MSDS

NOVA Chemicals® **Material Safety Data Sheet**

Material Name: Impact Polystyrene, Natural Grades **MSDS ID: NOVA-0056**

Section 1 - Product and Company Identification

Synonyms: Impact modified polystyrene, HIPS
Chemical Name: Polystyrene
Chemical Family: Polymer
Material Use: Petrochemical industry: Plastics
Chemical Formula: $(C_8H_8\ C_4H_6)_x$

#10
Approved
8-6-02

NOVA Chemicals Inc.
1550 Coraopolis Heights Road
Moon Township, PA 15108

In case of Emergency

1-800-561-6682, 1-403-314-8767 (NOVA Chemicals)(24 hours)
1-800-424-9300 (CHEMTREC-USA)
1-613-996-6666 (Canutec-Canada)(24 hours)

Section 2 - Composition / Information on Ingredients

CAS #	Component	Percent by Wt.
9003-55-8	Styrene-Butadiene polymer	94-100

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Nuisance particulates.

Additional Information

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

See Section 8 for applicable exposure limits. See Section 11 for applicable toxicity data.

Section 3 - Hazards Identification

HMIS Ratings: Health: 0* **Fire:** 1 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard
NFPA Ratings: Health: 0 **Fire:** 1 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Emergency Overview

Product is a white, inert, solid bead or pellet with slight odor. Nonflammable, but will burn on prolonged exposure to flame or high temperature. Slipping hazard.

Potential Health Effects: Eyes

Contact with hot or molten material may cause severe thermal burns. Contact with eye may cause mechanical irritation.

Potential Health Effects: Skin

Contact with hot or molten material may cause severe thermal burns. Mechanical rubbing may increase skin irritation.

Potential Health Effects: Ingestion

Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

Potential Health Effects: Inhalation

Fumes released during thermal processing may cause irritation to the respiratory system.

Section 4 - First Aid Measures

First Aid: Eyes

Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention.

First Aid: Skin
Wash the affected skin gently and thoroughly with running water and non-abrasive soap. Seek medical attention if symptoms develop or persist.

First Aid: Hazardous Skin Contact
In case of contact with molten product, cool rapidly with water and seek immediate medical attention. DO NOT attempt to remove molten product, or molten product that has cooled, from skin because skin without medical assistance.

First Aid: Inhalation
Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

First Aid: Hazardous Inhalation
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform rescue breathing. WARNING: It may be dangerous to the person providing aid to perform rescue breathing when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

First Aid: Ingestion
DO NOT induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform rescue breathing. Seek immediate medical attention.

First Aid: Notes to Physician
Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

Section 5 - Fire Fighting Measures

Flammability Class:	Nonflammable	**Flash Point:**	345° to 360°C (653° to 680°F) (Combustible Flash Ignition Temperature)
Upper flammability limit:	Not available	**Lower flammability limit:**	Not available
Auto Ignition:	427°C (800°F)		

General Fire Hazards
Nonflammable, but will burn on prolonged exposure to flame or high temperature.

Hazardous Combustion Products
Styrene, butadiene, carbon dioxide, carbon monoxide.

Extinguishing Media
Dry chemical, foam, carbon dioxide, water fog or water spray. Do not use direct water stream.

Fire Fighting Equipment/Instructions
Full-face, NIOSH-approved self-contained breathing apparatus and appropriate protective clothing must be worn by all individuals required to enter the hazard area.

Section 6 - Accidental Release Measures

Evacuation Procedures
Keep unnecessary personnel out of the area.

Small Spills
Spilled product may create a dangerous slipping hazard. Use appropriate tools to put the spilled solid in an appropriate waste disposal container. Prevent entry into sewers, drains, underground or confined spaces, water intakes, and waterways.

Large Spills
Sweep up or gather material and place in appropriate container for disposal. Prevent entry into sewers, drains, underground or confined spaces, water intakes, and waterways.

Special Procedures
Contact local police and appropriate emergency telephone numbers provided in Section 1. Ensure statutory and regulatory reporting requirements in the applicable jurisdiction are met. Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed.

Section 7 - Handling and Storage

Handling Procedures

Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Handle in contained and properly designed equipment systems. Keep away from uncontrolled heat. Ground all material handling and transfer equipment to dissipate build-up of static electricity. Keep handling areas free of loose pellets and dust generation and accumulation. Spilled product may create a dangerous slipping hazard. Keep from contact with strong oxidizing materials.

