

Section 1 - Product and Company Identification

Synonyms: HDPE, LDPE, LLDPE, LMDPE, Polyethylene resins, ethylene polymers

Chemical Name: Polyethylene

Chemical Family: Polymer

Material Use: Thermoplastic compound formed or extruded into plastic packaging, films, parts and items.

Chemical Formula: (CH₂)(CH₂)_x

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

In case of Emergency

1-800-561-6682 (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.
9002-88-4	Polyethylene (Ethene homopolymer) *	>98
68855-54-9	Crystalline Silica **	0-1
Not Available	Additives	0-1

Component Information/Information on Non-Hazardous Components

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

This material is not regulated as a hazardous material for transportation.

* This product may also be described as 1-Butene, polymer with ethene (CAS #25087-34-7), and as 1-Hexene, polymer with ethene (CAS #25213-02-9).

** Crystalline silica is added to some NOVAPOL[®] grades (e.g. film)

Chemical additives including antioxidants, stabilizers, processing aids and anti-static compounds may be formulated into various polyethylene resin grades in a total concentration of less than 1% wt/wt.

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

CAUTION Product is a clear to white solid, in a granular powder or pellet form having minimal odor. May contain suspect cancer hazard. Contact with molten material may cause thermal burns. This product may be irritating to the eyes, skin, and respiratory system. Under fire conditions, product will readily burn and emit a heavy, irritating smoke. Spilled product may create a dangerous slipping hazard.

Potential Health Effects: Eyes

Contact with eye may cause irritation. Contact with hot or molten material may cause severe injury, including possible blindness.

Potential Health Effects: Skin

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

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Potential Health Effects: Ingestion

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

Potential Health Effects: Inhalation

Inhalation of fine particles may cause respiratory irritation. Inhalation of heated gases or fumes produced while processing material at elevated temperature or during fire may cause irritation, pulmonary edema and a possible asthma-like response.

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 if irritation persists.

First Aid: Skin

Remove contaminated clothing. Wash affected area with mild soap and water. If irritation persists, get medical attention.

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 from skin because skin will tear easily.

First Aid: Inhalation

Move person to non-contaminated air. Assist breathing if necessary. Seek medical attention if symptoms persists. Inhalation of smoke following a fire may result in delayed pulmonary edema.

First Aid: Ingestion

Material is not expected to be absorbed from the gastrointestinal tract. Do not induce vomiting. Seek medical attention.

First Aid: Notes to Physician

For more detailed medical emergency support information call 1-800-561-6682 (24 hours). Burns should be treated as thermal burns. The material will come off as healing occurs; therefore, immediate removal from the skin is not necessary. Treat symptomatically. 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. Ingested material should pass through the digestive system without injury.

Section 5 - Fire Fighting Measures

Flammability Class:	Not flammable	Flash Point:	Not applicable
Upper flammability limit:	Not applicable	Flash Point Method:	Not applicable
Lower flammability limit:	Not applicable	Auto Ignition:	330°C-410°C (630°F-770°F)

General Fire Hazards

May support combustion but does not meet combustible definition. Under fire conditions, product will readily burn and emit a heavy, irritating smoke. High concentration of airborne dust may form explosive mixture with air.

Explosion Hazards

Dusts may form an explosive mixture with air. Risk of dust-air explosion is increased if flammable vapors are also present.

Hazardous Combustion Products

Carbon dioxide, carbon monoxide, aldehydes and small amounts of other organic vapours may be produced. Some of these decomposition products are hazardous.

Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog or water spray.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self contained breathing apparatus.

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Section 6 - Accidental Release Measures

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Small Spills

Stop leak, contain spill, and prevent entry into sewers, and waterways. Spilled product may create a dangerous slipping hazard. Use appropriate tools to put the spilled solid in an appropriate disposal or recovery container. Reuse or recycle where possible. Consult your local or regional authorities.

