



SMI

SAFETY DATA SHEET

Safety Data Sheet in accordance with UN GHS Purple Book

CAP – SDS – 20 – Styrene Monomer (Rev.00)

ISSUED DATE : 09 Jan 2015

SECTION-1. IDENTIFICATION

Product/Material	: Styrene Monomer
Recommended Use	: Intermediate material for use in manufacturing surfactants, polymers, and stabilizers.
Manufacturer	: PT. Styrindo Mono Indonesia (SMI)
Head Office	: Wisma Barito Pacific, Tower A, 7th floor, Jl. Letjend S. Parman, Kav.62-63. Jakarta 11410, Indonesia. Phone: +62-21-5308505, Fax: +62-21-5308506.
Plant	: Desa Mangunreja, Kecamatan Puloampel, Kabupaten Serang, Propinsi Banten, Indonesia Phone: +62-254-5750080, Fax: +62-254-5750085.
Emergency contact (24 hrs)	: Health & Safety, Phone: +62-254-5750080 Ext: 3153, 3145
Additional Information	: GROUPRND@capcx.com, Phone: +62-254-601501 Ext 1869, 1616
Website	: www.chandra-asri.com

SECTION-2. HAZARD IDENTIFICATION

GHS Classification	: Flammable Liquids, Category 3 Eye irritation, Category 2A Skin irritation, Category 2 Aspiration hazard, Category 1 Acute aquatic toxicity, Category 2 Carcinogenicity, Category 2 Acute toxicity, Category 4 Reproductive toxicity, Category 1B.
Hazard statements	: Flammable liquid and vapor May be fatal if swallowed and enters airways Causes skin irritation Causes serious eye irritation Harmful if inhaled May cause respiratory irritation Suspected of causing cancer Toxic to aquatic life.

Pictogram (Hazard Symbols)



Signal Word : DANGER

Precautionary Statements

Prevention

: Keep away from heat/sparks/open flames/hot surfaces-No smoking | No smoking. Keep container tightly closed | Ground/bond container and receiving equipment | Use explosion-proof electrical/ ventilating/ lighting/ equipment | Use only non-sparking tools | Take precautionary measures against static discharge | Wash skin thoroughly after handling | Avoid release to the environment | Wear protective gloves/ protective clothing/eye protection/face protection

Response:

: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Specific treatment (see supplemental first aid instructions on this label).
Do not induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction

Storage : Store in a well-ventilated place. Keep cool. Store locked up
Disposal : Dispose of contents/ container to an approved waste disposal plant

SECTION-3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name : Styrene Monomer
Molecular formula : C₈H₈ CAS No : 100-42-5
Common Name : Inhibited Styrene, Phenyl ethylene, Ethenyl, Styrol, Cinnamene, Vinyl benzene, styrolene, styrene.
Concentration : ≥ 99.7 %wt

SECTION-4. FIRST-AID MEASURES

General advice : Do not leave the victim unattended, Move out of dangerous area
Inhalation : Move to fresh air, If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
Skin contact : If skin irritation persists, call a physician. If on skin, rinse well with soap and water.
Eyes contact : Remove any contact lenses. Flush eyes with running water for at least 20 minutes, Protect unharmed eye. If eye irritation persists, consult a specialist.
Swallowed : Not applicable (gas) Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION-5. FIRE-FIGHTING MEASURES

Flash Point : 31°C (88°F)
Auto Ignition Temperature : 490°C (914°F)
Special Protective Equipment : Wear self-contained breathing apparatus for fire-fighting if necessary.
Further Information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and Explosion Protection : Normal measures for preventive fire protection. Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and ignition sources
Products of Combustion : The products are carbon oxides (CO, CO₂)

SECTION-6. ACCIDENTAL RELEASE MEASURES

Personal Precautions : Wear self-contained breathing apparatus when entering area unless atmosphere is prove safe. Remove all ignition sources. Vapors can accumulate in low areas.
Environmental Precautions : If the product contaminates rivers and lakes or drains inform respective authorities. Prevent product from entering drains, sewers, basements or confined areas.
Methods for Cleaning up : Wipe up with absorbent material (e.g. cloth, fleece). Keep in suitable, closed containers for disposal.