Incompatibility

Not resistant to oxidizing agents, dissolves in organic solvents.

Storage Procedures

Storage area should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store in grounded, properly designed and approved vessels and away from incompatible materials. Store and use away from heat, sparks, open flame, or any other ignition source. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically-safe electrical systems. Small amounts of fines or dust contained in granular resins may accumulate in material handling systems. If permitted to accumulate, these fines or dust can, under certain conditions, pose an explosion hazard. Every effort should be made to prevent the suspension, concentration or accumulation of fines or dusts in, or around, material handling systems. Further information can be obtained from NFPA-654. "Standard for the Prevention of Fire and Dust Explosions in Chemical, Dye, Pharmaceutical and Plastics Industries." DO NOT enter filled bulk containers and attempt to walk over product, due to risk of slipping and suffocation. Use a fall arrest system when working near open bulk storage containers.

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Material Information

Follow all applicable exposure limits.

B: Component Exposure Limits

ACGIH and OSHA exposure limit lists have been checked for those components with CAS registry numbers.

Styrene-Butadiene polymer (9003-55-8)

ACGIH: 10 mg/m3 TWA (inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica); 3 mg/m3 TWA (respirable fraction, particulate matter containing no asbestos and <1% crystalline silica) (related to Particulates not otherwise specified (PNOS))

OSHA: 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) (related to Particulates not otherwise regulated)

Engineering Controls

If user operations generate dusts, mists, or fumes, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses during normal handling. Wear full face shield during thermal processing.

Personal Protective Equipment: Skin/Hands/Feet

Normal work clothing (long sleeved shirts and long pants) is recommended. Impervious gloves should be worn when handling product.

Personal Protective Equipment: Respiratory

When dusts or thermal processing fumes are generated and ventilation is not sufficient to effectively remove them, appropriate NIOSH approved respiratory protection must be provided.

Personal Protective Equipment: General

Personal protective equipment (PPE) must not be considered a long term solution to exposure control. PPE must be accompanied by employer programs to properly select, maintain, clean, fit and use equipment. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers and applicable regulations to ensure adequate protection.

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Section 9 - Physical & Chemical Properties

Physical state and appearance:	White solid beads or pellets	Color:	White
Odor:	Slight odor	pH:	Not applicable
Vapor Pressure:	Not applicable	Vapor Density (Air=1):	Not applicable
Boiling Point:	Not applicable	Melting Point:	105°C to 135°C (221°F to 275°F)
Solubility (H2O):	Insoluble	Specific Gravity (Water=1):	1.04 g/cc, 104 kg/m
Softening Point:	79°C to 127°C (174°F to 261°F)	Evaporation Rate (n-Butyl Acetate=1):	Not applicable

Section 10 - Stability & Reactivity Information

Chemical Stability

This is a stable material.

Instability

Decomposition temperature: 300°C (572°F)

Chemical Stability: Conditions to Avoid

Avoid processing material over 300°C (572°F).

Incompatibility

Not resistant to oxidizing agents, dissolves in organic solvents.

Hazardous Polymerization

Will not occur.

Corrosivity

Not expected to be corrosive.

Hazardous Decomposition

Styrene, butadiene, carbon dioxide, carbon monoxide

Section 11 - Toxicological Information

Acute Toxicity

A: General Material Information

Polystyrene homopolymer may be irritating to the eyes. Skin contact with molten or heated material can cause burns.

B: Acute Toxicity - LD50/LC50

No LD50/LC50's are available for this product's components.

Chronic Toxicity

A: General Material Information

No additional information available.

B: Carcinogenic Effects

ACGIH, IARC, OSHA, and NTP carcinogen lists have been checked for those components with CAS registry numbers.

Styrene-Butadiene polymer (9003-55-8)

IARC: Supplement 7, 1987; Monograph 19, 1979 (Group 3 (not classifiable))

Section 12 - Ecological Information

Ecotoxicity

A: General Material Information

The information below is based on a knowledge of the components and the ecotoxicity of similar products. Sewer/waterway obstruction; marine life may ingest pellets, which may obstruct their digestive tract. Product is expected to be non-toxic, but small particles may have physical effects on aquatic and terrestrial organisms.

Environmental Fate

See information below.

