

This Material Safety Data Sheet contains current information regarding health, safety and disposal considerations for TKSC. To best meet your standards for safety and handling, we urge you to carefully review its contents and make it available to those who are responsible for handling and processing of the product.

This product is not for medical use whatsoever and may not be planted in a human body. TKSC shall not be liable for any death, injury, loss and/or damages that may result from such unauthorized use. TKSC shall take no liability whatsoever for any damages, losses, injury and/or death that may result from disposal and/or management of this product.

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**IDENTIFICATION OF THE SUBSTANCE**

**Product Name** ..... Styrene Monomer  
**Chemical Name** ..... Styrene  
**Chemical Family** ..... Aromatic hydrocarbons  
**CAS Number** ..... 100-42-5  
**Synonym(s)** ..... Phenylethylene, Vinylbenzene, Styrol, Cinnamene, Ethenylbenzene

**COMPANY IDENTIFICATION**

**Manufacturer & Supplier** ..... The Kuwait Styrene Company (TKSC)

**Telephone Number** ..... +965 23260326 Ext. 2535

**EMERGENCY PHONE NUMBER** ..... +31 115 69 49 82 (24 hours a day)

**Date of Preparation** ..... March, 2009

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

<u>INGREDIENTS</u>	<u>CAS#</u>	<u>%W/W</u>	<u>HAZARDS</u>
Styrene Monomer	100-42-5	99-100	Hazardous
May Include 4-tert-butylcatechol	98-29-3	<150ppm	Hazardous

**Occupational Exposure Limit**

<u>Component</u>	<u>TWA</u>	<u>STEL</u>	<u>Ceiling/Peak</u>
Styrene Monomer	20 PPM	40 PPM	NA
May Include 4-tert-butylcatechol	5 PPM	NA	NA

**3. HAZARDS IDENTIFICATION**

**NFPA RATINGS (SCALE 0-4):**

Health	2
Flammability	3
Reactivity	2



**SKIN CONTACT**

In case of skin contact it causes skin irritation; may cause drying or defatting of the skin ; not expected to cause an allergic skin reaction.

**INHALATION**

Harmful or fatal if swallowed. May cause respiratory tract irritation if inhaled; may effect nervous system

**EYE CONTACT**

In case of eye contact it causes irritation. Inflammation of eye is characterized by redness, watering and itching.

**OTHER HEALTH HAZARDS**

May cause cancer in laboratory animals; information relating to cancer in humans is not adequate. May cause damage to liver on repeated breathing. Repeated or prolonged exposure to the substance can produce target organs damage.

**4. FIRST AID MEASURES**

**SKIN CONTACT**

After contact with skin, wash immediately with plenty of water. Use non-abrasive soap and gently wash contaminated skin. Cover the irritated skin with an emollient. If irritation persists call for medical attention. For serious skin contact, wash with a disinfectant soap and cover the area with an anti-bacterial cream. Seek Medical attention.

**INHALATION**

Remove the victim to rest in well ventilated area. Seek medical attention.

**EYE CONTACT**

Flush eyes with running water. Remove contact lenses, if worn. Continue flushing eyes with running water for 15 minutes, keeping eyelids open. Do not use an eye ointment. Seek medical attention

**5. FIRE-FIGHTING MEASURES**

**OSHA FIRE CLASSIFICATION:** Flammable liquid

**FLAMMABLE PROPERTIES:** Flashpoint: >31°C

Autoignition: 490°C

**Combustion Products:** Complex mixture of solids, liquids and gases including carbon monoxide, carbon dioxide and unidentified organic compounds

**EXTINGUISHING MEDIA**

Use water fog, foam, dry chemical or carbon dioxide

**SPECIAL FIRE FIGHTING PROCEDURES**

Do not direct a solid stream of water or foam into burning liquid material; this may cause spattering and spread the fire.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS**

Firefighters should wear full bunker gear (helmet with face shield, bunker coat, gloves and rubber boots) and a positive pressure NIOSH approved self-contained breathing apparatus.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED**

**Small spill:** Absorb with an inert material and put the inert material in an appropriate waste disposal

**Large spill:** Flammable liquid, keep away from heat. Keep away from sources of ignition. If released in to work area, evacuate the area immediately. Absorb with dry earth, sand or other non-combustible materials. Prevent entry into sewers, basement or confined spaces. Be careful that the product is present at a concentration above TLV (Threshold Limit Value). Check TLV on MSDS and with local authorities. Spills may require reporting to local authorities.

**7. HANDLING AND STORAGE**

**HANDLING**

This product is for Industrial Use only

**Precautions**

Keep product in closed container away from heat. Ground all equipment containing material. Do not ingest. Do not breathe gas/vapors/fumes/spray. In case of insufficient ventilation wear respiratory equipment. If ingested seek medical help. Avoid contact with skin and eyes.

**STORAGE**

Flammable material should be stored in a separate safety storage cabinet or room. Keep away from heat and sources of ignition. Store in a cool and well ventilated place. Ground all equipment containing material.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**EXPOSURE CONTROLS**

Consider material hazards, applicable exposure limits, job activities and other substances in the work place when designing engineering controls and selecting personal protective equipment. If the controls are not adequate to prevent harmful exposure the equipment listed below is recommended.

**PERSONAL PROTECTION**

**Respiratory Protection**

Use vapor respirator. Make sure to use only an approved/certified respirator or equivalent.

**Hand Protection / Protective Gloves**

Wear gloves. Make sure to use only approved/certified gloves

**Eye Protection**

Use splash goggles. Make sure that eyewash stations and safety showers are proximal to the work station.

