Material Safety Data Sheet - Styrene

Section 1. Chemical Product and Company Identification

Product **Polystyrene, HIPS**

Chemical Name **Organic Copolymer**

Product Use **Thermoplastic Resin**

Section 2. Composition and Information on Ingredients

Components	CAS-No.	Weight %
Polystyrene (Impact)	9003-55-8	100

Additional Information: This product is not considered hazardous under 29 CFR 1910.1200 (Hazard Communication). This material 9is not a controlled product under Canadian WHMIS regulations.

Section 3. Hazards Identification

Physical State and Appearance

Solid. White pellets.

Emergency Overview

Irritating vapors to respiratory system and eyes may form when polymer is processed at high temperatures. Molten or heated material in skin contact can cause sever burns

Routes of Entry

FOR HOT MATERIAL: Skin contact. Eye contact. Inhalation.

Potential Accute Health Effects

Eyes This product is not known to cause eye irritation. However, as with any chemical, some sensitive individuals may experience eye irritation upon contact.
Heated Polymer: Eye contact can cause serious thermal burns.
Vapors formed when polymer is heated may be irritating to the eye

Skin No known acute effects of this product resulting from skin contact at room temperatures.
Heated Polymer: Skin contact can cause serious thermal burns.

Ingestion No effects are expected for ingestion of small amounts

Inhalation Negligible at room temperature. Nuisance dust can be irritating to the upper respiratory tract. Irritating vapors may form when the polymer is processed at high temperatures.

Potential Chronic Health Effects

CARCINOGENIC EFFECTS Classified NONE by NTP, NONE by OSHA.
3 (Not classifiable for human.) by IARC.
MUTANAGENIC EFFECTS Not available.
TERATOGENIC EFFECTS Not available.

Medical Conditions Aggravated by Overexposure

There is no known effect from chronic exposure to this product. Repeated or prolonged exposure is not known to aggravate medical condition.

Overexposure/ Signs/ Symptoms See Toxicological Information (Section 11)

Not available.

Section 4. First Aid Measures

Eye Contact

Rinse with water for a few minutes. Seek medical attention if necessary

Skin Contact

Polymer	No known EFFECT on skin contact, rinse with water for few minutes.
Heated Polymer	For serious burns from heated polymer, get medical attention. In case of skin contact, immediately immerse in or flush with clean, cold water.

Inhalation

Allow the victim to rest in a well ventilated area.

Ingestion

No First Aid procedures are needed.

Notes to Physician

Not available

Section 5. Fire Fighting Measures

Flammability of the Product

May be combustible at high temperature.

Auto Ignition Temperature

440°C (824°F)

Flash Points

Not available.

Flammable Limits

Not available.

Products of Combustion

Carbon oxides (CO, CO_2) and soot.

Fire Hazards in Presence of Various Substances

No specific information is available in our database regarding the flammability of this product in presence of various materials.

Explosion Hazards in Presence of Various Substances

Risks of explosion of the product in presence of mechanical impact:	Not expected.
Risks of explosion of the product in presence of static discharge:	Possible.
Risk of explosion from dust accumulation of the product is possible:	See MSDS section 7 Handling for more information.

Fire Fighting Media and Instructions

SMALL FIRE Use DRY chemicals, CO2, water spray, halon, or foam.

LARGE FIRE Use water spray, fog or foam. DO NOT use water jet.

Protective Clothing (Fire)

Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

Section 5. Fire Fighting Measures - Continued

Special Remarks on Fire Hazards

Fire may produce irritating gases and dense smoke.

Flowing material may produce static discharge, igniting dust accumulations

Special Remarks on Explosion Hazards

Processing or material handling equipment may generate dust of sufficiently small particle size, that when suspended in air may be explosive.

Section 6. Accidental Release Measures

Small Spill and Leak

Pellets on the floor could present a serious slipping problem. Good housekeeping must be maintained at all times to avoid this hazard. Sweep, shovel, or vacuum material into clean containers.

Large Spill and Leak

Use a shovel to put the material into a convenient waste disposal container. Do not allow any potentially contaminated water with pellets to enter any waterway, sewer or drain.

Section 7. Handling and Storage

Handling

Avoid Temperatures of 600°F (316°C) or above.

Handling of plastic may form nuisance dust. Protect personnel.

Pneumatic material handling and processing 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. See NFPA 654.

Storage

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8. Exposure Controls/ Personal Protection

Personal Protection

Eyes	Safety Glasses
Body	Coveralls
Respiratory	Ventilation is normally required when handling this product at high temperatures. Wear appropriate respirator when ventilation is inadequate
Hands	Thermally insulated gloves required when handling hot material

Personal Protection in Case of a Large Spill

Safety glasses. Gloves. Coveralls.

