

Product name: NOVAPOL® Polyethylene

# SAFETY DATA SHEET

# **SECTION 1: Identification**

Product identifier:

synonym(s):

SDS number:

NOVAPOL® Polyethylene

Other means of identification Common name(s),

HDPE, HPLDPE, LDPE, LLDPE, LMDPE, MDPE Polyethylene resins, ethylene polymers NOVA-0029C

#### Recommended use and restriction on use

**Recommended use:** Thermoplastic resin extruded into film, sheet or molded into containers and other shapes. **Restrictions on use:** All uses other than the identified.

# Manufacturer/Importer/Supplier/Distributor Information

#### Manufacturer

Company Name:	NOVA Chemicals
Address:	P.O. Box 2518, Station M
	Calgary, Alberta, Canada T2P 5C6
Telephone:	Product Information: 1-412-490-4063
SDS Information Email:	msdsemail@novachem.com

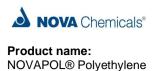
#### **Emergency telephone number:**

1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours) Latin/South America: +1 215 207 0061 (NCEC) (24 hours)

# **SECTION 2: Hazards identification**

#### **Classification according to NCh382**

Hazard Classification	Not classified	
Label Elements		
Hazard Symbol:	No symbol	
Signal Word:	No signal word.	
Hazard Statement:	not applicable	
Precautionary Statements:		
Prevention:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. [In case of inadequate ventilation] wear respiratory protection.	
Response:	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical advice/attention. IF ON SKIN: Wash with plenty of water/soap. If skin	



	irritation occurs: Get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Storage:	Store in accordance with local/regional/national regulations. Protect from sunlight.
Disposal:	Dispose of contents/container in accordance with local/regional/national/international regulations. Refer to manufacturer or supplier for information on recovery or recycling.
Other hazards which do not result in GHS classification:	If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air. Spilled product may create a dangerous slipping hazard.
SECTION 3: Composition/information on ingredients	

#### Mixtures

**Composition Comments:** The components are not hazardous or are below required disclosure limits.

# **SECTION 4: First aid measures**

Inhalation:	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention.	
Ingestion:	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical advice/attention.	
Skin Contact:	IF ON SKIN: Wash with plenty of water/soap. If skin irritation occurs: Get medical advice/attention.	
Eye contact:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.	
Most important symptoms/effects, acute and delayed		
Symptoms:	Thermal burns. Respiratory irritation. Mechanical irritation.	
Indication of immediate medical attention and special treatment needed		
Treatment:	After adequate first aid, no further treatment is required unless symptoms reappear. For more detailed medical emergency support information, call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response). Burns should be treated as thermal burns. Molten resin will come off as healing occurs; therefore, immediate removal from the skin is not necessary. Treatment should be directed at the control of symptoms and the clinical condition of the patient. No adverse effects due to ingestion are expected.	

# SECTION 5: Firefighting measures

# General Fire Hazards:Solid resins support combustion but do not meet combustible definition.<br/>Product will burn at high temperatures but is not considered flammable.<br/>Under fire conditions, product will readily burn and emit irritating smoke.<br/>Powdered material may form explosive dust-air mixtures.



# Suitable (and unsuitable) extinguishing media

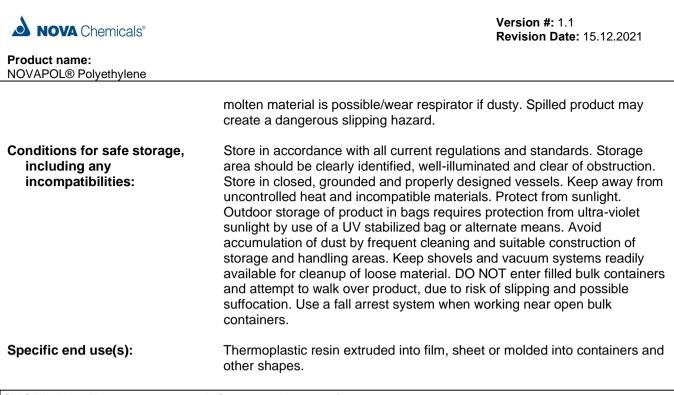
Suitable extinguishing media:	Water fog or water spray. Small fires: Dry chemical, carbon dioxide (CO2) or foam.	
Unsuitable extinguishing media:	Avoid water in straight hose stream; will scatter and spread fire.	
Specific hazards arising from the chemical:	Upon heating, polyethylene may emit various oligomers, waxes and oxygenated hydrocarbons as well as carbon dioxide, carbon monoxide and small amounts of other organic vapors (e.g. aldehydes, acrolein). Inhalation of these decomposition products may be hazardous. Powdered material may form explosive dust-air mixtures. Risk of dust-air explosion is increased if flammable vapors are also present. Static discharge: material can accumulate static charges which may cause an incendiary electrical discharge.	
Special protective equipment and precautions for fire-fighters		
Special fire-fighting procedures:	Keep upwind. Keep unauthorized personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Apply extinguishing media carefully to avoid creating airborne dust. Water may be used to flood the area. Use water spray to cool fire exposed surfaces and to protect personnel. Avoid inhaling any smoke and combustion materials. Remove and isolate contaminated clothing and shoes. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.	
Special protective equipment for fire-fighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.	

