

Manufacturer's Name	Address	Telephone No.
Westlake Chemical Corp.	900 Highway 108 Sulphur, LA 70665	337-583-2200

Product Name:	Styrene Monomer, Stabilized
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Section I. Product Identification

Product Name:	Styrene Monomer, Stabilized
Common Names / Synonyms:	

Cinnamene	Styrene Monomer (ACGIH)	Styrene Monomer, Stabilized (DOT)
Cinnamenol	Diarex HF 77	Ethenylbenzene
NCI-C02200	Phenethylene	Phenylethene
Phenylethylene	Stirol (Italian)	Styreen (Dutch)
Styrene (CZECH)	Styrol (German)	Styrole
Styrolene	Styron	Styropor
Vinylbenzen (CZECH)	Vinylbenzene	Vinylbenzol

CAS Number:	0100-42-5
Chemical Formula:	C ₈ H ₈

Section II. Hazardous Ingredients and Exposure Limits

Component	CAS No.	Percent	Exposure Limits
Styrene	0100-42-5	99.9 – 100	Reference
p-t-butylcatechol	98-29-3	Trace (10-55ppm)	

Exposure Limits –
OSHA PEL: 100 ppm
ACGIH TWA: 50 ppm
15 min STEL: 100 ppm

Section III. Chemical and Physical Properties

Boiling Point	(At 760 mm Hg) 293° F (145° C)
Melting Point	-23.8°F (-30.6°C)
Evaporation Rate (Butyl Acetate=1)	Not available
Vapor Density (Air = 1)	3.6
Molecular Weight	104 g/mol
Water Solubility	Slight

Appearance and Odor	Colorless, transparent liquid with a sweet, pleasant aromatic odor at low concentrations and an unpleasant odor at high concentrations
Odor Threshold	0.15 ppm in air
Vapor Pressure	5mmHg at 68°F
Specific Gravity (H ₂ O) = 1)	0.9059 at 68°F (20°C)
% Volatile by Volume	100

Section IV Fire and Explosion Hazard Data

Flash Point	88° F (31°C) CC
Auto-Ignition Temperature	914°F (490°C)
Flammable Limits in Air	LFL: .9 % UFL: 6.8 %

National Fire Protection Association Hazard Identification Code

Health 2 Flammability 3 Reactivity 1

Fire Extinguishing Media

Use foam, dry chemical or carbon dioxide. Use water spray to cool fire exposed containers, to disperse the styrene vapor and to protect personnel who are attempting to stop a styrene leak. In the case of large fires, the fire fighting should be done from a distance or from a remote, explosion proof position. Shut off the source of the leak if possible.

Special Fire Fighting Instructions: Wear a self-contained breathing apparatus (SCBA) with a full face piece operated in the pressure-demand or positive-pressure mode.

Unusual Fire or Explosion Hazards: Styrene vapor is heavier than air and may travel a considerable distance to a low-lying source of ignition and flash back to its origin. Violent polymerization inside heated containers of styrene can occur and elevated temperatures; explosive rupturing of these containers is possible. Styrene vapor is inhibited and can form polymers that will block the vents or flame arresters of storage tanks.

Section V Health Hazards

Primary Routes of Entry:	Inhalation – Yes Absorption – Yes Ingestion - No
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Acute Health Effects

Skin and eye irritation; depression of the central nervous system symptomized by drowsiness, unsteady gait, weakness and loss of coordination.

Inhalation

Workers exposed to styrene vapor at 200 to 700 ppm experienced drowsiness, nausea, headache, fatigue, dizziness and possible a metallic taste in their mouths. Exposures above 800 ppm are immediately irritating to the eyes, nose and the respiratory system. Excessive exposure through inhalation can cause narcotic effects and even death. A death has been reported from a 30 minute exposure to 10,000 ppm. (1%) "Styrene Sickness" has been described with symptoms of nausea, vomiting and an intoxicated sensation.

Absorption

Repeated or prolonged skin contact with liquid styrene can cause defatting, dermatitis and irritation.

Chronic Health Effects

Three studies reported by the LARC have suggested an association between leukemia and lymphomas and exposure to styrene. However, because of concomitant exposure to other chemicals it is not possible to single out styrene as the causative agent.

Eyes/Skin

Styrene is an eye and skin irritant.

Ingestion

There is no information on human health effects from eating food or drinking water contaminated with styrene.

Medical Conditions Aggravated by Exposure – None reported.

Carcinogenicity Status

Styrene is a suspected human carcinogen and an experimental carcinogen and teratogen.

Section VI First Aid Procedures**Eye Contact**

Immediately flush eyes included under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 minutes.

Skin Contact (Liquid Ethylene)

Rinse the affected areas with flooding amounts of water and then wash it with soap and water. If large skin areas are involved, continue to carefully monitor the exposed person for signs of developing depression of the central nervous system, because liquid styrene can penetrate intact skin rapidly by absorption.

