

Material Safety Data Sheet (MSDS)

1. CHEMICAL DATA

Synonym	Expandable Polystyrene
Chemical family resin	Styrene polymer
Formula	(C ₈ H ₈) _n
CAS No.	9003-53-6
Molecular weight	1,00,000-2,00,000

2. HAZARDS IDENTIFICATION

This assessment is based on information available on similar products Hazards in use, may form Flammable / explosive vapor-air mixture. Product releases pentane, a flammable hydrocarbon, may cause irritation to skin and eyes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Product description: Polystyrene (CAS No.: 9003-53-6), containing pentane isomers as blowing agent

Chemical name	CAS Number	Composition %
Styrene Monomer	100-42-5	92.0 - 94.5
pentane	9003-53-6	5.0 - 7.0
Others		0.5 - 1.0

4. FIRST AID MEASURES

Eye contact	Flush eyes with plenty of clean water, holding the eyelids apart, for at least 15 min. If symptoms persist, obtain medical attention
Skin contact	Wash skin with soap and water
Inhalation	If exposed to fumes released at high temperature, remove the Patient to fresh air. Apply artificial respiration if necessary and get medical attention
Ingestion	If swallowed, induce vomiting by touching the back of the throat with finger. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

General	Product is not classified as Flammable, but will burn on contact with flame or exposure to high temperature (see section 9).
Fire and Explosion Hazards	Flammable concentrations of pentane may accumulate on storage in closed containers. This product may give rise to hazardous fumes in a fire (carbon monoxide, Carbon dioxide).
Extinguishing media	water spray, Dry chemical powder or Carbon dioxide.
Unsuitable Extinguishing media	Do not use water jet.
Fire fighting protective equipment	A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions.
Others	Keep fire exposed containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Caution	Spillages may be slippery. Pentane can form explosive mixture with air. The pentane vapor is heavier than air; beware of pits and confined spaces. Remove or make safe all sources of ignition. Avoid friction, sparks, or other means of ignition. Take precautionary measures against static discharges. Prevent entry into drains.
Methods for cleaning up:	
Small spillages	Sweep up and shovel into waste drums or plastic bags. Transfer to a lidded container for disposal or recovery.
Large spillages	Use vacuum equipment for collecting spilt materials, where practicable. transfer to a lidded container for disposal or recovery.
Other info	See also section 13

7. HANDLING AND STORAGE

Handling	Provide adequate ventilation including appropriate local extraction. Do not breathe fumes/vapor. Avoid generation of dust clouds. Should be kept away from naked flames and other sources of ignition extinguish any other fire. Remove or make safe all sources of ignition. Avoid friction, sparks, or other means of ignition. The electrical system should be spark-free, when using do not smoke.
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Take precautionary measures against static discharges. Ensure adequate earthing. Avoid release to the environment. permission must be obtained from the appropriate local authority before disposing of waste material.

Process hazards

Take precautionary measures against static discharges to avoid the buildup of static electric charge, and also the formation of an explosive pentane-air mixture, Containers should be fully emptied when processing. Ventilate freight containers for one hour before unloading. Line velocity should not exceed 8 m/s during normal pumping operations. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used.

Storage

Flammable concentrations of pentane may accumulate on storage in closed containers. Keep container tightly closed, in a cool, well ventilated place. Keep away from direct sunlight and other sources of heat or ignition. Keep away from rain and moist conditions.

Suitable containers

Steel (drums). Specific design for storage rooms or vessels: storage rooms should be kept cool to reduce pentane release, and provided with a suitable ventilation system to prevent accumulation of pentane. in addition, safety devices to alert any build up of pentane/air explosive mixtures should be used. The electrical system should be spark-free.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**General**

Use only in well-ventilated areas.

Respirators

An approved dust mask should be worn if dust is generated during processing or handling.

Eye protection

Safety spectacles.

Gloves

Wear suitable gloves. Break through time of the glove material: refer to the information provided by the gloves' producer.

Others

Wear suitable protective clothing antistatic safety shoes or antistatic boots.

