+135-3858-6433 (GuangDong)
+188-1699-6168 (ShangHai)
+852-6957-5415 (HongKong)

Polystyrene

Safety Data Sheet

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Section 1: Identification

1.1. Product identifier

Product form : Mixture

Product Identifier(s) : Polystyrene
Crystal Polystyrene
General Purpose Polystyrene
This MSDS covers all prime grades of General Purpose Polystyrene including but not limited to the following grades:
5##, 5##P#
5##W, 5##WP#
5##B, 5##BP#
5##L, 5##LP#
5##T, 5##TP#
CX5###
rePS-5
where # can be any numeric digit (0 - 9). This MSDS also covers compounded samples labeled Polystyrene Nxxxxx and Nxxxxx-x, where x can be any numeric digit (0 - 9).

1.2. Recommended use of the chemical and restrictions on use

Use of the substance/mixture : Manufacture of plastic articles

1.3. Details of the supplier of the safety data sheet

Total Petrochemicals & Refining USA, Inc.
P O Box 674411
Houston, TX 77267-4411

For non-emergency product information:
Phone: 713-483-5000
Email: product.stewardship@total.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 (Toll Free USA & Canada) / 703-527-3887 (Multiple languages)
Total Petrochemicals & Refining USA, Inc.: 1-800-322-3462 (Language: English only)

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Combustible Dust

2.2. Label elements

GHS-US labeling

Signal word (GHS-US) : **Warning**

Hazard statements (GHS-US) : **If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.**

2.3. Hazards not otherwise classified

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

2.5. Additional information

Based on conditions common to industrial workplace use of this product : Plastic bag or liner may cause a static ignition hazard.
Spilled pellets may create a slipping hazard. Sweep up spillage and dispose of properly.
Skin or eye contact with hot polymer can cause thermal burns.
Processing the polymer at high temperatures may form vapors that irritate the eyes and respiratory tract.

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Section 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	CAS No	%
Polystyrene	9003-53-6	94.5 - 100
White mineral oil, petroleum	8042-47-5	0 - 5
Additives (chemical identity withheld as a trade secret)	Trade Secret	0 - 0.5

Section 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. If necessary seek medical advice.

First-aid measures after skin contact : Gently wash with plenty of soap and water. Heated Material: For serious burns from heated material, get medical attention. In case of skin contact, immediately immerse in or flush with clean, cold water. Do not attempt to remove adhered material from skin.

First-aid measures after eye contact : Rinse eyes with water as a precaution. Obtain medical attention if irritation persists. In case of eye contact with hot material, cool immediately with plenty of water and obtain immediate medical treatment.

First-aid measures after ingestion : Remove material from mouth. Rinse mouth out with water. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : Nuisance dusts can be irritating to the upper respiratory tract. Irritating vapors may form when the polymer is processed at high temperatures.

Symptoms/injuries after skin contact : Contact with skin or eyes with hot material may cause serious thermal burns to skin or eyes.

Symptoms/injuries after eye contact : Dust from this product may cause minor eye irritation. Contact with skin or eyes with hot material may cause serious thermal burns to skin or eyes.

Symptoms/injuries after ingestion : No effects are expected for ingestion of small amounts. May be a choking hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

Section 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : For small fire : Dry chemical. Carbon dioxide. Water. For large fire : Foam. Water spray.

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the chemical

Fire hazard : May be combustible at high temperature. May form combustible dust concentrations in air. Vapors generated from overheating/melting/decomposition may be flammable and may cause fire/explosion if source of ignition is present.

Explosion hazard : Potential dust explosion hazard. When dust becomes airborne and is exposed to an ignition source, sufficient combustible/flammable dust may exist to burn in the open or explode if confined.

Hazardous decomposition products in case of fire : Carbon oxides (CO, CO2). Aldehydes. Ketones. Hydrocarbons. Fire will produce dense black smoke. Soot.

5.3. Advice for firefighters

Firefighting instructions : Fight fire from safe distance and protected location. Avoid raising powdered materials into airborne dust, creating an explosion hazard. Apply aqueous extinguishing media carefully to prevent frothing/steam explosion. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Other information : May re-ignite itself after fire is extinguished.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Emergency procedures for non-emergency personnel : Material creates a slipping hazard on hard surfaces. Clean up spills from walking surfaces immediately.

6.2. Methods and material for containment and cleaning up

Methods for cleaning up : On land, sweep or shovel into suitable containers. Do not allow water contaminated with pellets or powder to enter any waterway, sewer or drain.

Other information : Dispose of contaminated material at an authorized site. Notify authorities if product enters sewers or public waters.

6.3. Reference to other sections

No additional information available

Section 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Do not overheat the product. Avoid contact with heated product to prevent burns.

When handled in bulk quantities, this product and its associated packaging may present a crushing hazard due to the large masses involved, possibly resulting in severe injury or death.

Combustible dust precautions: Handling this product may result in electrostatic accumulation. Use proper grounding procedures. Use only non-sparking tools. Avoid raising powdered material due to explosion hazard. Prevent the build-up of electrostatic charge. The plastic packaging film used to secure bags of material on pallets can also develop static electricity -- remove packaging film in an area free from ignitable vapors/dust.

Processing or material handling equipment may generate dust of sufficiently small particle size, that when suspended in air may be explosive. Dust accumulations should be controlled through a comprehensive dust control program that includes, but is not limited to, source capture, inspection and repair of leaking equipment, routine housekeeping and employee training in hazards. Refer to the latest edition of the National Fire Protection Association (NFPA) 654 publication, "Standard for the Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastics Industries", for complete discussion on dust explosion prevention and control measures.

