SAFETY DATA SHEET

1. Identification

Product identifier	**STYRENE MONOMER**
Other means of identification	
Synonyms	Styrene Monomer (Inhibited), Vinylbenzene, Phenylethene, Ethenylbenzene
Recommended use	Base chemical for the production of polystyrene, rubbers, resins, plastics, and polyesters.
Recommended restrictions	Industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Americas Styrenics LLC
Address	Suite 1200 24 Waterway Avenue The Woodlands, TX 77380 United States
Telephone	General Assistance: 1-844-512-1212 (8 a.m. - 5 p.m. M-F)
E-Mail	productsteward@amsty.com
Emergency Telehone Number:	CHEMTREC: 1-800-424-9300 (USA)
Local Emergency Telephone	1-800-510-8510

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 (Respiratory tract irritation)
	Specific target organ toxicity, repeated exposure	Category 1 (Auditory system)
	Aspiration hazard	Category 1

OSHA defined hazards Not classified.

Label elements

Signal word	Danger
Hazard statement	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. Causes damage to organs (Auditory system) through prolonged or repeated exposure.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use electrical/ventilating/lighting equipment appropriate for the hazardous area classification per NFP 497." Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response	If swallowed: Immediately call a poison center/doctor. Do not induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If skin irritation occurs: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Wash contaminated clothing before re-use. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Styrene		100-42-5	≥ 99.9

Composition comments Stabilized with t-Butyl Catechol. Occupational Exposure Limits for constituents are listed in Section 8. All concentrations are in percent by weight.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a physician or Poison Control Center immediately.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or Poison Control Center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Decrease in motor functions. Behavioral changes. Narcosis. Dizziness. Headache. Aspiration may cause pulmonary edema and pneumonitis. Jaundice. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Irritation of nose and throat. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed. May polymerize if heated.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Electrical equipment must be rated for the hazardous area classification per NFPA 497. Use general and local exhaust ventilation properly rated for the hazardous area classification. Do not breathe mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in a cool, dry place out of direct sunlight. Keep away from heat, sparks and open flame. Maintain inhibitor and dissolved oxygen level. Flammable mixtures may exist within the vapor space of containers at room temperature. See Section 10 for more specific information. Shelf life is dependent on storage temperature and inhibitor level. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-2 (29 CFR 1910.1000)

Material	Type	Value
STYRENE MONOMER	Ceiling	200 ppm
	TWA	100 ppm

US. ACGIH Threshold Limit Values

Material	Type	Value
STYRENE MONOMER	STEL	20 ppm
	TWA	10 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
STYRENE MONOMER	STEL	425 mg/m3
		100 ppm
	TWA	215 mg/m3
		50 ppm

Biological limit values

ACGIH Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
STYRENE MONOMER	400 mg/g	Mandelic acid plus phenylglyoxylic acid	Creatinine in urine	*
	40 ug/l	Styrene	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls

General and local exhaust ventilation appropriate for the hazardous area classification per NFPA 497. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

Eye/face protection

When working with liquids wear splash-proof chemical goggles and face shield unless full facepiece respiratory protection is worn.

Skin protection

Hand protection

Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (but/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Colorless liquid.
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Aromatic
Odor threshold	0.1 ppm
pH	Not available.
Melting point/freezing point	-23.08 °F (-30.6 °C) (Literature)
Initial boiling point and boiling range	293 °F (145 °C) (Literature)
Flash point	87.8 °F (31.0 °C) Tag closed cup
Evaporation rate	1 (Literature)
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.1 % v/v
Flammability - upper (%)	6.1 % v/v
Vapor pressure	0.67 kPa at 68°F (20 °C)
Vapor density	3.6 (Literature)
Relative density	0.91 (Literature)

Solubility(ies)	
Solubility (water)	0.03 g/l at 20 °C
Partition coefficient (n-octanol/water)	2.95
Auto-ignition temperature	914 °F (490 °C) (Literature)
Decomposition temperature	Not available.
Viscosity	0.8 m²/s
Other information	
Explosive properties	Vapors may form explosive mixture with air.
Molecular formula	C8-H8
Molecular weight	104.14 g/mol
Oxidizing properties	Not oxidizing.
Surface tension	32.3 mN/m (68 °F (20 °C))

