

**Section 1 - Product and Company Identification****Synonyms:** Mixture of Polyethylene and Polystyrene**Chemical Name:** Organic Copolymer**Chemical Family:** Plastic**Material Use:** Petrochemical Industry: Plastics**Chemical Formula:** MixtureNOVA 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.
9003-53-6	Polystyrene homopolymer	45-80
24937-78-8	Ethylene-Vinyl acetate copolymer	20-55
78-78-4	Isopentane	5-12

**Component Related Regulatory Information**

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

**Additional Information**

According to 29 CFR 1910.1200 (Hazard Communication), ARCEL is not hazardous. The blowing agent used in the product is considered hazardous.

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

**Section 3 - Hazards Identification****HMIS Ratings: Health: 1 Fire: 3 Reactivity: 0***Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard***NFPA Ratings: Health: 1 Fire: 3 Reactivity: 0***Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe***Emergency Overview**

DANGER FLAMMABLE, KEEP REFRIGERATED. Product is a solid, white, blue, or gray-green bead with slightly fruity, aromatic odor. This product can release a gas that is highly flammable in the presence of open flames, lit cigarettes, sparks, static electricity discharges, or heat. Keep at a temperature not exceeding 40°F (4°C). Not resistant to oxidizing agents, partially dissolves in organic solvents. The blowing agent may be irritating to the eyes, respiratory system and skin. When heated to decomposition, product emits acrid smoke and irritating fumes. Slipping hazard.

**Potential Health Effects: Eyes**

This product may cause irritation to the eyes.

**Potential Health Effects: Skin**

This product may cause irritation to the skin.

**Potential Health Effects: Ingestion**

This product may be harmful if it is swallowed.

**Potential Health Effects: Inhalation**

This product may cause irritation to the respiratory system.

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## Section 4 - First Aid Measures

### First Aid: Eyes

Check for and remove any contact lenses. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

### First Aid: Skin

Not normally expected to present a skin hazard. This product may cause irritation to the skin from repetitive handling. Remove contaminated clothing. Wash the affected skin gently and thoroughly with running water and non-abrasive soap. Seek medical attention.

### First Aid: Inhalation

Move person to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

### First Aid: Ingestion

Not normally expected to present an ingestion hazard. If ingestion occurs, maintain an open airway and seek medical attention. Watch for an obstruction in the victim's mouth. Remove, if possible, but do not force fingers or a hard object between victim's teeth.

### First Aid: Notes to Physician

Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. After adequate first aid, no further treatment is required unless symptoms reappear.

## Section 5 - Fire Fighting Measures

<b>Flammability Class:</b>	Extremely Flammable (based on blowing agent)	<b>Flash Point:</b>	-57°C (-70°F) (based on blowing agent)
<b>Upper flammability limit:</b>	7.6% (based on blowing agent)	<b>Flash Point Method:</b>	Closed Cup
<b>Lower flammability limit:</b>	1.4% (based on blowing agent)	<b>Auto Ignition:</b>	420°C (788°F)

### General Fire Hazards

Fire and explosion risk. Vigorously supports combustion. Released vapors are flammable when exposed to lit cigarettes, sparks, static electricity discharges, or open flame. When heated to decomposition, product emits acrid smoke and irritating fumes. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Move containers from the fire area if this can be done without risk.

### Explosion Hazards

Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

### Hazardous Combustion Products

Styrene, oxides of carbon, and other toxic gases at elevated temperatures.

### Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog or water spray. Use water to cool fire-exposed containers and to protect personnel.

### Fire Fighting Equipment/Instructions

Wear full set of protective equipment including positive pressure breathing apparatus, chemical goggles and gloves.

Move containers from fire area if you can do it without risk. Cool containers with flooding quantities of water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. ALWAYS stay away from containers engulfed in fire. Prevent runoff from entering waterways, drains and sewers.

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## Section 6 - Accidental Release Measures

### Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

### Small Spills

Spilled product may create a slipping hazard. Consider isolating the spill or leak area immediately until ambient air sampling results indicate that the pentane vapor concentration is below the flammable range. Use appropriate non-sparking tools to put the spilled solid in an appropriate waste disposal container. Eliminate all sources of ignition.

