MEASURES

**As a general rule, in case of doubt or if symptoms persist, always call a doctor**
**NEVER induce swallowing in an unconscious person.**

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| **In case of exposure by inhalation:** | **Leave contaminated area immediately; breathe fresh air. Proper respiratory protection must be supplied to any rescuers. If coughing, difficult breathing or any other symptoms develop, seek medical attention at once, even if symptoms develop many hours after exposure.** |
| **Skin contact :** | **Flood all areas of body that have contacted the substance with water. Don't wait to remove contaminated clothing; do it under the water stream.**<br>**Use soap to help assure removal. Isolate Contaminated clothing when removed to prevent contact by others.** |
| **In case of splashes or contact with eyes:** | **Remove any contact lenses at once. Immediately flush eyes well with copious quantities of water or normal saline for at least 20-30 minutes. Seek Medical attention.** |
| **In case of swallowing:** | **If unconscious or convulsing, DO NOT INDUCE VOMITING or give anything by mouth. That victim's airway is open and lays him on his side with his head lower than his body and transport at once to a medical facility. If conscious and not convulsing, give a glass of water to dilute the substance. If medical advice is not readily available, DO NOT INDUCE VOMITING, and rush the victim to the nearest medical facility.** |
| **Note of physician:** | **For ingestion consider gastric lavage and activated charcoal slurry.** |

## 5. FIRE FIGHTING MEASURES

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| **Flammable class:** | **Severe fire hazard. Vapour /air mixtures are explosive. The vapour is heavier than air. Vapours or gases may ignite at distant ignition sources and flash back. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.**<br>**FLASH POINT: 29ºC (85ºF)** |
| **Suitable extinguishing media:** | **Use water spray to cool fire-exposed containers.** |

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| | **Water may be ineffective.**<br>**This substance is lighter than water and insoluble in water. The fire could easily spread by the use of water in an area where the water can not be contained.**<br>**Use water spray, dry chemical, carbon dioxide, or appropriate foam. regular dry chemical carbon dioxide, water, and regular foam.**<br>**Large fires: Use regular foam or flood with fine water spray.** |
| **Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:** | **Carbon monoxide and carbon dioxide** |
| **Special protective equipment for fire fighting :** | **Firefighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus. Wear chemical goggles and gloves.** |
| **Other information:** | **Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out stay away from the ends of tanks. For fires in cargo or storage area:**<br>**cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions:**<br>**Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.**<br>**For tank, rail car or tank truck:**<br>**Evacuation radius: 800 meters (1/2 mile)**<br>**Water may be ineffective.** |

## 6. ACCIDENTAL RELEASE MEASURES

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| **Personal precautions:** | **Use proper protective equipment as indicated in section 5.** |
| | **AIR RELEASE: Reduced vapours with water spray. Stay upwind and keep out of low areas.**<br>**SOIL RELEASE: Trap spilled material at bottom in deep-water pockets, excavated holding areas or within sand bag barriers. Dick for later disposal. Absorb with sand or other non-combustible material. Collect with absorbent into suitable container.** |

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| | **WATER RELEASE: Cover with absorbent sheets, spill-control pads or pillows. Neutralize. Collect with absorbent into suitable container. Absorb with activated carbon. Remove trapped material with suction hoses. Collect spilled material using mechanical equipment.** |
| **Environmental precautions:** | **Remove or shut off all sources of ignition. Remove mechanically or contain on an absorbent material such as dry sand or earth .keep out of sewers and waterways.** |
| **Methods for cleaning up and disposal:** | **Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces.** |
| **Other information:** | **Small spill and leakage: Remove all sources of ignition, ventilate the spill area, and use absorbent paper to pick up spilled material. Follow by washing surfaces well, first with 60-70 % ethanol, then with soap and with 60-70 % ethanol, then with soap and water. Seal all wastes in vapour-tight plastic bags for eventual disposal.** |

## 7. HANDLING AND STORAGE

**The regulations relating to storage premises apply to workshop where the product is handled:**

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| **Handling:** | **Wash thoroughly after handling .remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue (liquid or vapor ) and can be dangerous .Do not pressurize , cut , weld , braze , solder , drill , grind , or expose empty containers to heat , sparks or open flames . Use only with adequate ventilation. Avoid breathing vapor or mist.** |
| **Storage:** | **Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Protect from physical damage. Store outside or in a detached** |