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under recommended storage conditions (see Section 7).
Possibility of hazardous reactions	May polymerize if heated. Maintain inhibitor and dissolved oxygen level. Do not purge containers of this material with nitrogen. Polymerization can be catalyzed by: Absence of air. This product is inhibited with; p-Tertiary butylcatechol. Uninhibited monomer vapors can polymerize and plug relief devices.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Avoid contact with incompatible materials.
Incompatible materials	Absorbent materials such as Cellulose, Clay-based absorbents. Sawdust. Aluminum chloride. Metal halides. Metal salts. Oxidizing materials. Peroxides. Strong acids.
Hazardous decomposition products	Thermal decomposition may produce smoke and oxides of carbon.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled.
Skin contact	Irritating to skin.
Eye contact	Causes serious eye irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
Symptoms related to the physical, chemical and toxicological characteristics	Behavioral changes. Decrease in motor functions. Narcosis. Dizziness. Headache. Jaundice. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Irritation of nose and throat. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Harmful if inhaled.

Product	Species	Test Results
STYRENE MONOMER		
Acute		
Inhalation		
LC50	Rat	11.8 mg/l, 4 Hours
Oral		
LD50	Rat	5000 mg/kg
Liquid		
LD50	Rat	5000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization Not expected to result in respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Possible cancer hazard - may cause cancer based on animal data.

IARC Monographs. Overall Evaluation of Carcinogenicity

Styrene (CAS 100-42-5) 2A Probably carcinogenic to humans.

NTP Report on Carcinogens

Styrene (CAS 100-42-5) Reasonably Anticipated to be a Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity Not classified.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Causes damage to organs (Auditory system) through prolonged or repeated exposure.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Causes damage to organs through prolonged or repeated exposure.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
STYRENE MONOMER			
Acute			
	LC50	Rainbow Trout (Oncorhynchus mykiss)	4.1 mg/l, 96 hours
Aquatic			
Acute			
Crustacea	EC50	Daphnia	4.7 mg/l, 48 hours
	LC50	Daphnia	23 mg/l, 48 hours
Terrestrial			
Chronic			
Other	LC50	Earthworm	120 mg/kg, 14 days

Persistence and degradability Expected to be readily biodegradable.

Bioaccumulative potential Log Pow: = 2.95 (measured value)

Mobility in soil May partition into air, soil and water. The product is insoluble or slightly soluble in water. This product evaporates readily and volatile components will spread in the atmosphere.

Other adverse effects No additional information.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company. When disposed as supplied, the RCRA waste code is: D001: Waste Flammable material with a flash point <140 F

Waste from residues / unused products Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN2055
UN proper shipping name	Styrene monomer, stabilized
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN2055
UN proper shipping name	Styrene monomer, stabilized
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN2055
UN proper shipping name	STYRENE MONOMER, STABILIZED
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Styrene (CAS 100-42-5)	Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA) All components are listed on or exempt from the U.S. EPA TSCA Inventory List.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories	Flammable (gases, aerosols, liquids, or solids) Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Specific target organ toxicity (single or repeated exposure) Aspiration hazard

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Styrene	100-42-5	≥99.9
Benzene	71-43-2	<=1 ppm
Ethylbenzene	100-41-4	<=100 ppm

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

US. Massachusetts RTK - Substance List

Styrene (CAS 100-42-5)

US. New Jersey Worker and Community Right-to-Know Act

Styrene (CAS 100-42-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Styrene (CAS 100-42-5)

US. Rhode Island RTK

Styrene (CAS 100-42-5)

California Proposition 65

WARNING: WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2)	Listed: February 27, 1987
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004
Styrene (CAS 100-42-5)	Listed: April 22, 2016

California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997

California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Revision date	19-October-2023
Version #	1.3
	Bold double bars in left-hand margin indicate a change from previous version.
HMIS® ratings	Health: 3 Flammability: 3 Physical hazard: 1

List of abbreviations

ACGIH: American Conference of Governmental Industrial Hygienists.
CAS: Chemical Abstract Service.
Ceiling: Short Term Exposure Limit Ceiling value.
DOT: Department of Transportation.
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
IARC: International Agency for Research on Cancer.
N/A: Not applicable.
NFPA: National Fire Protection Association.
STEL: Short-Term Exposure Limit.
TWA: Time Weighted Average.

References

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens

Disclaimer

Americas Styrenics LLC urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDSs obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.