Large Spills

Stop leak, contain spill, and prevent entry into sewers and waterways. Spilled product may create a dangerous slipping hazard. Isolate, contain, and attempt to recover. Use appropriate instruments to put the spilled material in an appropriate recovery or disposal container. Reuse or recycle where possible. Consult your local or regional authorities.

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. Wear appropriate protective equipment and clothing during clean-up.

Section 7 - Handling and Storage

Handling Procedures

Handle in contained and properly designed equipment systems. Use with adequate ventilation. Avoid ingestion and inhalation. 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 build-up. Spilled product may create a dangerous slipping hazard.

Incompatibility

May react with strong oxidizing agents. Organic solvents, ether, gasoline, lubricating oils, chlorinated hydrocarbons and aromatic hydrocarbons may react with and degrade polyethylene. Dusts may form an explosive mixture with air. Risk of dust-air explosion is increased if flammable vapors are also present.

Storage Procedures

Storage area should be clearly identified, well illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store in closed, grounded and properly designed vessels, away from incompatible materials. Avoid accumulation of dust by frequent cleaning and suitable construction of storage and handling areas. Keep shovels and vacuum systems readily available for clean up of loose material. Do not enter filled bulk containers and attempt to walk over product, due to risk of slipping and possible suffocation.

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Material Information

Follow all applicable exposure limits. To recognize the adverse effects of exposure to otherwise nontoxic particulate matter, an ACGIH TLV-TWA of 10 mg/m³ for inhalable total particulate and a TLV-TWA of 3 mg/m³ for respirable particulate have been established.

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B: Component Exposure Limits

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

Polyethylene (Ethene homopolymer) * (9002-88-4)

ACGIH: 10 mg/ m³ TWA (inhalable particulate); 3 mg/ m³ TWA (respirable particulate) (These values are for particulate matter containing no asbestos and <1% crystalline silica) (related to particulates (insoluble) not otherwise specified (PNOS))

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

NIOSH see Appendix D (related to Particulates not otherwise regulated)

Crystalline Silica (68855-54-9)

ACGIH: 0.05 mg/ m³ TWA (this TLV is for the respirable fraction of dust) (related to Silica, crystalline, quartz)

OSHA: respirable dust: 0.1 mg/ m³ TWA (related to Silica-crystalline, quartz)

NIOSH as respirable dust: 0.05 mg/ m³ TWA; NIOSH Potential Occupational Carcinogen - see Appendix A (related to Silica, crystalline)

Engineering Controls

Ventilation should effectively remove and prevent buildup of any dust or heated vapors generated from the handling and processing of this product. Ensure that eyewash stations and safety showers are proximal to the workstation location.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields. Goggles are required if contact with molten material is likely.

Personal Protective Equipment: Skin/Hands/Feet

For molten product, use any type rubber thermal insulating gloves and other clothing as necessary to protect from thermal burns. Safety footwear with good traction is recommended to help prevent slipping.

Personal Protective Equipment: Respiratory

Ventilation should effectively remove and prevent buildup of any dust or heated vapors generated from the handling and processing of this product. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, mechanical generation of dusts, heating, drying, etc. 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.

Section 9 - Physical & Chemical Properties

Physical state and appearance:	Solid, pellets, or granules	Color:	Clear to white
Odor:	Minimal, sweet	pH:	Not applicable
Vapor Pressure:	Not applicable	Vapor Density (Air=1):	Not applicable
Boiling Point:	Not applicable	Melting Point:	105°C - 135°C (221°F - 275°F)
Solubility (H2O):	Insoluble	Specific Gravity (Water=1):	0.910 - 0.965
Softening Point:	85°C - 127°C (185°F - 261°F)	Evaporation Rate (n-Butyl Acetate=1):	Not applicable
Dispersion properties:	Is not dispersed in cold water, hot water		

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Section 10 - Stability & Reactivity Information

Chemical Stability

Stable

Chemical Stability: Conditions to Avoid

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

Incompatibility

May react with strong oxidizing agents. Organic solvents, ether, gasoline, lubricating oils, chlorinated hydrocarbons and aromatic hydrocarbons may react with and degrade polyethylene. Dusts may form an explosive mixture with air. Risk of dust-air explosion is increased if flammable vapors are also present.