# **SECTION 6: Accidental release measures**

Personal precautions, protective equipment and emergency procedures:	Isolate area. Alert stand-by emergency and fire-fighting personnel. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.
Environmental Precautions:	Prevent entry into waterways, sewer, basements or confined areas.
Methods and material for containment and cleaning up:	Wear appropriate personal protective equipment. Do not touch or walk through spilled material. In case of leakage, eliminate all ignition sources. Stop leak if safe to do so. Prevent entry into waterways, sewer, basements or confined areas. Spilled product may create a dangerous slipping hazard. Use appropriate tools to put the spilled solid in an appropriate disposal or recovery container. Recover and reclaim or recycle, if practical. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

# **SECTION 7: Handling and storage**

Precautions for safe handling:	Keep away from uncontrolled heat and incompatible materials. Ground all material handling and transfer equipment. Wash hands thoroughly after handling. Prevent dust accumulation to minimize explosion hazard. For additional information on control of static and minimizing potential dust and fire hazards, refer to NFPA-654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids, 2013 Edition". Use in a well-ventilated area. Avoid release to the environment. Wear eye protection/protective gloves as
	needed/wear full face-shield during thermal processing if contact with



#### **SECTION 8: Exposure controls/personal protection**

Control Parameters Occupational Exposure Limits		
	During dusty conditions ACGIH recommends for Particles (insoluble or poorly soluble) not otherwise specified a TWA of 10 mg/m3 (inhalable particles), 3 mg/m3 TWA (respirable particles). <b>Chile:</b> 8 mg/m3 (LPP) (Total dust.); 2.4 mg/m3 (LPP) (Respirable dust.); Particulates Not Otherwise Specified	
Appropriate Engineering Controls	Engineering methods to reduce hazardous exposure are preferred controls. Methods include mechanical ventilation (dilution and local exhaust) process or personal enclosure, remote and automated operation, control of process conditions, leak detection and repair systems, and other process modifications. Ensure all exhaust ventilation systems are discharged to outdoors, away from air intakes and ignition sources. Supply sufficient replacement air to make up for air removed by exhaust systems. Administrative (procedure) controls and use of personal protective equipment may also be required. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Use only appropriately classified electrical equipment and powered industrial trucks.	
Individual protection measures,	such as personal protective equipment	
General information:	Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.	
Eye/face protection:	Safety glasses. Wear a face shield when working with molten material.	
Skin Protection Hand Protection:	Wear gloves to protect against thermal burns.	
Skin and Body	Wear appropriate clothing to prevent any possibility of skin contact. Wear	



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Protection:	work clothes with long sleeves and pants. Safety footwear with good traction is recommended to help prevent slipping. Static Dissipative (SD) rated footwear is also recommended.	
Respiratory Protection:	Appropriate NIOSH approved air-purifying respirator or self-contained breathing apparatus should be used. Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.	
Hygiene measures:	Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Ensure that eyewash stations and safety showers are in close proximity to work locations.	

# **SECTION 9: Physical and chemical properties**

Appearance	
Physical state:	solid
Form:	Pellets or Granular powder
Color:	white / colorless / translucent
Odor:	Minimal, Mild
Odor Threshold:	No data available.
pH:	not applicable
Melting point/freezing point:	105 - 135 °C (221 - 275 °F) (Melting Point) 85 - 127 °C (185 - 261 °F) (Softening point)
Initial boiling point and boiling range:	not applicable
Flash Point:	not applicable
Evaporation rate:	not applicable
Flammability (solid, gas):	May form combustible dust concentrations in air.
Upper/lower limit on flammability or explosition	ive limits
Flammability Limit - Upper (%):	not applicable
Flammability Limit - Lower (%):	not applicable
Vapor pressure:	not applicable
Vapor density:	not applicable
Density:	905 - 965 kg/m3
Relative density:	0.905 - 0.965
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	not applicable
Auto-ignition temperature:	330 - 410 °C (626 - 770 °F)
Decomposition temperature:	> 300 °C (> 572 °F)
Viscosity:	not applicable
Other information	
Explosive properties:	No data available.
Oxidizing properties:	not applicable

# SECTION 10: Stability and reactivity

# Reactivity:

Contact with incompatible materials. Sources of ignition. Exposure to heat.

**Chemical Stability:** 

Material is stable under normal conditions.



