

Global Product Strategy (GPS) Safety Summary

Polybutene-1

This GPS Safety Summary is a high-level summary intended to provide the general public with an overview of product safety information on this product. It is not intended to provide emergency response, medical or treatment information, or to provide an overview of all safety and health information. This summary is not intended to replace the Safety Data Sheet. For detailed guidance on the use or regulatory status of this product, please consult the Safety Data Sheet, and the Product Stewardship Bulletin (PSB).

Chemical Identity

Chemical name: Polybutene-1 Homopolymer
CAS number: 9003-78-5

Chemical name: 1-Butene, polymer with ethene
CAS number: 25087-34-7

Chemical name: 1-Butene, polymer with ethene and 1-propene
CAS number: 25895-47-0

Uses and Applications

Polybutene-1 (PB-1) is a thermoplastic polymer and a member of the polyolefins family. It is produced by polymerization of butene. PB-1 polymers are a family of versatile, flexible, strong and durable butene-based polymers.

PB-1 is used in flexible pressure piping for domestic water systems, and heating and cooling systems. PB-1 is also used in applications such as “easy-open” packaging (seal peel film), construction, fibers and fabrics, compounds, adhesives and coatings.

PB-1 has high flexibility and resistance to internal pressure / creep resistance and retains these properties near the melting point.

PB-1 is compatible with polypropylene (PP), and can be used in blends to improve certain characteristics of PP. It is less compatible in blends with polyethylene but still dispersible.

PB-1 is weldable and various joining techniques are feasible including socket welding, butt welding and electro-fusion welding.

PB-1 is not sold in pipe applications intended for use in North America.

Physical / Chemical Properties

PB-1 resins are solid polymers that are stable at ambient temperatures. When heated to very high temperatures, the resins may burn or decompose to flammable hydrocarbons. All PB-1 grades have very good chemical resistance.

Common commercial PB-1 grades have a melting point in the range of 90 - 130°C (194 - 266°F).

PB-1 dust may form explosive mixtures with air.

Health Effects

Health hazards are negligible at ambient temperatures because of the polymers' high molecular weight, minimal toxicity and general inertness. PB-1 polymers have a low irritation and sensitization potential. Hot material may cause thermal burns.

At processing temperatures, irritating fumes may cause soreness in the nose and throat; coughing may result. If the product is spilled, it may create slipping hazards.

The United States Occupational Safety and Health Administration (OSHA) and European Union (EU) regulations consider PB-1 polymers as non-hazardous with regard to health hazards. The United States Department of Transportation (USDOT) and the United Nations (UN) Model regulations consider PB-1 polymers to be non-hazardous.

Environmental Effects

PB-1 resins are not expected to be toxic to the environment. PB-1 is not considered biodegradable as it biodegrades at a slow rate and may persist in the environment.

Exposure

During handling or processing of PB-1 resins, exposure to hot material, fumes and dust may take place. For such activities, exposure should be controlled by selecting and applying the appropriate Risk Management Measures.

Spillage of PB-1 resins may cause exposure to the environment, which can be minimized by proper design of equipment, handling procedures and cleaning-up spilled pellets or granules immediately.

Risk Management Measures

For detailed guidance on the use of polybutene-1 polymers, the (Material) Safety Data Sheet should be consulted.

In general, recommended Risk Management Measures will include, but may not be limited to the following:

- Avoid contact with strong oxidizers, excessive heat, sparks or open flame.
- Clean-up spilled pellets or granules to prevent slipping hazard, or environmental exposure.
- Ventilate area during handling or processing of polypropylene resins to prevent accumulation of dust and fumes.
- Use appropriate Personnel Protective Equipment (PPE) when dust or fumes are present.

In addition, the following measures will help reduce the loss of pellets to the environment:

- Bulk-handling equipment to minimize pellet leakage.
- Screening placed in storm drains.
- Proper emptying and sealing of bulk containers (rail or truck) prior to shipment to prevent loss of residual pellets from unsealed "empty" bulk cars and trucks.

Regulatory Information / Classification and Labeling

For a detailed overview of the regulatory status of this substance, please refer to the Product Stewardship Bulletin on the LyondellBasell corporate website.

For a detailed overview of the classification and labeling of this product, please refer to the regional Safety Data Sheet, which can be found on the LyondellBasell corporate website.

Conclusion Statements

- Polybutene-1 resins are versatile materials with a wide range of uses in consumer and industrial end-use applications.
- Polybutene-1 is considered non-hazardous to humans and the environment.
- During processing of polybutene-1 resins, the material can be hot, irritating fumes may be present, and dust can be formed. The use of personal protective equipment and good ventilation is recommended during the processing of these resins.

Contact Information within Company

For further information on this product in general, please consult the LyondellBasell corporate Website (www.lyb.com).

Date of issue

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Users should review the applicable Safety Data Sheet before handling the product.

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