Hazardous Polymerization

Not likely to occur.

Corrosivity

Product is not corrosive.

Hazardous Decomposition

Upon heating, polyethylene may emit various oligomers, waxes and other oxygenated hydrocarbons. Some of these decomposition products are hazardous. See Section 16.

Section 11 - Toxicological Information

Acute Toxicity

A: General Material Information

Material is considered essentially inert and non-toxic. Exposures to high levels of dust or heated fumes may cause irritation and possible pulmonary edema. Contact with molten material may cause burns.

B: Acute Toxicity - LD50/LC50

Polyethylene (Ethene homopolymer) * (9002-88-4)

Inhalation LC50 Mouse : 12 gm/ m³/30M

Chronic Toxicity

A: General Material Information

Product has minimal chronic toxicity. Most polyethylene particles are large and non-respirable. Target organ is the respiratory system.

The following information has been found for its components:

Crystalline silica - IARC has classified crystalline silica as Group 1 (carcinogenic to humans). However, the crystalline silica is inextricably bound or coated in the polyethylene; this appears to prevent any toxic reaction to the lungs.

B: Carcinogenic Effects

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

Polyethylene (Ethene homopolymer) * (9002-88-4)

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

Crystalline Silica (68855-54-9)

ACGIH: A2 - Suspected Human Carcinogen (related to Silica, Crystalline - Quartz)

NTP: Reasonably anticipated to be a Human Carcinogen (related to Quartz)

IARC: Monograph 68, 1997; (inhaled in the form of quartz or cristobalite from occupational sources) (related to Silica, quartz) (Group 1 (carcinogenic to humans))

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Section 12 - Ecological Information

Ecotoxicity

Polyethylene is an essentially biologically inert solid and considered non-toxic.

Environmental Fate

This product has been found widely distributed and persistent in aquatic systems. It is readily recovered from land following spills

Mobility

This product has not been found to migrate through soils

Persistence/Degradability

Product does not readily degrade. Under optimal oxidation conditions, >99% of polyethylene will remain intact after exposure to microbial actions. Product will slowly change (embrittle) in the presence of sunlight, but will not fully breakdown. Product buried in landfill has been found to be stable over time. No toxic degradation products are known to be produced.

Bioaccumulation/Accumulation

Pellets may accumulate in the digestive systems of birds and aquatic life, causing injury and possible death.

Section 13 - Disposal Considerations

North America Waste Number & Descriptions

A: General Material Information

This product is not known to be a hazardous waste according to US RCRA and Canadian regulations. Provincial jurisdictions use various hazardous waste control regulations and the Transportation of Dangerous Goods Act to define hazardous waste and appropriate packaging, reporting, storage and transport. The use, mixing or processing of this material may alter this product. Contact federal, provincial/state and local authorities in order to generate or ship a waste material associated with this product to ensure materials are handled appropriately and meet all criteria for disposal of hazardous waste. DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED INCINERATION.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Section 14 - Transportation Information

US DOT Information

Shipping Name: Not regulated as a Hazardous Material for Transportation.

Canadian TDG Information

Shipping Name: Not regulated as a Hazardous Material for Transportation.

International Air Transport Association (IATA) Regulations

Shipping Name: Not regulated as a Hazardous Material for Transportation.

International Maritime Dangerous Goods (IMDG) Code

Shipping Name: Not regulated as a Hazardous Material for Transportation.

Section 15 - Regulatory Information

US Federal Regulations

A: General Material Information

The EPA Storm Water Regulations classify resin pellets as 'significant materials'. For food contact compliance statements please contact your sales representative.

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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 - State

The following components appear on one or more of the following state hazardous substances lists. Other state right-to-know lists may apply.