SECTION-7. HANDLING AND STORAGE

Handling
Advice on Safe Handling : Styrene vapors may polymerize in vents or flame arrestors of storage tanks. Electrostatic charge may accumulate and create a hazardous condition when

handling this material. For personal protection see section 8. Smoking, eating, and drinking should be prohibited in the application area.

Advice on Protection Against Fire and Explosion : Normal measures for preventive fire protection. Take necessary action to avoid static electricity discharge. Keep away from open flames, hot surfaces and source of ignition.

Storage

Requirements for Storage Areas and Containers : Electrical installations/working materials must comply with the technological safety standards. Ground all equipment containing material

Advice on Common Storage : Do not store for extended periods. Avoid plastic, copper and copper alloy containers.

SECTION-8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ingredients with Workplace Control Parameters

Ingredients	Basis	Value	Control Parameter	Note
Styrene monomer	ACGIH	TLV-TWA	20 ppm	8 hour
		TLV-STEL	50 ppm	15 min

Personal protective equipment

Respiratory Protection : When exposures are not adequately controlled, use respirator approved for protection from organic vapors.

Skin and Body Protection : Flame retardant clothing covering the entire body.

Eyes Protection : Wear safety glasses or chemical goggles under a full-face shield is recommended

Hygiene Measures : General industrial hygiene practices.

SECTION-9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid, clear
Color	Colorless
Odor	Sweet
Flash Point	31°C (88°F)
pH	Not Applicable
Lower Flammable Limit	0.9 % V
Upper Flammable Limit	6.8 % V
Oxidizing Properties	No
Auto Ignition Temperature	490°C (914°F)
Molecular formula	C ₈ H ₈

Molecular Weight	104.16 g/mol
Freezing point	30.63°C (-23.13°F)
Pour point	No data available
Vapor Pressure	4.55 mmHg
Boiling Point	145.15°C (293.27°F)
Water Solubility	0.029 %wt at 20°C
Viscosity Dynamic	0.763 cps
Relative Vapor Density	3.6 (air=1.0)
Evaporation Rate	No data available
Volatile Content	> 0.975 %

SECTION-10. STABILITY AND REACTIVITY

Possibility of Hazardous Reaction

Condition to Avoid : Heat, light, catalyst, halogens or any other chemicals

Materials to Avoid : Corrosive to copper and copper bearing alloys. Oxidizing solid/liquids.

Other Data : This material is considered stable under normal ambient anticipated storage and handling conditions of temperature and pressure. No decomposition if stored and applied as directed.

SECTION-11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity : LD50: >5,000mg/kg | Species: rat | Sex: male and female.

Acute Inhalation Toxicity : LD50: 11.8mg/l | Exposure time: 4 hrs | Species: rat | Test atmosphere vapor.

Acute Dermal Toxicity : LD50: > 2,000mg/kg | Species: rat | Sex: male and female.

Skin irritation : Irritating to skin

Eye irritation : Irritating to eye

Sensitization : Classification: Does not cause skin sensitization, largely based on human evidence

Repeated Dose Toxicity : Species: mouse | Sex: male and female | Application Route: oral | Dose: 0, 150, 300 mg/kg | Exposure time: 78 wk | Number of exposures: 5 d/wk | NOEL: 150 mg/kg | Lowest observable effect level: 300 mg/kg.

Aspiration toxicity : May be fatal if swallowed and enters airways. Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effect of Styrene

Carcinogenicity : This substance has been reported to cause tumors in certain animal species.

Mutagenicity : In vitro tests showed mutagenic effects which were not observed with in vivo test.