Environmental exposure controls

European community and local provisions on volatile Organic substances (VOC) are to be fulfilled when they are applicable to the EPS industry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: Solid, small spherical beads
Colour	: white or dyed
Flash point (°C)	: < -50°C (pentane)
Flammable limits (upper)	: (% v/v) 7.8% (v/v) (pentane)
Flammable limits (lower)	: (% v/v) 1.3% (v/v) (pentane)
Auto ignition temperature (°C)	: 285°C (pentane) (astm e-659)
Density	: 1020–1050kg/m ³ @ 20°C (beads)
Bulk density	: circa. 600kg/m ³ @ 20°C
Vapor density	: (air=1) 2.5 (pentane)
Partition coefficient	: Not available (n-octanol / water)
Softening point (°C)	: 70-75°C (beads expand with evolution of pentane)
Solubility (water)	: Insoluble
Solubility (other)	: Soluble in aromatic hydrocarbons, halogenated solvents and ketones.

10. STABILITY / REACTIVITY

Conditions to avoid	Keep away from heat sources of ignition and direct sunlight.
Materials to avoid	Avoid storing or handling in conjunction with un class 1 explosives.
Hazardous decomposition Product(S)	Pentane, styrene monomer, carbon monoxide (in case of fire or during hot wire cutting).release of pentane increases with temperature. (Beads expand with evolution of pentane) @ 70-75°C.

11. TOXICOLOGICAL INFORMATION

This assessment is based on information available on similar products.	
Inhalation	The product can evolve pentane vapors, which at high concentrations may lead to dizziness, headache and anesthetic effects.
Ingestion	Unlikely to be hazardous if swallowed. LD50 > 2000 mg/kg
Skin contact	May cause irritation. LD50 > 2000 mg/kg
Eye contact	Irritating to eyes
Long term exposure	No data

12. ECOLOGICAL INFORMATION

This environmental hazard assessment is based on information available on similar products. Small particles may have physical effects on aquatic and terrestrial organisms.

Environmental fate and distribution

The product is essentially insoluble in water. The product has low potential for bio-accumulation. Expandable polystyrene sinks in fresh water, may float or sink in sea water.

Persistence and degradation

The product itself has not been tested. In accordance with the required stability, the product is not readily biodegradable. The statement has been derived from the structure of the product. It can be largely eliminated from the water by a biotic processes, e.g. Mechanical separation.

13. DISPOSAL CONSIDERATIONS

Surplus, unused, old beads may still contain residual pentane. Therefore product has to be treated using all the safety measures in place for the fresh material. (see also section 7).

Regulatory information

European Union directive 94/62/EC.

Recommended

Recover or Recycle, if possible. Remove all packaging for recovery or disposal. Normal disposal is via incineration operated by an accredited disposal contractor.

14. TRANSPORT INFORMATION

UN No. 2211, UN Class 9, UN Pack. Group III

Proper Shipping Name: POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor (Pentane)

Road/Rail - ADR/RID Class: 9

HAZARDS IDENTIFICATION: 90, ADR Si 2211

Tunnel restriction code: (D/E)

Special Provisions: 633: Keep away from any source of Ignition.

SEA - IMDG, Primary Class: 9

UN Packing group Sea: III

Marine Pollutant: Not classified as a Marine Pollutant.

IMDG EMS: F-A, S-I

AIR - ICAO/IATA, Primary Class: 9

UN Packing group Air: III

CEPIC TEC®: 90GM3-III

Additional information

Transport or conveyance within the manufacturing premises: refer to the internal procedures and information provided by this document. Transport or conveyance outside the manufacturing premises: apply the requirements of the regulations on transport of dangerous goods and the manufacturer's recommendation on safe loading, transporting, unloading of the material.

15. REGULATORY INFORMATION

Risk Phrases:

R18

In use may form flammable/explosive vapor air mixture.

Safety Phrases

S3/7

Keep container tightly closed in a cool place.

S9

Keep container in a well-ventilated place.

S16

Keep away from sources of ignition - No smoking.

S33

Take precautionary measures against static discharges.

16. OTHER INFORMATION

Risk Phrases:

R12

Extremely flammable.

R18

In use, may form flammable/explosive vapor-air mixture.

R51/53

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R65

Harmful: may cause lung damage if swallowed.

R66

Repeated exposure may cause skin dryness or cracking.

R67

Vapors may cause drowsiness and dizziness.

The information contained in this Safety Data Sheet (SDS) is believed by LG Polymers India Pvt.Ltd., to be accurate on the date issued. The design and Characteristics of the product manufactured out of LGPI material are beyond our control & expertise, therefore, LGPI shall not own the responsibility for any consequential damage incurred by the Purchaser.