### Large Spills

Flammable vapors are released from spills. Use water spray curtain to divert vapor drift. Consider evacuating the spill or leak area immediately until ambient air sampling results indicate that the pentane vapor concentration is below the flammable range. Prevent entry into sewers, basements, or confined areas; dike if needed. Eliminate all sources of ignition.

### Special Procedures

Wear appropriate protective equipment and clothing during clean-up. (See Section 8)

Contact local police/emergency services 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.

### Damaged or Suspect Damaged Containers

If ARCEL® containers are damaged or suspected to have been damaged during transit, open the truck trailer door slowly and ventilate for 15 minutes. Never permit smoking. Test the atmosphere to ensure the air is free of isopentane before entering.

## Section 7 - Handling and Storage

### Handling Procedures

Keep this product from heat, sparks, lit cigarettes, static electricity discharges, or open flame. Ground all equipment containing material. Do not breathe dust from this material. Keep away from incompatibles such as oxidizing agents, and organic solvents.

After opening the container in a well ventilated area, allow 15 minutes for the accumulated pentane to dissipate.

Partially filled containers represent a potentially serious hazard because the insides of the container permit a space for the pentane to accumulate. When partially filled containers have to be used, direct a stream of air into the container for 15 minutes after opening to ensure no accumulation of isopentane in the container.

Shipping containers, trucks, and trailers should be ventilated for at least 15 minutes prior to unloading.

Maintain sufficient air circulation and ventilation to prevent flammable concentrations from forming, especially in low-lying areas.

### Incompatibility

Not resistant to oxidizing agents, partially dissolves in organic solvents.

### Storage Procedures

Flammable materials should be stored in a separate safety storage cabinet or room. Keep this product from heat, sparks, lit cigarettes, static electricity discharges, or open flame. Store only in sealed original container below 40°F or 4°C.

For additional handling and storage information, refer to the NOVA Chemicals ARCEL Moldable Foam Resin Storage and Handling Safety Guide.

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## Section 8 - Exposure Controls / Personal Protection

### Exposure Guidelines

#### A: General Material Information

Follow all applicable exposure limits.

#### B: Component Exposure Limits

ACGIH, OSHA, NIOSH, EPA, TSCA, Alberta, and Ontario exposure limit lists have been checked for those components with CAS registry numbers. Other exposure limits may apply. Check with authorities.

#### Ethylene-Vinyl acetate copolymer (24937-78-8)

ACGIH: 10 mg/m<sup>3</sup> TWA (inhalable fraction); 3 mg/m<sup>3</sup> TWA (respirable fraction) (related to Particulates (insoluble or poorly soluble) not otherwise specified (PNOS))

OSHA: 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction) (related to Particulates not otherwise regulated)

Alberta: 5 mg/m<sup>3</sup> TWA (respirable mass); 10 mg/m<sup>3</sup> TWA (total mass) (related to Nuisance particulates)

Ontario: 10 mg/m<sup>3</sup> TWAEV (inhalable); 3 mg/m<sup>3</sup> TWAEV (respirable. both must contain no asbestos and less than 1% crystalline silica) (related to Particulates (Insoluble) Not Otherwise Classified)

#### Isopentane (78-78-4)

ACGIH: 600 ppm TWA (listed under Pentane, all isomers)

### Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below recommended exposure limits. 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 chemical goggles.

#### Personal Protective Equipment: Skin/Hands/Feet

Use impervious gloves. Use of non-static accumulating and fire-resistant protective coveralls and long sleeves is recommended. Footwear with conductive soles is also recommended.

#### Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of vapor/mist/fume/dust, appropriate NIOSH 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.

Commercial synthetic clothing, unless specifically treated, carries a risk in a fire situation and can generate dangerous static electricity if donned or doffed in a flammable atmosphere.