Teratogenicity : Did not show teratogenic effects in animal experiments.

Reproductive toxicity : No toxicity to reproduction

SECTION-12. ECOLOGICAL INFORMATION

Toxicity to Fish : LC50: 4.02 mg/l | Exposure time: 96 hrs | Species: Pimephales promelas (fathead minnow) | Flow-through test | Test substance: yes | Toxic to fish.

Toxicity to Daphnia and Other Aquatic Invertebrates : EC50: 4.7mg/l | Exposure time: 48 hrs | Species: Daphnia magna (Water flea) | flow-through test.

Toxicity to Algae : EC50: 4.9 mg/l | Exposure time: 72 hrs | Species: Selenastrum capricornutum (algae).

Elimination Information (Persistence and Degradability)

Bioaccumulation : Does not significantly accumulate in organisms

Biodegradability : According to the results of tests of biodegradability this product is considered as being readily biodegradable.

Result of PBT assessment : This substance is not considered to be very persistent nor very bioaccumulating (vPvB). This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

SECTION-13. DISPOSAL CONSIDERATIONS

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility. Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION-14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT : UN2055, STYRENE MONOMER, STABILIZED, 3, III, RQ (STYRENE)

IMO / IMDG : UN2055, STYRENE MONOMER, STABILIZED, 3, III, RQ (STYRENE), (31 °C)

IATA : UN2055, STYRENE MONOMER, STABILIZED, 3, III

ADR : UN2055, STYRENE MONOMER, STABILIZED, 3, III

RID : UN2055, STYRENE MONOMER, STABILIZED, 3, III

ADN : UN2055, STYRENE MONOMER, STABILIZED, 3, III


SECTION-15. REGULATORY INFORMATION

Classification and Labeling of Commonly Used Dangerous Chemical Substances. Primary label: Combustible Liquid

Europe REACH	:	On the inventory, or in compliance with the inventory
United States US.TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION-16. OTHER INFORMATION

NFPA Hazard Rating for Styrene Monomer

	Health-2	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury
	Flammability-3	Liquids and solids that can be ignited under almost all ambient temperature conditions.
	Reactivity-2	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water

Abbreviations that may have been used in this document:

ACGIH	:	American Conference of Government Industrial Hygienists
LOAEL	:	Lowest Observed Adverse Effect Level
AICS	:	Australia, Inventory of Chemical Substance
NFPA	:	National Fire Protection Agency
NDSL	:	Canada, Domestic Substances List
CNS	:	Central Nervous System
CAS	:	Chemical Abstract Service
EC	:	Effective Concentration
EC50	:	Effective Concentration 50%
EINECS	:	European Inventory of Existing Chemical Substances
GHS	:	Globally Harmonized System
IC50	:	Inhibition Concentration 50%
IARC	:	International Agency for Research on Cancer
IECS	:	Inventory of Existing Chemical Substances in China
ENCS	:	Japan, Inventory of Existing and New Chemical Substances
KECI	:	Korea, Existing Chemical Inventory
LC50	:	Lethal Concentration 50%
LD50	:	Lethal Dose 50%
NIOSH	:	National Institute for Occupational Safety & Health
NTP	:	National Toxicology Program
NOEC	:	No Observed Effect Concentration
PEL	:	Permissible Exposure Limit
PRNT	:	Presumed Not Toxic
RCRA	:	Resource Conservation Recovery Act
STEL	:	Short-term Exposure Limit
TLV	:	Threshold Limit Value

TWA : Time Weighted Average
US DOT : United States Department Of Transportation
IMDG : International Maritime Dangerous Goods
IATA : International Air Transport Association
ADR : Agreement on Dangerous Goods by Road (Europe)
RID : Regulations Concerning the International Transport of Dangerous Goods
ADN : European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways
TSCA : Toxic Substance Control Act
SARA : Superfund Amendments and Reauthorization Act

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