

### Styrene Monomer (SM)

Code : 08-002-0

Prepared By : TENRYU (THAILAND)

Validation Date : 04-Jan-2021

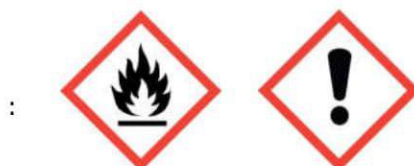
#### 1. Identification of the substance or mixture and of the supplier

Trade Name	:	Styrene
Material Uses	:	Raw material for used in polymer manufacture: SBR, ABS, SAN resins and rubber modified polystyrene for plastics; styrene-butadiene rubber latex. Styrene polyesters for GRP, FRP molding resins; styrene copolymer resins for coating; chemical intermediate.
Supplier	:	<b>TENRYU (THAILAND) Co., Ltd.</b> 149/44 Moo 7, Bang Chalong Subdistrict, Bang Phli District, Samut Prakan Province 10540 Tel : +66 2-0058388 Mobile : +66 64-789-1461 Fax : +66 2-0058389
Emergency Contact	:	+66 64-789-1461

#### 2. Hazards Identification

GHS Classification	:	Acute Toxicity : Category 4 Flammable liquids : Category 3 Eye Irritation : Category 2A Skin Corrosion/Irritation : Category 2
Signal Word	:	Warning
Health Hazard	:	Irritating to eye, skin and respiratory system. Harmful if swallowed.
Environmental Hazard	:	Toxic to aquatic organisms.

GHS Pictogram



GHS Hazard Statements	:	H226	Flammable liquid and vapour.
	:	H315	Cause skin irritation.
	:	H319	Cause serious eye irritation.
	:	H335	May cause respiratory irritation.

### GHS Precautionary Statements

Prevention	P210	Keep away from heat/sparks/open flames/hot surface and Non-smoking.
	P233	Keep container tightly closed.
	P240	Ground/Bond container and receiving equipment.
	P241	Use explosion-proof electrical/ventilating/lighting/equipment.
	P242	Use only non-sparking tools.
	P243	Take precautionary measure against static discharge.
	P261	Avoid breathe dust/fume/gas/mist/vapours/spray.
	P264	Wash thoroughly after handling.
	P271	Use only outdoors or in a well-ventilated area.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P280	Wear protective glove/eye protection/face protection.
Response	<u>If on skin</u>	
	P303+P361 +P353	Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P370+P378	In case of fire: Use manufacturer/supplier or the competent authority to specify appropriate media for extinction.
	P302+P352	Wash with plenty of soap and water.
	P362	Take off contaminated clothing and wash before reuse.
	<u>If in eye</u>	
	P332+P313	If skin irritation persists: Get medical advice/attention.
	<u>If inhaled</u>	
	P304+P340	Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	<u>If swallowed</u>	
P301+P312	Call a poison center or doctor/physician if you feel unwell.	
Storage	P403+P233	Store in a well-ventilated place. Keep container tightly closed.
	P403+P235	Store in a well-ventilated place. Keep cool.
	P405	Store locked up.
Disposal	P501	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

## Precautionary Pictograms



### 3. Composition/Information on Ingredients

Chemical Name	:	Styrene
Common Name	:	SM
Synonyms Name	:	Styrene monomer, Styrol, Vinylbenzene
CAS No.	:	100-42-5
UN No.	:	2055
Molecular Weight	:	104.15
Chemical Formula	:	$C_6H_5CH=CH_2$
Purity	:	>99 %w/w

### 4. First-Aid Measures

Inhalation	:	Remove to fresh air. If the victim has difficulty breathing or tightness of the chest, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
Skin Contact	:	Remove contaminated clothing. Immediately flush skin with large amounts water and follow by washing with soap if available.
Eye Contact	:	Immediately flush eyes with large amounts of water for at least 15 minutes. Transport to nearest medical facility for additional treatment.
Ingestion	:	Compel the victim to vomit it and transport to nearest medical facility for additional treatment.

### 5. Fire-Fighting measures

Suitable extinguishing media	:	Dry chemical powder, Alcohol-resistant foam and Carbon dioxide.
Specific hazard arising from the chemical	:	May produce toxic fumes of carbon monoxide, carbon dioxide if burning.
Special protective action for fire-fighters	:	Keep adjacent containers cool by spraying with water.
Protective Equipment	:	Wear full protective clothing and self-contained breathing apparatus.

## 6. Accidental Release Measures

- Protective Measures** :
- Observe all relevant local and international regulations.
  - Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see chapter 8 this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
  - Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- Clean-Up Methods**
- ♦ **Small spillage (< 200 LT)** : 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 safely. Remove contaminated soil and dispose of safely.
  - ♦ **Large spillage (> 200 LT)** : Transfer by mechanical means such as 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 safely. Remove contaminated soil and dispose of safely.
- Other Information** :
- Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