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| | **building. Store with flammable liquids. Keep separated from incompatible substances.** |
| **Other information:** | **Store in flammable liquids storage, and open flame in accordance with applicable regulations. Keep container closed when not in use. Keep away from ignition sources such as heat, sparks, or open flames. Keep container closed. Use with adequate ventilation** |

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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| **Exposure limit values:** | **EXPOSURE LIMITS:**<br>**XYLENE:**<br>**OSHA- the TWA for Xylene is 100 ppm**<br>**ACGIH- the TLV-TWA for Xylene (o-, m-, p- isomers) is 100 ppm and the TLV-STEL is 150 ppm;**<br>**NIOSH- the TWA is 100 ppm and the ceiling limit is 200 ppm /10 min.** |
| **Exposure controls:** | **VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.** |
| **Personal protective equipment:** | **As below** |
| **Eye protection:** | **Wear splash resistant safety goggles with a face shield. Provide and emergency eye wash fountain and quick drench shower in the immediate work area** |
| **Respiratory protection:** | **Any chemical cartridge respirator with organic vapor cartridge(s).**<br>**Any powered, air-purifying respirator with organic vapor cartridge(s).**<br>**Any self-contained breathing apparatus with a full-face piece.**<br>**Escape –**<br>**Any air-purifying respirator with a full face piece and an organic vapor canister.**<br>**Any appropriate escape-type, self – contained breathing apparatus.**<br>**For Unknown Concentrations or Immediately Dangerous to Life or Heath:**<br>**-Any supplied-air respirator with full face pies and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape** |

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| | **supply.** |
| | **Any self-contained breathing apparatus with a full-face piece.** |
| **Hand protection:** | **Wear appropriate chemical resistant gloves.** |
| **Skin and body protection:** | **Wear appropriate chemical resistant clothing.** |
| **Health measures:** | **Not available** |
| **Environmental exposure controls:** | **Not available** |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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| **General information:** | **Clear colourless liquid** |
| **Appearance (at 20°C):** | **clear** |
| **Colour:** | **colourless** |
| **Odour:** | **Not available** |
| **PH (at 20°C):** | **Not available** |
| **Boiling point/range (°C):** | **137°C -140°C** |
| **Freezing point/range (°C):** | **Not available** |
| **Flash point (°C):** | **29°C (85ºF)** |
| **Flammability:** | **flammable** |
| **Auto-ignition temperature:** | **Not available** |
| **Explosive properties:** | **Not available** |
| **Oxidising properties:** | **Not available** |
| **Vapour pressure (at 21°C):** | **6.72 mmHg (10 mm Hg @ 28ºC)** |
| **Vapour density (air=1):** | **3.7** |
| **Specific gravity (water=1) (at 20°C):** | **0.864 at 20ºC** |
| **Solubility (at 20°C):** | **water solubility: <1 mg/ml at 22ºC**<br>**Solvent solubility:**<br>**Acetone: >=100mg/ml at 22ºC**<br>**DMSO: >=100mg/ml at 22ºC**<br>**Ether: Miscible**<br>**miscible with many other organic liquids**<br>**Ethanol: >=100mg/ml at 22ºC**<br>**Benzene: Not available** |
| **Density:** | **0.860 g/ml** |
| **Other information:** | **Refractive index is 1.4970 @ 20ºC.**<br>**Formula: C8 H10**<br>**Molecular Weight: 106.17** |

## 10. STABILITY AND REACTIVITY

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| **Stability:** | **Stable at normal temperatures and pressure.** |
| **Conditions to avoid:** | **POLYMERIZATION: Will not polymerize.**<br>**Avoid heat, flames, sparks and other sources of ignition.**<br>**Containers may repute or explode if exposed to heat. Keep out of water supplies and sewers.** |
| **Material to avoid:** | **Incopmpatibilities:oxidizing materials**<br>**Reactivity: Reacts with oxidizing materials; will attack some forms of plastics, rubber and coatings.** |
| **Hazardous decomposition products:** | **Thermal decomposition products: oxides of carbon** |

