

STYRENE MONOMER

FORMULA



DESCRIPTION

Styrene (vinyl benzene, styrene monomer SM) is a colorless to yellowish oily liquid with a distinctive aromatic odor. It is sparingly soluble in water but soluble in alcohols, ethers and carbon disulfide. This valuable monomer is flammable, reactive and toxic. Styrene Monomer is a light liquid. It has a low vapor pressure and high refractive index. It is chemically reactive and undergoes polymerization readily (by heat, light or peroxide catalysts). Polymerization results in volumetric shrinkage (17%) and exothermic heat (17.8 Kcal/mole).

PROPERTIES

Parameter	Unit	Quantity
Molecular weight	g/mol	104.14
Refractive index	°C at 29°C	1.5445
Boiling point	°C	146
Freezing point	°C	-30 to -32
Vapor density	air = 1 at 15°C	3.6
Viscosity	cp at 20°C	0.76
CAS number	100-42-5	
IUPAC name	Styrene	

Parameter	Unit	Quantity	Test Method
Purity	wt%	99.7 min.	ASTM D-5135
Polymers	ppm, wt	10 max.	ASTM D-2121
Color	APHA	10 max.	ASTM D-1209
Aldehydes (as benzaldehyde)	wt%	0.01 max.	ASTM D-2119
Inhibitor (as TBC)	ppm, wt	14-18 (1)	ASTM D-4590
Peroxides (as H ₂ O ₂)	ppm, wt	50 max.	ASTM D-2340
Total sulfur (as S)	ppm, wt	5 max.	ASTM D-5623
Total chlorides (as Cl)	wt%	0.005 max.	UOP-395/66
Ethyl benzene	ppm, wt	500 max.	ASTM D-5135
Density	at 15°C	0.909-0.911	ASTM D-4052

DISCLAIMER:

The information contained in this datasheet is to the best of our knowledge correct and up to date. Under well-defined conditions. Its accuracy or suitability under the actual conditions of any independent use is not guaranteed and must be determined by the user. All advice given about the product is given in good faith. Since as we have no control over conditions of substrate, manufacturer and seller cannot accept any liability in connection with the use of the product relative to coverage, performance, injury, or damage, unless we specify in writing to do so. The information in this data sheet is subject to change without prior notice and it is the user responsibility to ensure it is current. For further information and advice please contact RAR RESIN Technical Service Department.

HAZARDS AND SAFETY

Styrene Monomer liquid has a distinctive pleasant odor, but is harmful if swallowed and burns the skin and eyes. Its vapors are irritating to eyes and throat; if inhaled, it will cause dizziness and loss of consciousness. This monomer is considered to be a moderately toxic, highly flammable and a highly reactive chemical. In the event of a fire, the fire-fighting group should be at a safe distance and protected from explosions and use dry chemicals or carbon dioxide.

Parameter	Unit	Quantity
Threshold limit value	ppm	100
Ignition point	°C	490
Flash point	°C	31-32.5
Flammable limits in air	vol %	1.1-6.1
UN or ID No.		2055

APPLICATIONS

Styrene Monomer is most commonly used in the production of valuable styrene homopolymers and copolymers, which are either solid (SPS) or expandable (EPS). Some SPS grades are used for the production of disposable transparent containers and EPS grades are useful in the fabrication of blocks for thermal insulation and boxes for vegetables and fruits. High Impact Polystyrene (HIPS), is polystyrene blended with rubber for better mechanical properties useful in the production of dairy products, packaging materials and sheets. The copolymers of SM with butadiene and/or acrylonitrile create valuable products combining characteristics of synthetic rubbers and strong plastics.

STORAGE AND HANDLING

Styrene Monomer is stored in insulated carbon steel tanks. To prevent Styrene polymerization, the Styrene temperature must be controlled at around 10-11°C. Also, a polymerization inhibitor must be added. Normally, Tertiary Butylcatechol (TBC) is used with a concentration of 10-15 PPM. In hot climates and during the transportation of Styrene, the initial TBC level should be increased to around 50 PPM to avoid autocatalytic polymerization which becomes self-sustaining above 20°C. The exact TBC level will depend on the prevailing ambient temperature and the duration of the transportation. As a general rule when transporting Styrene, you should avoid contact with copper, copper alloys, brass and PVC. Avoid contact of Styrene (containing low level of TBC) with oxygen as it creates hazardous peroxides. Avoid contact with air. Avoid static electricity, sparks or any open flame. Keep liquid temperature and vapor venting under rigged control. Avoid direct or prolonged exposure to the sunlight and ambient conditions.

Indoor storage should be in a standard flameproof storage room with temperature controlled lower than 25°C. Use safety goggles, rubber gloves and chemical cartridge respirators.

Our premium quality Styrene Monomer is shipped in chemical vessels (Type 2 of the International Maritime Organization Code). Our Styrene Monomer is also transferred via suitable road trucks arranged by us or by customers. Glass is particularly suitable for handling Styrene Monomer in small quantities, and stable plastic materials may also be used. Precautionary labeling: "Styrene Monomer inhibited, flammable liquid, harmful if swallowed".

DISCLAIMER

This information contained in the data sheet is to the best of our knowledge correct and up to date. Under well-defined conditions. Its accuracy or suitability under the actual conditions of any independent use is not guaranteed and must be determined by the user. All advice given about this product is given in good faith. Since as we have no control over conditions of substrate, manufacturer and seller cannot accept any liability in connection with the use of the product relative to coverage, performance, injury, or damage, unless we specify in writing to do so. The information in this data sheet is subject to change without prior notice and it is the user responsibility to ensure it is current. For further information and advice please contact RAR RESIN Technical Service Department.