## 7. Handling And Storage

- Handling** :
- Avoid contact with skin, eyes, and clothing. Do not breathe vapours. Extinguish any naked flame. Remove ignition sources. Avoid sparks. Do not smoke. The vapour is heavier than air spreads along the ground and distant ignition is possible. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Do not use compressed air for filling, discharging, or handling operations. Handle and open container with care in well-ventilated area. Do not empty into drains.
- Storage** :
- Must be stored in a diked (bonded) well-ventilated area, away from sunlight to prevent polymerization reaction. Keep the temperature of this material at 30°C or under. Keep away ignition sources, other sources of heat and oxidizing agents. Keep under nitrogen blanket. Inspect frequently the vent and flame arrester of storage tank, because vapour not containing inhibitor is easy to polymerize. Check frequently the concentration of the inhibitor in this product.
- Product Transfer** :
- Keep containers closed when not in use. Do not use compressed air for filling, discharging, or handling operations. If positive displacement pumps are used, these must be fitted with a non-integral pressure relief



valve. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

**Recommended Materials** : For containers, or container linings use mild steel, stainless steel.

**Additional 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.

## 8. Exposure Controls and Personal Protection

**Exposure Standard** : Occupational Exposure Limits

- TLV-TWA = 50 ppm (215 mg/m<sup>3</sup>)
- TLV-STEL = 100 ppm (425 mg/m<sup>3</sup>)

**Engineering Controls Workplace** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value.

**Respiratory Protection** : Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

**Hand Protection** : Butyl rubber gloves, Nature rubber gloves, Neoprene rubber gloves, Nitrile rubber gloves.

**Eye Protection** : Chemical splash goggles (chemical monogoggles).

**Other Protection** : Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

## 9. Physical and Chemical Properties

**Appearance** : Clear liquid

**Odour** : Specially odour

**pH Value** : No data available

**Boiling Point (°C)** : 145 °C

**Melting Point (°C)** : - 31 °C

**Flash Point** : 31 °C

**Lower/Upper Flammability limits** : 1.1 - 6.1 %V

**Vapour Pressure (kPa)** : 1.27 kPa @ 30 °C

**Vapour Density** : 3.6 (air = 1)

**Solubility in Water** : Immiscible

**Auto Ignition Temperature** : 490 ° C

## 10. Stability and Reactivity

Chemical Reactivity	:	This product stable under normal condition by filling inhibitor.
Stability	:	This product stable under normal condition by filling inhibitor.
Hazardous Polymerisation	:	May undergo auto-polymerization.
Conditions to Avoid	:	Oxidizing agents, Peroxides, Amines, Bases, Acids, Reducing agents, Halogens.
Materials to Avoid	:	Oxidizing agents, Peroxides, Amines, Bases, Acids, Reducing agents, Halogens.
Hazardous Decomposition Products	:	Thermal decomposition is highly dependent on conditions. Carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. May form explosive peroxides.

## 11. Toxicological Information

Acute Toxicity	:	
♦ LD <sub>50</sub> Acute oral toxicity	:	2,650 mg/kg , (rat)
♦ LC <sub>50</sub> Acute inhalation toxicity	:	12,000 mg/m <sup>3</sup> /4 hours , (rat)
Skin Irritation	:	Irritating to skin. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Eye Irritation	:	Irritating to eyes. Inflammation of the eye is characterized by redness, pain and itching.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation to the respiratory system.
Carcinogenicity	:	This product has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

## 12. Ecological Information

Acute Toxicity	:	
♦ Fresh Fish ( <i>Lebistes reticulatus</i> )	:	Low toxicity : LC <sub>50</sub> : 74.8 mg/l/96 hours
♦ Crustacea ( <i>Daphnia magna</i> )	:	Low toxicity : EC <sub>50</sub> : 5 mg/l/24 hours
Mobility	:	Dissolves in ethanol and methanol. If product enters soil, it will low mobile and may contaminate groundwater.
Persistence / Degradability	:	Readily biodegradable.
Bio-accumulation	:	Not accumulate in biological organisms.

### 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 classifications and disposal methods in compliance with applicable regulations.
- Container Disposal** : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Refer to Section 7 before handling the product or containers. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recovered or metal reclaimed.
- Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

### 14. Transport Information

#### Road/Rail Transport ADR/RID

- ◆ UN. Number : 2055
- ◆ Class/Item : 3
- ◆ Hazard Symbol : Flammable Liquid
- ◆ Proper Shipping Name : Styrene Monomer, Stabilized
- ◆ Packing Group : III

#### Maritime Transport IMO

- ◆ UN. Number : 2055
- ◆ Class : 3
- ◆ Packing Group : III
- ◆ Hazard Symbol : Flammable Liquid
- ◆ Proper Shipping Name : Styrene Monomer, Stabilized
- ◆ Marine Pollutant : No

#### Air Transport IATA/ICAO

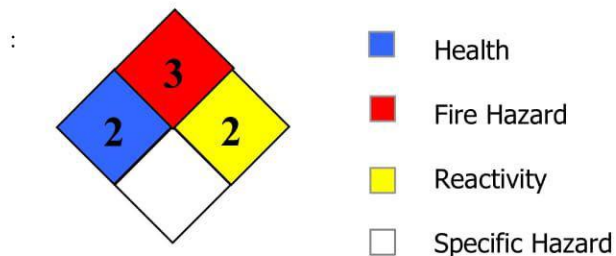
- ◆ UN. Number : 2055
- ◆ Class : 3
- ◆ Packing Group : III
- ◆ Hazard Symbol : Flammable Liquid
- ◆ Proper Shipping Name : Styrene Monomer, Stabilized

## 15. Regulatory Information

EC Label Name	:	Styrene Monomer
EC Classification	:	Highly Flammable
EINECS (EC)	:	202-851-5
EC Annex I Number	:	601-026-00-0
RETCS	:	WL3675000

## 16. Other Information

National Fire Protection Association (USA)



SDS Distribution

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The information in this document should be made available to all who may handle the product.

Prepared By

:

TENRYU (THAILAND) Co., Ltd.

### Disclaimer :

The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty of guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

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