Product Name

Polystyrene (Impact)

Exposure Limits

Not available. Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical State & Appearance Solid white pellets

Odor Odorless
Taste Not available
Color Polystyrene is translucent

Molecular Weight	Not available
Molecular Formula	(-CH(C6H5)-CH2)x(-CH2-Ch=CH-CH2-)y
pH (1% soln/ Water)	Not applicable
Boiling/ Condensation Point	Not available
Melting/ Freezing Point	> 132.22°C (270°F)
Critical Temperature	Not available
Specific Gravity	1.04 (Water = 1)
Vapor Pressure	Not available
Vapor Density	Not available
Volatility	Negligible
Odor Threshold	Not available
Evaporation Rate	Not available
VOC	0 (%)
Viscosity	Not available
$LogK_{ow}$	Not available
Ionicity (in Water)	Not available
Dispersion Properties	Not available
Solubility in Water	Insoluable in water
Physical Chemical Comments	No additional remark

Section 10. Stability and Reactivity

Chemical Stability

This product is stable. Avoid temperatures of 600°F (316°C) or above

Conditions of Instability

No additional remark.

Incompatibility with Various Substances

Reactive with strong oxidizing agents.

Hazardous Decomposition Products

Hazardous decomposition products are carbon monoxide, carbon dioxide, dense smoke, and various hydrocarbons. Exposure of polystyrene to extremely high temperatures (600°F or higher) may cause partial decomposition. Chemicals that may be released include styrene monomer, benzene, and other hydrocarbons.

Hazardous Polymerization

No.

Section 11. Toxicological Information

Toxicity to Animals

LD50	Not Available
LC50	Not Available

Chronic Effects on Humans

CARCINOGENIC EFFECTS: Classified None by NTP, None by OSHA. 3 (Not classifiable for human.) by IARC.

Other Toxic Effects on Humans

Not considered to be dangerous for humans according to our data base.

Special Remarks on Toxicity to Animals

No additional remark.

Special Remarks on Chronic Effects on Humans

No additional remark.

Special Remarks on Other Toxic Effects on Humans

No additional remark.

Section 12. Ecological Information

Ecotoxicity

Not Available

BOD5 and COD

Not Available

Biodegradable/ OECD

Not Available

Mobility

Not Available

Toxicity of the Products of Biodegradation

No additional information.

Section 13. Disposal Considerations

Waste Information

Transfer to an approved disposal area in accordance with federal, state, and local regulations.

Waste System

Not available

Consult your local or regional authorities.

Section 14. Transport Information

DOT Information for Bulk Shipments (non bulk shipments may differ)

Not a DOT controlled material (United States).

DOT Proper Shipping Name

Not applicable.

Section 14. Transport Information – Continued

Packing Group

Not established.

USCG Proper Shipping Name

Not available.

Marine Pollutant

Not available.

Hazardous Substances Reportable Quantity

Not available.

Special Provisions for Transport

No additional remark.

TDG Classification

Not controlled under TDG (Canada).

ADR/RID Classification

Not controlled under ADR (Europe).

IMO/ IMDG Classification

Not controlled under IMDG

ICAO/ IATA Classification

Not regulated as a Dangerous Good for Transportation

Section 15. Regulatory Information

HCS Classification

Not controlled under the HCS (United States).

US Federal Regulations

TSCA inventory

All components listed.

SARA 302/ 304/ 311/ 312 extremely hazardous substances

No products were found

SARA 302/ 304 emergency planning and notification

No products were found

SARA 302/ 304/ 311/ 312 hazardous chemicals

No products were found

SARA 311/ 312 MSDS distribution – chemical inventory – hazard identification

No products were found

Clean water act (CWA) 307

No products were found

Clean water act (CWA) 311

No products were found

Clean air act (CAA) 112 accidental release prevention

No products were found

Clean air act (CAA) 112 regulated flammable substances

No products were found

Clean air act (CAA) 112 regulated toxic substances

No products were found

Section 15. Regulatory Information - Continued

Internal Regulations

WHMIS (Canada)	Not controlled under WHMIS (Canada). CEPA DSL: Polystyrene (Impact)
EINECS	Not available.
DSCL (EEC)	Not controlled under DSCL (Europe).
Internal Lists	No products were fournd

State Regulations

No products were found.

California Prop. 65	There are no Proposition 65 chemicals present in our polystyrene resins at levels that would require a warning under the California Safe Drinking Water and Toxic Enforcement Act.

Section 16. Other Information

Label Requirements

Irritating vapors to respiratory system and eyes may form when polymer is processed at high temperatures. Molten or heated material in skin contact can cause severe burns.

Hazardous Material Information System (USA)

National Fire Protection Association (USA)

Health	0
Fire Hazard	1
Reactivity	0
Personal Protection	

References

HSDB – Hazardous Substances Data Bank.

RTECS – Registry of Toxic Effects of Chemical Substances

Other Special Considerations

Acceptable business/ technical terms necessary for medical device applications must be developed by contacting your K&R Plastics sales representative. Without such documented business terms, K&R Plastics makes no representations, and disclaims all warranties, express or implied, concerning biocompatibility and/ or suitability of this product for medical device applications