## Section 9 - Physical & Chemical Properties

<b>Physical state and appearance:</b>	Solid, bead	<b>Color:</b>	White, blue, or gray-green
<b>Odor threshold:</b>	Not available	<b>Odor:</b>	Fruity, slight aromatic
<b>Vapor Pressure:</b>	Not available	<b>pH:</b>	Not available
<b>Dispersion properties:</b>	Not dispersed in cold/hot water	<b>Vapor Density (Air=1):</b>	2.5
<b>Melting Point:</b>	>180°C (357.8°F)	<b>Boiling Point:</b>	Not available
<b>Specific Gravity (Water=1):</b>	0.99	<b>Solubility (H<sub>2</sub>O):</b>	Non-soluble. Partially soluble in various organic solvents.
<b>Ionicity (in water):</b>	Not applicable	<b>Softening Point:</b>	Approx. 100°C (212°F)

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## Section 10 - Stability & Reactivity Information

### Chemical Stability

This is a stable material.

### Instability

No additional information available.

### Chemical Stability: Conditions to Avoid

Keep this product from heat, ignition sources, static electricity discharges, and incompatible materials.

### Incompatibility

Not resistant to oxidizing agents, partially dissolves in organic solvents.

### Hazardous Polymerization

Will not occur.

### Corrosivity

Not expected to be corrosive.

### Hazardous Decomposition

Styrene, oxides of carbon, and other toxic gases at elevated temperatures.

### Special Remarks

KEEP REFRIGERATED at a temperature not exceeding 40°F (4°C). May burn or react violently with fluorine/oxygen mixtures with 50-100% fluorine. May be decomposed by strong oxidizing agents.  
(Ethylene/Vinyl Acetate Copolymer)

## Section 11 - Toxicological Information

### A: Acute Toxicity - General Material Information

This product has not been tested.

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

Ethylene-vinyl acetate copolymer may be irritating to the eyes, skin, and respiratory system. Contact with molten ethylene-vinyl acetate copolymer may cause thermal burns.

The blowing agent used in the product contains isopentane which can irritate eyes, skin, and respiratory system.

### B: Acute Toxicity - LD50/LC50

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

### C: Chronic Toxicity - General Material Information

No additional information available.

### D: Chronic Toxicity - Carcinogenic Effects

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

#### Polystyrene homopolymer (9003-53-6)

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

### Special Remarks on Other Toxic Effects on Humans

When heated, this material may release fumes and/or vapors that are irritating to the eyes, nose, throat, and skin. Overexposure to fumes or vapors may also cause headache, nausea, shortness of breath, and cough. Molten or heated material can cause serious burns to unprotected skin and eyes. (Ethylene/Vinyl Acetate Copolymer)

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## 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.

#### B: Component Analysis - Ecotoxicity - Aquatic/Terrestrial Toxicity

##### Isopentane (78-78-4)

###### Air:

When released into the air, isopentane is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals, with half-life between 1 and 10 days.

###### Aquatic:

When released into water, isopentane may biodegrade to a moderate extent. When released to water, isopentane is expected to quickly evaporate. Into the water, isopentane is expected to have a half-life of less than 1 day. Isopentane has an estimated bioconcentration factor (BCF) of less than 100. Isopentane has a log octanol-water partition coefficient greater than 3.0. Isopentane is not expected to significantly bioaccumulate.

Soil (micro- and macro-organisms): Not Available.

Inhibitory effects on the activity of micro-organisms and impact on sewage treatment plants: Not Available.

### Environmental Fate

See information below.

### Mobility

May float or sink in water.

### Persistence/Degradability

Expected to be inherently non-biodegradable. Integrated environmental half-life expected to be  $\geq$  100 days.

### Bioaccumulation/Accumulation

Not expected to bioaccumulate significantly.

