



SAFETY DATA SHEET (SDS)

SDS in accordance with UN GHS Purple Book

CAP – SDS – 20 – Styrene Monomer (Rev.06)

This SDS is effective as from 31 Jul 2023 and supersedes previous document published | Validity date: 31 Jul 2028

SECTION-1. IDENTIFICATION

Product/Material	: Styrene Monomer
Recommended Use	: Intermediate material for use in manufacturing surfactants, polymers, and stabilizers.
Manufacturer	: PT Chandra Asri Petrochemical, Tbk
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: 3141, 3147 (24hrs), 3106 (daytime)
Website	: www.chandra-asri.com

SECTION-2. HAZARD IDENTIFICATION

GHS Classification	: Flammable liquids: Category 3 Aspiration hazard: Category 1 Skin irritation: Category 2 Serious eye irritation: Category 2A Acute toxicity – inhalation: Category 4 Specific organ target toxicity – single exposure: Category 3 Specific organ target toxicity – repeated exposure: Category 1 Hazardous to the aquatic environment, long term (chronic): Category 2.
Hazard statements	: H226: Flammable liquid and vapour H304: May be fatal if swallowed and enters airways H315: Causes skin irritation H319: Causes serious eye irritation H332: Harmful if inhaled H335: May cause respiratory irritation H372: May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) H411: Toxic to aquatic life with long-lasting effects.

Pictogram (Hazard Symbols)



Signal Word	: DANGER
NFPA Hazard Rating	: Health = 2 Flammability = 3 Reactivity = 2
Precautionary Statements	

Prevention

: P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources – No smoking | P233: Keep container tightly closed | P240: Ground and bond container and receiving equipment | P241: Use explosion-proof [electrical/ventilating/lighting] equipment | P242: Use non-sparking tools | P243: Take action to prevent static discharges | P260: Do not breathe dust/fume/gas/mist/vapours/spray | P261: Avoid breathing dust/fume/gas/mist/vapours/spray | P264: Wash thoroughly after handling | P270: Do not eat, drink or smoke when using this product | P271: Use only outdoors or in

Response: a well-ventilated area | P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

: P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor | P302+P352: IF ON SKIN: Wash with plenty of water | P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing | P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing | P312: Call a POISON CENTER/doctor if you feel unwell | P314: Get medical advice/attention if you feel unwell | P321: Specific treatment (see on this label) | P330: Rinse mouth | P331: Do NOT induce vomiting | P332+P313: If skin irritation occurs: Get medical advice/attention | P337+P313: If eye irritation persists: Get medical advice/attention | P362+P364: Take off contaminated clothing. And wash it before rinse.

Storage : P403+P233: Store in a well-ventilated place – Keep container tightly closed | P405: Store locked up.

Disposal : P501: Dispose of contents/container in accordance with local/regional/national/international regulation (to be specified).

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 : When exposures are not adequately controlled, 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	Molecular Weight	104.16 g/mol
Color	Colorless	Freezing point	30.63°C (-23.13°F)
Odor	Sweet	Pour point	No data available
Flash Point	31°C (88°F)	Vapor Pressure	4.55 mmHg at 20°C
pH	Not Applicable	Boiling Point	145.15°C (293.27°F)
Lower Flammable Limit	0.9 % V	Water Solubility	0.029 %wt at 20°C
Upper Flammable Limit	6.8 % V	Viscosity Dynamic	0.763 cps
Oxidizing Properties	No	Relative Vapor Density	3.6 (air=1.0)
Auto Ignition Temperature	490°C (914°F)	Evaporation Rate	No data available
Molecular formula	C ₈ H ₈	Volatile Content	> 0.975 %
Density (typical)	0.9 g/cm ³		

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 : Suspected of damaging the unborn child.

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

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 Int'l Carriage of Dangerous Goods by Inland Waterways
- TSCA** : Toxic Substance Control Act
- SARA** : Superfund Amendments and Reauthorization Act

This Safety Data Sheet (SDS) contains the following historical revisions:

Rev No	Issued Date	Revision Change	Description
00	09 Jan 2015	Original Document	
01	25 Jan 2019	SECTION-01	Emergency Contact was modified
		SECTION-02	NFPA was modified
		SECTION-08	Personal Protective Equipment was modified
02	23 Feb 2021	SECTION-01	Additional information of manufacturer was modified
		SECTION-09	Density was added
03	23 Jul 2021	SECTION-01	Information of manufacturer was revised
04	14 Sep 2021	SECTION-01	Contact person was modified
05	19 Aug 2022	SECTION-02	GHS classification, hazard statement, and precautionary statement were modified
		SECTION-11	Toxicological information was modified
06	31 Jul 2023	SECTION-02	Modify hazard and precautionary statements

*THE INFORMATION EXPRESSED HEREIN IS THOSE OF QUALIFIED CURRENT KNOWLEDGE AND EXPERIENCE ANT THAT THE INFORMATION IS SUFFICIENT OF ALL CASES. USERS SHOULD CONSIDER THE DATA AS A SUPPLEMENT TO OTHER INFORMATION AND SHOULD MAKE INDEPENDENT DETERMINATION OF ITS SUITABILITY, THEIR EMPLOYEES AND CUSTOMERS AND OF THE ENVIRONMENTAL PROTECTION TO ASSURE PROPER USE AND DISPOSAL OF THE MATERIAL. RESPONSIBILITY FOR USAGE, STORAGE, HANDLING AND DISPOSAL OF THE PRODUCTS DESCRIBED HEREIN, WHETHER ALONE, OR IN COMBINATION WITH ANY OTHER SUBSTANCE, IS THAT OF THE PURCHASER AND/OR END-USER. **CAP** MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULT TO BE OBTAINED FROM THE USE THEREOF. **CAP** ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.*