Inhalation

Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have qualified medical personnel administer oxygen as required.

Ingestion

Unlike a route of entry. Should this type of exposure occur, slowly give the exposed person 4 to 8 glasses of milk or water to dilute the material. Do not induce vomiting. Never give anything by mouth to someone who is unconscious or convulsing.

Physicians Note: Treat central nervous system effects symptomatically. Styrene is excreted as hippuric acid; urine levels of this metabolite can be useful in determining the level of exposure to the styrene.

Section VII Personal Protection**Respiratory Protection**

Wear a NIOSH approved respirator if necessary. Follow OSHA respirator regulations (29 CFR 1910.134). Use air purifying with chemical cartridge for concentrations less than 500 ppm. If concentration is unknown use self contained breathing air.

Skin

Wear impervious gloves, boots, aprons and gauntlets to prevent prolonged or repeated skin contact.

Eyes

Wear protective eyeglasses or chemical safety goggles, per OSHA eye and face protection regulations (29 CFR 1910.133). Where splashing is possible, wear a full face shield over the goggles or glasses.

Ventilation

Install and operate general and local maximum explosion proof ventilation systems powerful enough to maintain airborne levels of this material below the OSHA PEL cited in Section II of this standard.

Contaminated Equipment

Launder contaminated clothing before wearing. Remove this material from shoes and equipment.

Section VIII Reactivity Data**Hazardous Decomposition or By-Products**

Acrid vapor upon heating. Production of carbon monoxide, carbon dioxide and styrene oxide.

Stability

Styrene is stable in closed containers during routine operations. Hazardous polymerization can occur if the inhibitor fails or if the styrene monomer, stabilized is exposed to excessive heat, light or catalytic materials such as peroxides and strong acids.

Incompatible Materials

Styrene can react dangerously with oxidizing materials such as chlorosulfonic acid, oleum and sulfuric acid. Also metal salts, acids, caustic, aluminum chloride, ferric chloride and chlorine gas.

Hazardous Polymerization

Hazardous polymerization cannot occur.

Section IX Spill, Leak and Disposal Procedures**Spill and Leak**

Evacuate unnecessary personnel, eliminate all sources of ignition immediately and provide adequate ventilation. Clean up personnel need protection against skin or eye contact with the liquid as well as inhalation of its vapors. Contain large spills and collect waste or absorb it with an inert material such as sand, earth or vermiculite. Use non sparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds and waterways.

Waste Disposal

Dispose of contaminated styrene promptly; do not store contaminated liquid styrene for any length of time. Reclamation of spilled liquid styrene is not recommended; its reactivity and the possibility of contaminated induced polymerization make reclamation unattractive. Follow all Federal, State and Local Regulations.

OSHA Designations

Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations

(40 CFR 302.4)

CERCLA Hazardous Substance, Reportable Quantity

1000 lbs per the Clean Water Act (CWA) paragraph 311 (b) (4)

Section X Additional Precautions**Storage**

Store styrene in closed containers in a cool, dry and well ventilated area away from sources of ignition and strong oxidizers. Keep them out of direct sunlight. Protect containers from physical damage. Outside, isolated or detached storage is recommended.

Special Handling / Storage

Contamination of storage facilities, especially with polymerization initiators, must not occur. Store styrene in its original containers and remove from the storage area only the amount that is immediately needed. Control inventory carefully. Prolonged storage is strongly discouraged and a first in first out rotation system may be useful for proper stock rotation requirements. Check the styrene at least weekly to determine the inhibitor and polymer content if the material is being stored for any period of time in excess of 30 days at 90° F (32° C). Large tanks of styrene should be stored under a nitrogen blanket.

Section XI Transportation Data**DOT and IMDG Information**

Shipping Name: Styrene Monomer, Stabilized
Labels: Flammable Liquid
UN / NA ID No.: UN2055
DOT Packaging Exceptions: 49 CFR 173.118
Hazard Class: 3
Packing Group: III

Section XII Other Regulatory Data

This Material is Regulated Under:

Occupational Safety and Health Administration (OSHA): Air Contaminant (29 CFR 1910.1200: Styrene Monomer, Stabilized is hazardous according to 1910.1200.

EPA Toxic Substances Control Act (TSCA): Styrene Monomer, Stabilized is listed on the chemical substance inventory. Reportable Quantity is 1000 lbs.

Superfund Amendments Reauthorization Act of 1986 (40 CFR Part 372): Listed

OSHA 29 CFR 1910.119 Process Safety Management: Listed this material as flammable per 1910.119.

EPA 40 CFR Part 68 (RMP): Not listed.

Section XIII Users Responsibility

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of the user's operation should be examined to determine, if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to employees and/or customers. Westlake Petrochemicals Corporation must rely on the user to use this information to develop appropriate work practice guideline and employee instructional programs specific to the user's operation.

Section XIV Disclaimer of Responsibility

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