	MSDS	ISSUE DATE	June-2020
	STYRENE MONOMER	<a href="http://WWW.TPCO.IR">WWW.TPCO.IR</a>	
IRAN/TABRIZ/TABRIZ PETROCHEMICAL COMPANY/P.O.BOX:51745-354/TEL:+984134282612		Page:1/5	

**1. Chemical Product and Company Identification:**

Product Name: Styrene (monomer)

Synonym: Vinyl benzene

Chemical Formula: C<sub>8</sub>H<sub>8</sub>

Company Identification: Iran-Tabriz petrochemical company

**2. Composition and Information on Ingredients:**

Styrene, CAS No: 100-42-5, Min 99.7% wt

Toxicological Data on Ingredients: Styrene (monomer): ORAL (LD50): Acute: 2650 mg/kg [Rat]. 316 mg/kg [Mouse].

VAPOR (LC50): Acute: 12000 ppm 4 hour(s) [Rat]. 9500 ppm 4 hour(s) [Mouse].

**3. Hazards Identification:**

Potential Acute Health Effects:

Very hazardous in case of eye contact (irritant). Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC. A4 (Not classifiable for human or animal.) by ACGIH.

MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to the nervous system, upper respiratory tract.

Repeated or prolonged exposure to the substance can produce target organs damage.

**4. First Aid Measures:**

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:


After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

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**Ingestion:**

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

**5. Fire and Explosion Data:**

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 490°C (914°F)

Flash Points: CLOSED CUP: 31.1°C (88°F). (Cleveland) OPEN CUP: 36.7°C (98.1°F) (TAG).

Flammable Limits: LOWER: 1.1% UPPER: 6.1%

Products of Combustion: These products are carbon oxides (CO, CO<sub>2</sub>).

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks. Slightly flammable to flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, auto ignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

**6. Accidental Release Measures:**

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.


Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Be careful that the product is not present at a concentration level above TLV.

**7. Handling and Storage:**

Precautions:

Keep locked up Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment if ingested, seek

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medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

Storage:

Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

#### 8. Exposure Controls/Personal Protection:

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent gloves.

Personal Protection in Case of a Large Spill:

Splash goggles, Full suit, Vapor respirator, Boots and gloves should be considered. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA=50ppm, C= 100ppm from NIOSH- TWA=100ppm, C=600ppm from OSHA- TWA=20ppm from ACGIH. Consult local authorities for acceptable exposure limits.

#### 9. Physical and Chemical Properties:

Physical state and appearance: Liquid. (Clear viscous liquid)

Odor: Sweetish and Aromatic.

Taste: Not available.

Molecular Weight: 104.14 g/mole

Color: Colorless.

PH (1% sol/water): Not available.

Boiling Point: 145.2°C (293.4°F)

Melting Point: -30.6°C (-23.1°F)

Critical Temperature: Not available.

Specific Gravity: 0.906 (Water = 1)

Vapor Pressure: 4.5 mm of Hg (@ 20°C)


Vapor Density: 3.59 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.1 ppm.

Water/Oil Dist. Coeff: The product is equally soluble in oil and water

Iconicity (in Water): Not available.

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Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

**10. Stability and Reactivity Data:**

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosion: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosion: Not available.

Polymerization: It Is Not Likely In Presence of Heat, So Should Be Used Inhibitor (especially in transportation and storage)

**11. Toxicological Information:**

Routes of Entry: Dermal contact, Eye contact, Inhalation and Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 316 mg/kg [Mouse].

Acute toxicity of the vapor (LC50): 9500 ppm 4 hour(s) [Mouse].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC. A4 (Not classifiable for human or animal.) by ACGIH.

The substance is toxic to the nervous system, upper respiratory tract.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

Animal embryo toxic. Postnatal development injury in animal. Menstrual disorders in human.

Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans: Not available.

**12. Ecological Information:**

Ecotoxicity: Not available.


BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

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**13. Disposal Considerations:**

Dispose in accordance with all applicable regulations.

**14. Transport Information:**

DOT Classification: Class 3: Flammable liquid.

Identification: Styrene monomer, inhibited: UN2055 PG: III

Special Provisions for Transport: Marine Pollutant

**15. Regulatory Information:**

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 2

Specific hazard:

Protective Equipment:

Gloves, Lab coat and Vapor respirator should be considered. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

**16. Other Information:**

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