Component	CAS #	CA	FL	MA	MN	NJ	PA
Crystalline Silica (1 related to Quartz dust) (2 related to Quartz) (3 related to Silica-crystalline, quartz) (0 related to Silica, Quartz) (0* related to Quartz (SiO2))	68855-54-9	No	Yes ¹	Yes ²	Yes ³	Yes ⁰	Yes ^{0*}

D: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	
Crystalline Silica	68855-54-9	1% item 1402 (1489) ~1% item 1406 (1491) (related to Silica-crystalline, quartz)

State Regulations

Other state regulations may apply. Check individual state requirements.

Provincial Regulations

No information is available.

Other Regulations

A: General Material Information

Components of this product have been checked against the European Inventory of Existing Commercial Chemical Substances (EINECS). Components not identified on this inventory are exempt from the listing (i.e. as polymers).

B: Component Analysis – Inventory Status

Component	CAS #	EU-EINECS	USA-TSCA	CANADA-DSL
Polyethylene (Ethene homopolymer) *	9002-88-4	Exempt	Yes	Yes
Crystalline Silica	68855-54-9	Yes	Yes	Yes
Polyethylene (1-Hexene, polymer with ethene)	25213-02-9	Exempt	Yes	Yes
Polyethylene (1-Butene, polymer with ethene)	25087-34-7	Exempt	Yes	Yes

Hazard Communication Class

This product is not considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

WHMIS Classification

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

Section 16 - Other Information

Label Information

PRECAUTIONS:

CAUTION Product is a clear to white solid, in a granular powder or pellet form having minimal odor. May contain suspect cancer hazard. Contact with molten material may cause thermal burns. This product may be irritating to the eyes, skin, and respiratory system. Under fire conditions, product will readily burn and emit a heavy, irritating smoke. Spilled product may create a dangerous slipping hazard.

FIRST AID:

SKIN: Remove contaminated clothing. Wash affected area with mild soap and water. If irritation persists, get medical attention. In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily.

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

INHALATION: Move person to non-contaminated air.

INGESTION: Do not induce vomiting. Seek medical attention.

IN CASE OF A LARGE SPILL: Stop leak, contain spill, and prevent entry into sewers and waterways. Spilled product may create a dangerous slipping hazard. Use appropriate instruments to put the spilled material in an appropriate recovery or disposal container. Reuse or recycle where possible. Consult your local or regional authorities.

References

Available on request.

Special Considerations

Exposure to the Hazardous Combustion and Decomposition Products as described in Sections 5 and 10 may be linked with various acute and chronic health effects. These effects include irritation of eyes and upper respiratory tract primarily from the aldehydes; breathing difficulties, systemic toxicity such as liver, kidney, and central nervous system effects.

NOVA Chemicals has monitored worker exposures to emissions during commercial scale processing polyethylene. Concentrations of hazardous decomposition products were determined to be well below established exposure limits in the workplace. This information is available on request in a NOVA Chemicals' report, "Quantitation of Employee Exposure to Volatile Emission Products Generated by Commercial-Scale Processing of Polyethylene".

For additional information on unloading hopper cars containing plastic resins, refer to NOVA Chemicals' 'A Guide to Railcar Unloading.'

For information on processing properties, selection of product grades and Product Data Sheets please visit our web site: <http://www.novachem.com>

'For additional information on preventing pellet loss, refer to published Plastic Industries (SPI, APC) publications and resources under 'Operation Clean Sweep'.

For additional information of control of static and minimizing potential dust and fire hazards, refer to NFPA-654 "Standard for the Prevention of Fire and Dust Explosions in Chemical, Dye, Pharmaceutical and Plastics Industries"

Key/Legend

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

Validated by Product Integrity Group on 10/01/01

Verified by Product Steward.

Contact: Product Integrity Group
NOVA Chemicals Corporation
6711 Mississauga Road, Suite 200
Mississauga, Ontario L5N 2W3
Contact Phone: 905-542-6980

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Other Information

Notice to Reader

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This is the end of MSDS # NOVA-0029