

Material Safety Data Sheet

HAZARD WARNINGS		RISK PHRASES	PROTECTIVE CLOTHING
  		Flammable material; avoid heat and sources of ignition. Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system. Possible mutagenic material. Refrigerate and vent pressure slowly before opening.	   

Section I. Chemical Product and Company Identification

Chemical Name	Styrene (stabilized with TBC)		
Catalog Number	S0095	Supplier	TCI America 9211 N. Harbortgate St. Portland OR 1-800-423-8616
Synonym	Ethenylbenzene		
Chemical Formula	C ₈ H ₈		
CAS Number	100-42-5	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Styrene (stabilized with TBC)	100-42-5	Min. 99.0 (GC)	This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD ₅₀ (oral) 2650mg/kg Rat LC ₅₀ (inhalation) 12000mg/m ³ /4H Mouse LD ₅₀ (intravenous) 90mg/kg

Section III. Hazards Identification

Acute Health Effects	Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic: rat (inhalation) 100ppm/4H/5 days/ 1 year intermittent. Tumorigenic- Carcinogenic by RTECS criteria. rat (oral) 1520mg/kg/143 weeks intermittent. Tumorigenic- Equivocal tumorigenic by RTECS criteria. DEVELOPMENTAL TOXICITY Reproductive: rat (inhalation) 5mg/m ³ /2H. Duration: female 1-22 days of pregnancy. Effects on newborn- Still birth. rat (inhalation) 15000mg/m ³ /24H. Duration: female 1-7 days of pregnancy. Effects on fertility- Post-implantation mortality. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. Seek medical attention. Treat symptomatically and supportively.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	Not available.
Flash Points	31°C (87.8°F).	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Reactive with strong oxidizers. Vapors may travel to source of ignition and flash back. Closed containers may explode from heat of a fire. Highly flammable in presence of open flames and sparks, of heat.		

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Emergency phone number (800) 424-9300

(stabilized with TBC)

Explosion Hazards Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions Flammable liquid.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release Measures

Spill Cleanup Instructions Flammable liquid. Harmful material. Irritating material. Possible mutagenic material. Refrigerate material.
Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information FLAMMABLE. HARMFUL. IRRITANT. POSSIBLE MUTAGEN. REFRIGERATE. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents. Reactive with strong oxidizers; may be ignited by heat, sparks or flames. Vapors may travel to source of ignition and flash back. Closed containers may explode from heat of a fire. Empty containers may pose a fire risk. Evaporate residue under a fume hood if possible. Ground all equipment containing material. Handle with caution and minimize exposure. Keep away from heat and sources of ignition. Tightly seal container and store in a cool, dry place. Use only non-sparking hand tool when handling this product.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.

Personal Protection Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.



Exposure Limits This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid.	Solubility	Sparingly soluble in water. Soluble in carbon disulfide, alcohol, ether, methanol, acetone. Soluble in all proportions in benzene and petroleum ether.
Specific Gravity	0.909	Partition Coefficient	Not available.
Molecular Weight	104.15	Vapor Pressure	12.4mm Hg
Boiling Point	145 to 146°C	Vapor Density	3.6
Melting Point	-31°C (-23.8°F)	Volatility	Not available.
Refractive Index	1.5468 @ 20°C	Odor	Almost floral odor, penetrating.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	Not available.		

Section X. Stability and Reactivity Data

Stability This material is stable if stored under proper conditions. (See Section VII for instructions)

Conditions of Instability May polymerize to light. Avoid excessive heat and light.

Incompatibilities Reactive with oxidizing agents, copper and copper alloys.

Section XI. Toxicological Information

RTECS Number WL3675000

Routes of Exposure Eye Contact. Ingestion. inhalation. Skin contact.

Toxicity Data
Rat LD₅₀ (oral) 2650mg/kg
Rat LC_{LO} (inhalation) 12000mg/m³/4H
Mouse LD₅₀ (intravenous) 90mg/kg

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Chronic Toxic Effects	<p>CARCINOGENIC EFFECTS : Not available.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic: rat (inhalation) 100ppm/4H/5 days/ 1 year intermittent. Tumorigenic- Carcinogenic by RTECS criteria. rat (oral) 1520mg/kg/143 weeks intermittent. Tumorigenic- Equivocal tumorigenic by RTECS criteria.</p> <p>DEVELOPMENTAL TOXICITY Reproductive: rat (inhalation) 5mg/m3/2H. Duration: female 1-22 days of pregnancy. Effects on newborn- Still birth. rat (inhalation) 15000mg/m3/24H. Duration: female 1-7 days of pregnancy. Effects on fertility- Post-implantation mortality. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.</p>
Acute Toxic Effects	Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Significant amounts of styrene may be released to the environment from emissions generated by its production and use and from automobile exhaust. If released to the atmosphere, styrene will react rapidly with both hydroxyl radicals and ozone with a combined, calculated half-life of about 5 hours. In night-time air, it will degrade rapidly by reaction with atmospheric nitrate radicals. If released to environmental bodies of water, styrene will volatilize relatively rapidly and biodegrade, but is not expected to hydrolyze. If released to soil it will biodegrade and have a low soil mobility. While styrene has been detected in various US drinking waters, it was not detected in a groundwater supply survey of 945 US finished water supplies which use groundwater sources. Styrene has been detected in various US chemical, textile, latex, oil refinery and industrial wastewater effluents. Styrene has been frequently detected in the ambient air of source dominated locations and urban areas, has been detected in the air of a national forest in Alabama, and has been detected in the vicinity of oil fires. Food packaged in polystyrene containers has been found to contain small amounts of styrene.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
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Section XIV. Transport Information

DOT Classification	CLASS 3: Flammable liquid
PIN Number	UN2055
Proper Shipping Name	Styrene monomer, stabilized.
Packing Group (PG)	III
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	WHMIS CLASS B-2: Flammable liquid with a flash point lower than 35°C (100°F).
EINECS Number (EEC)	202-851-5
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture.
Japanese Regulatory Data	Not available.

Section XVI. Other Information**Version 1.0****Validated on 8/9/2000.****Printed 2/24/2005.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.