Hygiene measures : Do not eat, drink or smoke when using this product. Keep away from food and drink. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Ground/bond container and receiving equipment. Electrostatic charges may be generated when emptying sacks. It is recommended that sacks are emptied away from explosive atmospheres.

Storage conditions : Store at room temperature. Protect from heat and direct sunlight. Store in dry, cool, well-ventilated area.

Section 8: Exposure controls/personal protection

8.1. Occupational Exposure Limits

Polystyrene		
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³ (Inhalable fraction) 3 mg/m³ (Respirable Particles)
USA ACGIH	Remark (ACGIH)	Particulates, not otherwise classified

8.2. Exposure controls

Appropriate engineering controls : Provide readily accessible eye wash stations and safety showers. Ensure adequate ventilation. If handling results in dust generation or high temperatures, local exhaust ventilation should be provided to insure that exposure to dust or decomposition products does not exceed the exposure recommended levels.

Hand protection : Use insulated gloves when handling this material hot.

Eye protection : Safety glasses.

Skin and body protection : Wear suitable protective clothing. Safety foot-wear.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Other information : In case of risk of overexposure to dust, vapour or fumes (during product processing), it is recommended that a local exhaust system is placed above the conversion equipment (a fume hood) and the working area must be properly ventilated.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Pellets.

Color : transparent and colorless.

Odor : Odorless.

Odor threshold : No data available

pH : Not applicable

Relative evaporation rate (butyl acetate=1)	:	No data available
Melting point	:	> 132 °C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Specific gravity / density	:	1.04
Solubility	:	Water: Negligible.
Log Kow	:	No data available
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive limits	:	No data available

9.2. Other information

Softening point : approximately 100°C

Section 10: Stability and reactivity

10.1. Reactivity

Flowing product can create electrical charge, resulting sparks may ignite dust or cause an explosion in some concentration ranges.

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

Dust may form explosive mixture in air.

10.4. Conditions to avoid

To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Hazardous decomposition products formed under fire conditions: carbon monoxide, carbon dioxide, toxic fumes.

Exposure of polystyrene to extremely high temperatures (315°C or higher) for extended periods of time may cause partial decomposition. Chemicals that may be released include styrene monomer, benzene, and other hydrocarbons.

Section 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation. Ingestion. Skin and eye contact.

Acute toxicity : Not classified

White mineral oil, petroleum (8042-47-5)	
LD50 oral rat	> 5000 mg/kg

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Polystyrene (9003-53-6)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Section 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

Polystyrene	
Persistence and degradability	This material is persistent in the environment. Not readily biodegradable.
BOD (% of ThOD)	Below detection limit

12.3. Bioaccumulative potential

Polystyrene	
Bioaccumulative potential	This product is not expected to bioaccumulate through food chains in the environment.

12.4. Mobility in soil

Polystyrene	
Ecology - soil	low mobility.

12.5. Other adverse effects

No additional information available

Section 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form . Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Transfer to a safe disposal area in accordance with federal, state, and local regulations.

Waste disposal recommendations : Recycle the material as far as possible.

Additional information : May be used as fuel in suitably designed installations.

Section 14: Transport information

US Transport (DOT) for Bulk Shipments (Non-Bulk Shipments May Differ)

Not a DOT controlled material

Transport by sea (IMDG)

Not an IMDG controlled material

Air transport (IATA)

Not an IATA controlled material

Section 15: Regulatory information

15.1. US Federal regulations

Polystyrene
TSCA
All components of this product are listed or exempted from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

SARA 313
This product contains no chemicals in excess of the applicable de minimis concentration that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Table 372.65).

SARA Section 311/312 Hazard Classes Fire hazard

Export Control Classification Number (ECCN): EAR99 (No License Required)

15.2. International regulations

CANADA

Polystyrene

WHMIS Classification — This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR
Uncontrolled product according to WHMIS classification criteria

National inventories

Listed on the Canadian DSL (Domestic Sustances List)

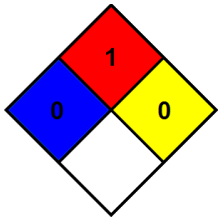
15.3. US State regulations

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer and/or reproductive toxicity, not limited to any that may be listed below.

Section 16: Other information

NFPA (National Fire Protection Association)

NFPA health hazard	: 0
NFPA fire hazard	: 1
NFPA reactivity	: 0



HMIS III Rating

Health	: 0
Flammability	: 1
Physical Hazard	: 0
Personal Protection	: See section 8 of SDS

US OSHA LABEL as specified under 29 CFR §1910.1200 (f)

Polystyrene

Total Petrochemicals & Refining USA, Inc.
PO Box 674411
Houston, TX 77267-4411 USA
Tel. 713-483-5000 or 1-877-871-2709

Warning

If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.

Supplemental Information: Based on conditions common to industrial workplace use of this product

Plastic bag or liner may cause a static ignition hazard.
Spilled pellets may create a slipping hazard. Sweep up spillage and dispose of properly.
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Version : 1.0
Date of issue : May 1, 2015

MSDS ID: PS_GPPS_PELLETS
SDS REFERENCE NUMBER: PS0007

SDS Template - TOTAL SDS US (GHS HazCom 2012) TPRI Version 3.01