## 11. TOXICOLOGICAL INFORMATION

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| **Acute toxicity:** | **- $LD_{50}$, oral, rat ($mg.kg^{-1}$):not available**<br>**- $LD_{50}$, oral, mouse ($mg.kg^{-1}$): not available**<br>**- $LD_{50}$, dermal ($mg.kg^{-1}$): not available** |
| **Sub chronic – chronic toxicity:** | **Not available** |
| **Sensibilization:** | **LOCAL EFFECTS: Irritant: inhalation, skin, eye** |
| **Carcinogenicity:** | **No information found** |
| **Reproductive effects:** | **Not available** |
| **Human experience:** | **Temporary corneal effects, conjunctival irritation; dizziness; headache; nausea and vomiting; mental confusion; weakness; euphoria; tightness in the chest; shallow and rapid respiration; staggering tremors; ventricular irregularities including fibrillation; paralysis, unconsciousness and convulsions. Violent excitement or delirium may precede unconsciousness. It may cause kidney or liver damage.**<br>**HEALTH EFFECTS:**<br>**(O-XYLENE)**<br>**INHALATION:**<br>**ACUTE EXPOSURE:**<br>**XYLENE: Irritation of the upper respiratory tract may occur at 200ppm.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 substantial pain, transient euphoria and emotional liability, headache, nausea, vomiting,** |

**anorexia, abdominal pain, dizziness, drowsiness, ataxia, and staggering. There may be salivation, slurred speech, blurred vision, nystagmus; trinities, tremors, confusion, and flushing of the face and a feeling of increased body heat. In severe exposure, there may be stupor, amnesia, 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 pathetical brain hemorrhage. Both survivors were unconscious for 19-24 hours and experienced retrograde ammonia, 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:**
**XYLENE: 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, parenthesis, tremors, apprehension, impaired memory, insomnia, vertigo, and trinities. 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, mussel hemorrhage, and anemia has been reported. Effects on the liver, kidney, cardiovascular system, and the bone marrow have also 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 increases in the platelets. One case of an apparent epiletiform seizure following a relatively brief exposure has occurred. Women may develop menstrual disorders, such as menorrhagiaa or metrorrhagia, infertility, and pathological pregnancy conditions including toxicosis, danger of miscarriage, and specific developmental abnormalities. Included among these effects are fetal death, fetotoxicity, and musculoskeletal abnormalities, and extra embryonic structures.**

**SKIN CONTACT:**

**ACUTE EXPOSURE;**

**XYLENE: Liquid xylene is a defatting agent and may cause a burning sensation, drying, vasodilatation, erythematic, and possibly blistering. The liquid is readily absorbed through intact or broken skin at of approximately 4-10 mg/cm2/hour, but systemic effects have not been reported.**

**CHRONIC EXPOSURE:**

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

**EYE CONTACT:**

**ACUTE EXPOSURE:**

**XYLENE: 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:**

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

**INGESTION;**

**ACUTE EXPOSURE:**

**XYLENE: Lung damage may occur if aspirated into the lungs and may be fatal. Symptoms may include coughing, difficulty breathing, cyanosis and pulmonary edema. 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 does of 15-30 milliliters (about 1/2 –1 ounce) is the expected human lethal does.**

**CHRONIC EXPOSURE:**
**XYLENE: 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. Including among these effects were fetotoxicity, litter size craniofacial and musculaskeeletal system abnormalities, and post-implementation mortality.**

**Other information:** **Not available**

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity:**

**ORTHOXYLENE:**
**FISH TOXICITY; 16400ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)**
**INVERTEBRATE TOXICITY: 200 mg / L 24 hour(s) EC 100 (Immobilization) water flea(Daphnia magna)**
**ALGAL TOXICITY: 4200 ug/L 8 hours(s) EC 50 (Growth) Green algae.**
**Other toxicity: 73000 ug/l 48 hour(s) LC50 clawed toad**
**Kow: 138356.64(log=5.141 )(estimated from water solubility)**
**Koc: 40550.85(log =4.608) )(estimated from water solubility**