Mobility
Sinks in water.
Persistence/Degradability
Pellets may accumulate in the digestive systems of birds and aquatic life, causing injury and possible death. Do not allow product to enter sewer or waterways. Expected to be inherently non-biodegradable.
Bioaccumulation/Accumulation
Not expected to bioaccumulate significantly.

Section 13 - Disposal Considerations

North America Waste Number & Descriptions
A: General Material Information
This product, if discarded, is not expected to be considered a hazardous waste according to US RCRA and Canadian regulations. Check Local, State, Federal, and Provincial Environmental Regulations prior to disposal. Preferred disposal methods are: 1) clean and reuse if possible; 2) contact resin broker; 3) contact plastic recycler; 4) incinerate with waste heat recovery and/or 5) landfill. Reuse, recycling, storing, transportation, and disposal must be in accordance with applicable federal, state/provincial and local regulation. DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED IGNITION.
B: Component Waste Numbers
No EPA Waste Numbers are applicable for this product's components.

Section 14 - Transportation Information

US DOT Information
Shipping Name: This material is not regulated as a hazardous material for transportation.

Canadian TDG Information
Shipping Name: This material is not regulated as a hazardous material for transportation.

International Air Transport Association (IATA) Regulations
Shipping Name: This material is not regulated as a hazardous material for transportation.

International Maritime Dangerous Goods (IMDG) Code
Shipping Name: This material is not regulated as a hazardous material for transportation.

Section 15 - Regulatory Information

U.S. Federal Regulations
A: General Material Information
No information available.
B: Component Analysis
None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).
C: Component Analysis - U.S. State
Some components (including those present only in trace quantities, and therefore not listed in this document) may be included on the Right To Know lists of other U.S. states. The reader is therefore cautioned to contact his or her NOVA Chemicals representative or NOVA Chemicals' Product Integrity group for further U.S. State Right-To-Know information.

None of this products components are listed on the state lists from NJ or PA.
D: Component Analysis - WHMIS IDL
No components are listed in the WHMIS IDL.
U.S. State Regulations
Other U.S. state regulations may apply. Check individual U.S. state requirements.

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Canadian Provincial Regulations

No information available.

Other Regulations

A: General Material Information

The monomer is listed by EINECS for polystyrene homopolymer.

B: Component Analysis - Inventory Status

Component	CAS #	US - TSCA	CANADA - DSL	EU - EINECS
Styrene-Butadiene polymer	9003-55-8	Yes	Yes	No

Canadian Environmental Protection Act (CEPA): This product is on the Domestic Substances List (DSL), and is acceptable for use under the provisions of CEPA.

WHMIS Classification

Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations, and the MSDS contains all of the information required by the Controlled Products Regulations. Not controlled under WHMIS (Canada).

Section 16 - Other Information

Label Information

PRECAUTIONS: Product is a white, inert, solid bead or pellet with slight odor. Nonflammable, but will burn on prolonged exposure to flame or high temperature. Slipping hazard.

FIRST AID:

SKIN: For contact with molten product, do not remove any material or clothing adhering to the skin. Flush the burned area immediately with large amounts of cold water. If it is possible, submerge the area in cold water. Immediately seek medical attention or contact a physician.

EYES: Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention.

INHALATION: Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform rescue breathing. WARNING: It may be dangerous to the person providing aid to perform rescue breathing when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

INGESTION: DO NOT induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform rescue breathing. Seek immediate medical attention.

IN CASE OF A LARGE SPILL: Spilled product may create a dangerous slipping hazard. Use appropriate tools to put the spilled solid in an appropriate waste disposal container.

References

Not available

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; IARC = International Agency for Research on Cancer; IDL = Ingredient Disclosure List; Kow = Octanol/water partition coefficient; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; RCRA = Resource Conservation and Recovery Act; SARA = Superfund Amendments and Reauthorization Act; TDG = Transportation of Dangerous Goods; TSCA = Toxic Substances Control Act.

Validated by Product Integrity Group on 06/26/02 Verified by Product Steward.

Contact: Product Integrity Group
NOVA Chemicals Corporation

MSDS

Material Safety Data Sheet
Material Name: Impact Polystyrene, Natural Grades

MSDS ID: NOVA-0056

6711 Mississauga Road, Suite 200
Mississauga, Ontario L5N 2W3
Contact Phone: 905-542-6980

Other Information

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This is the end of MSDS # NOVA-0056