**Skin Protection**

Use gloves and lab coat to prevent skin contact. Use gloves, lab coat, boots and complete facial protection.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance and Odor</b>	Clear Liquid with sweetish odor
<b>Boiling Point</b>	145° C
<b>Freezing Point</b>	-30° C
<b>Specific Gravity @ 20°C</b>	0.906
<b>Vapor Pressure</b>	4.5mmHg @ 20°C
<b>Percent Volatile</b>	100% volume
<b>Odor Threshold</b>	0.15 ppm Max
<b>Solubility</b>	Water: Very slightly soluble Other solvents: Soluble to various extents

**10. STABILITY AND REACTIVITY**

**STABILITY:** Stable at normal, ambient and anticipated storage and handling conditions of temperature and pressure

**Conditions to Avoid:** Prolonged temperature above 250°C, light

**Materials to Avoid:** Oxygen, strong oxidizing agents, strong acids, strong alkalis, peroxides, halogens, and any other chemicals; corrosive to copper and its alloys.

**Polymerization:** May occur if exposed to excessive heat

## **11. TOXICOLOGICAL INFORMATION**

### **STYRENE MONOMER, INHIBITED:**

#### **IRRITATION DATA:**

500 mg skin-human; 500 mg open skin-rabbit mild; 100 percent skin-rabbit moderate; 100 mg eyes-rabbit severe; 100 mg/24 hour(s) eyes-rabbit moderate

#### **TOXICITY DATA:**

12 gm/m<sup>3</sup>/4 hour(s) inhalation-rat LC50; >5010 mg/kg skin-rabbit LD50 (Monsanto); 2650 mg/kg oral-rat LD50

**CARCINOGEN STATUS:** IARC: Human Inadequate Evidence, Animal Limited Evidence, Group 2B; ACGIH: A4 -Not Classifiable as a Human Carcinogen

#### **LOCAL EFFECTS:**

Irritant: inhalation, skin, eye

#### **ACUTE TOXICITY LEVEL:**

Moderately Toxic: inhalation, ingestion

**TARGET ORGANS:** central nervous system

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** central nervous system disorders, respiratory disorders, skin disorders and allergies

**TUMORIGENIC DATA:** Available.

**MUTAGENIC DATA:** Available.

**REPRODUCTIVE EFFECTS DATA:** Available.

**ADDITIONAL DATA:** May cross the placenta. Alcohol may enhance the toxic effects. This Styrene Monomer contains very low concentrations of 4-T-BUTYL CATECHOL (TBC). TBC is a polymerization inhibitor. For further information on TBC general toxicity, refer to TBC MSDS sheet.

## **12. ECOLOGICAL INFORMATION**

### **PERSISTENCE AND DEGRADABILITY**

Styrene released to soil is subject to biodegradation. Volatilization and biodegradation are important transport and degradation processes respectively for styrene in water.

### **AQUATIC TOXICITY/ECOTOXICITY**

This material is expected to be toxic to aquatic organisms.

## **13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD(S)**

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.  
Dispose in accordance with all applicable regulations. Use this material for its intended purpose; recycle if possible.

**14. TRANSPORT INFORMATION**

DOT Classification: Class 3 : Flammable Liquid  
Identification: Styrene Monomer, Inhibited  
I.D No. :UN2055  
PG (Packaging Group) : III  
Special Provisions for Transport : Marine Pollutant  
Consult appropriate Dangerous Goods Regulations for mode specific or quantity specific requirements.

**15. REGULATORY INFORMATION**

**U.S. REGULATIONS:**

**TSCA INVENTORY STATUS:** Yes

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

**CERCLA SECTION 103 (40CFR302.4):** Yes

**STYRENE:** 1000 LBS RQ

**SARA SECTION 302 (40CFR355.30):** No

**SARA SECTION 304 (40CFR355.40):** No

**SARA SECTION 313 (40CFR372.65):** Yes

**STYRENE**

**SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):**

**ACUTE:** Yes

**CHRONIC:** Yes

**FIRE:** Yes

**REACTIVE:** Yes

**SUDDEN RELEASE:** No

**OSHA PROCESS SAFETY (29CFR1910.119):** No

**STATE REGULATIONS:**

**California Proposition 65:** No

**EUROPEAN REGULATIONS:**

**EC NUMBER (EINECS):** 202-851-5

**EC RISK AND SAFETY PHRASES:**

R 10	Flammable.
R 20	Harmful by inhalation.
R 36/38	Irritating to eyes and skin.
S 2	Keep out of reach of children.
S 23	Do not breathe gas, fumes, vapor, or spray.

**CONCENTRATION LIMITS:**

C>=12.5% Xn R 20-36/38

**EC Classification** : None  
**EC Symbol** : None Required  
**Risk Phrases** : None Required  
**Safety Phrases** : None Required

## **16. OTHER INFORMATION**

This MSDS has been compiled as guided by European Community Directive 91/155/EEC.

The product is intended for industrial use only. This MSDS and other product literature should be carefully reviewed before using the product. If necessary consult reference works or experts in fire prevention, ventilation and toxicology for proper understanding and utilization of the data in the MSDS. Enforce good housekeeping in your plant.

Specific toxicology tests have not been conducted on this product. Our toxicity evaluation is based on information from similar products, the ingredients, technical literature and/or professional experience.

### **REVISION**

First Issue May, 2009

NOTICE: No freedom from any patent is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. TKSC assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.