## Section 13 - Disposal Considerations

### U.S./Canadian 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:** Polymeric beads, expandable

**UN/NA #:** UN2211 **Hazard Class:** 9 **Packing Group:** III

**Required Label(s):** Class 9: Miscellaneous

### Canadian TDG Information

**Shipping Name:** Polymeric beads, expandable

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**MSDS ID: NOVA-0114**

**UN/NA #:** UN2211 **Hazard Class:** 9 **Packing Group:** III  
**Required Label(s):** Class 9: Miscellaneous

## International Air Transport Association (IATA) and ICAO Regulations

**Shipping Name:** Polymeric beads, expandable  
**UN #:** UN2211 **Hazard Class:** 9 **Packing Group:** III

## International Maritime Dangerous Goods (IMDG) Regulations

**Shipping Name:** Polymeric beads, expandable  
**UN #:** UN2211 **Hazard Class:** 9 **Packing Group:** III  
**Additional Info.:** EmS No.: 4.1-06

## Section 15 - Regulatory Information

### A: International Regulations

Monomers are listed in EINECS for polystyrene homopolymer and ethylene-vinyl acetate copolymer.

### Component Analysis - International Inventory Status

Component	CAS #	US - TSCA	CANADA - DSL	EU - EINECS
Polystyrene homopolymer	9003-53-6	Yes	Yes	Exempt
Ethylene-Vinyl acetate copolymer	24937-78-8	Yes	Yes	Exempt
Isopentane	78-78-4	Yes	Yes	Yes

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

### USA Federal & State Regulations

No information available.

### USA OSHA Hazard Communication Class

According to 29 CFR 1910.1200 (Hazard Communication), ARCEL is not hazardous. The blowing agent used in the product is considered hazardous.

### USA Right-to-Know - Federal

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).

### USA Right-to-Know - State

The following components appear on one or more of the following state hazardous substances lists. 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.

Component	CAS	NJ	PA
Isopentane	78-78-4	Yes	Yes

### C: Canadian Regulations - Federal and Provincial

#### Canadian Federal WHMIS IDL

No components are listed in the WHMIS IDL.

#### WHMIS Classification

Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR), and the MSDS contains all of the information required by the CPR.

#### Provincial Regulations

No information available.

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## Section 16 - Other Information

### Label Information

DANGER FLAMMABLE, KEEP REFRIGERATED. Product is a solid, white, blue, or gray-green bead with slightly fruity, aromatic odor. Fire and explosion risk. This product can release a gas that is highly flammable in the presence of open flames, lit cigarettes, sparks, static electricity discharges, or heat. Keep at a temperature not exceeding 40°F (4°C). Not resistant to oxidizing agents, partially dissolves in organic solvents. The blowing agent may be irritating to the eyes, respiratory system and skin. When heated to decomposition, product emits acrid smoke and irritating fumes. Slipping hazard.

### FIRST AID:

**SKIN:** Not normally expected to present a skin hazard. This product may cause irritation to the skin from repetitive handling. Remove contaminated clothing. Wash the affected skin gently and thoroughly with running water and non-abrasive soap. Seek medical attention.

**EYES:** Check for and remove any contact lenses. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

**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 mouth-to-mouth resuscitation. **WARNING:** It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

**INGESTION:** Not normally expected to present an ingestion hazard. If ingestion occurs, maintain an open airway and seek medical attention. Watch for an obstruction in the victim's mouth. Remove if possible but do not force fingers or a hard object between victim's teeth.

**IN CASE OF A SPILL:** Prevent entry into sewers, basements, or confined areas; dike if needed. Eliminate all sources of ignition. Use appropriate non-sparking tools to put the spilled solid in an appropriate waste disposal container. Ground all equipment containing material.

### 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; LEL = Lower Explosive Limit; 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 Business Review Team/Product Integrity Group. Verified by Product Steward on 11/25/2003

**Contact:** Product Integrity Group  
NOVA Chemicals Corporation  
6711 Mississauga Road, Suite 200  
Mississauga, Ontario L5N 2W3

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### Other Information

#### Notice to Reader

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RESPONSIBILITY FOR USE, STORAGE, HANDLING AND DISPOSAL OF THE PRODUCTS DESCRIBED HEREIN, WHETHER ALONE OR IN COMBINATION WITH ANY OTHER SUBSTANCE, IS THAT OF THE PURCHASER AND/OR END USER.

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**This is the end of MSDS # NOVA-0114**