**Bio accumulative potential:** **Bio concentration: 33.96 (estimated from**

**Mobility:**
**Persistence and degradability:**

**water solubility)**
**Aquatic pressures: 2.6723816 hour(s)**
**Environmental summary: Relatively non-persistent in the environment. Not expected to leach through the soil or the sediment. Accumulates very little in the bodies of living organisms. Highly volatile from water.**

**Other adverse effects:**

**Not available**

## 13. DISPOSAL CONSIDERATIONS

**Disposal of product:**

**Subject to disposal regulations: U.S EPA 40 CFR 262. Hazardous waste number (s): U239.**

**Disposal of packaging:**

**Dispose in accordance with all applicable regulations.**

## 14. TRANSPORT INFORMATION

**Land transport:**
**ADR/RID:**
**Packaging group:**

**SHIPPING**
**D.O.T. Shipping Name: Xylene (RQ-1000/454)**
**D.O.T. Identification Number: UN1307**
**D.O.T. Hazard Classification:**
**Flammable liquid**
**CH3**

**Maritime transport:**

**Air transport:**

**CH3**
**Other Shipping Regulations:**
**Flammable liquid label required.**
**Passenger aircraft limit is 1 qt;**
**cargo aircraft limit is 10 gal.**
**Exceptions: 173.118.**
**Specific requirements, 173.119 in code of Federal Regulations, Title 49 (1984)**

## 15. REGULATORY INFORMATION

**Hazardous label(s):**

**EC CLASSIFICATION (ASSIGNED): Flammable**
**Xn harmful**
**Xi Irritatant**
**Ec classification may inconsistent with independly researched data. .**

**DANGER HAZARD SYMBOL: Xn**
**HarmfulCONCENTRATION LIMITS:**
**C> = 20 % Xn R 20/21-38**
**12.55 < = C < 20% Xn R 20/21**
**GERMAN REGULATIONS:**
**WATER HAZARD CLASS (WGK):**
**STATE OF CLASSIFICATIONS:**
**VWVWS**
**CLASSIFICATION UNDER HAZARD TO WATER: 2**
**NATIONAL INVENTORY STATUS:**
**U.S.INVENTORY (TSCA): Listed on inventory.**
**TSCA 12 (b) EXPORT NOTIFICATION: Not listed.**
**U.S. REGULATIONS:CERCLA SECTIONS 102a /103 HAZARDOUS SUBSTANCES (40 CFR 302.4)**
**O-Xylene: 1000LBS RQ**
**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): not regulated.**
**SARA TITLE III SECTIN 304 EXTEREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40): Not regulated.**
**SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21): ACUTE: Yes**
**CHRONIC: NO**
**FIRE: YES**
**REACTIVITY: NO**
**SUDDEN RELEASE: NO**
**SARA TITLE III SECTION 313 (40 CFR 372.65):**
**O-xylene**
**OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated**
**STATE REGULATIONS:**
**CALIFORNIA PROPOSITIONS:**
**California proposition 65: Not Regulated.**
**CANADIAN REGULATIONS: WHIMS CLASSIFICATION: Not determined.**

**Safety phrases:**

**S2 Keep out of reach of children.**
**S 25 Avoid contact with eyes.**

**Risk phrases:**

**R 10 Flammable**
**R20 /21 harmful by inhalation and in Contact with skin.**
**R38 Irritating to skin.**

## 16. OTHER INFORMATION

***Additional Reference Sources:***

**Merck Index, M. windholz et Al, 10th Ed., pp. 1447-1448 (1983), Merck**
**Dangerous Properties of Industrial materials, N. I. Sax, 6th Ed, P. 2739 (1984), Van Nostrand Reinhold.**
**Hazards in the chemical Laboratory, L. Bretherick, 3rd Ed., p. 533 (1981), The Royal Society of Chemistry.**
**Handbook of poisoning: Prevention, Diagnosis and Treatment, R.H. Dreisbach, 11th Ed., pp. 208-209 (1983), Lange Medical publications.**

**The contents and format of this MSDS are in accordance with EEC Commission Directive 2001/58/EC**

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