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Possibility of hazardous reactions:	Hazardous polymerization not likely to occur.
Conditions to avoid:	Avoid exposing to heat and contact with strong oxidizing substances. Avoid processing material over 300 $^\circ C$ (572 $^\circ F).$
Incompatible Materials:	Strong oxidizing agents. Organic solvents, ether, gasoline, lubricating oils, chlorinated hydrocarbons and aromatic hydrocarbons may react with and degrade polyethylene. Powdered material may form explosive dust-air mixtures. Risk of dust-air explosion is increased if flammable vapors are also present.
Hazardous Decomposition Products:	Upon decomposition, polyethylene may emit various oligomers, waxes and oxygenated hydrocarbons as well as carbon dioxide, carbon monoxide and small amounts of other organic vapors (e.g. aldehydes, acrolein). Inhalation of these decomposition products may be hazardous.

# **SECTION 11: Toxicological information**

# Information on likely routes of exposure

	Inhalation:	During processing, thermal fumes and inhalation of fine particles may cause respiratory irritation.
	Ingestion:	Ingestion of this product is not a likely route of exposure.
	Skin Contact:	During processing, contact with powder or fines may cause mechanical irritation. Molten material will produce thermal burns.
	Eye contact:	During processing, contact with powder or fines may cause mechanical irritation. Molten material will produce thermal burns.
Symptoms related to the physical, chemical and toxicological characteristics		
	Inhalation:	Respiratory irritation.
	Ingestion:	No adverse effects due to ingestion are expected.
	Skin Contact:	Mechanical irritation. Thermal burns. Negligible irritation of the skin based on chemical structure (polymer).
	Eye contact:	Mechanical irritation. Thermal burns. May cause mild, short-lasting discomfort to eyes.

# Information on toxicological effects

# Acute toxicity (list all possible routes of exposure)

Oral Product:	LD 50: > 5,000 mg/kg (estimated)
Dermal Product:	Not classified for acute toxicity based on available data.
Inhalation Product:	Not classified for acute toxicity based on available data.
Repeated dose toxicity Product: SDS_CL	No data available.



Skin Corrosion/Irritation Product:	No data available.	
Serious Eye Damage/Eye Irritat Product:	ion No data available.	
Respiratory or Skin Sensitization Product:	on No data available.	
Carcinogenicity Product:	Not classified	
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: No carcinogenic components identified		
Germ Cell Mutagenicity		
In vitro Product:	There are no known or reported genetic effects.	
In vivo Product:	There are no known or reported genetic effects.	
Reproductive toxicity Product:	There are no known or reported reproductive effects.	
Specific Target Organ Toxicity Product:	- Single Exposure No data available.	
Specific Target Organ Toxicity - Repeated Exposure Product: No data available.		
Aspiration Hazard Product:	Not classified.	
Other effects:	No data available.	
SECTION 12: Ecological information		
General information:	NOVAPOL® resins are expected to be inert in the environment. They float on water and are not biodegradable. They are not expected to bioconcentrate (accumulate in the food chain) due to their high molecular weight. NOVAPOL® pellets are not expected to be toxic if ingested but may represent a choking hazard if ingested by waterfowl or aquatic life.	
Ecotoxicity:		
Acute hazards to the aquatic environment:		

Fish Product:	LC 50 (96 h): > 100 mg/l
Aquatic Invertebrates Product:	EC 50 (Daphnia magna, 48 h): > 100 mg/l
Toxicity to Aquatic Plants Product:	EC 50 (72 h): > 100 mg/l

Chronic hazards to the aquatic environment:		
Fish Product:	NOEC : > 100 mg/l	
Aquatic Invertebrates Product:	NOEC : > 100 mg/l	
Toxicity to Aquatic Plants Product:	NOEC : > 100 mg/l	
Persistence and Degradability		
Biodegradation Product:	Not readily degradable. 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.	
BOD/COD Ratio Product:	No data available.	
Bioaccumulative potential Bioconcentration Factor (BCF) Product: Pellets may accumulate in the digestive systems of birds and aquatic life, causing injury and possible death due to starvation.		
Partition Coefficient n-octanol / water (log Kow) Product: not applicable		
Mobility in soil:	Biologically persistent. This product has not been found to migrate through soils.	
Other adverse effects:	Pellets are persistent in aquatic and terrestrial systems.	
SECTION 13: Disposal considerations		
Disposal instructions:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Preferred disposal methods for polyethylene in order of preference are: 1) clean and reuse if possible, 2) recover and resell through plastic recyclers or resin brokers, 3) incinerate with waste heat recovery and 4) landfill. DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED INCINERATION. Open burning of plastics at landfills should not be undertaken.	
Contaminated Packaging:	Check regional, national and local environmental regulations prior to disposal.	

# SECTION 14: Transport information

#### ADR

Not regulated.

# ΙΑΤΑ

Not regulated.



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#### IMDG

Not regulated.

Transport in bulk according to Annex II of MARPOL and the IBC Code: not applicable

#### SECTION 15: Regulatory information

#### National Regulations

Chile. Controlled chemical substances susceptible to manufacturing of narcotics and psychotropic drugs, Lists I, II, III (Decree 1358) Not Regulated

Chile. Prohibited Substances. Decree No. 594, art. 65: Regulating Basic Health and Environmental Conditions in the Workplace

Not Regulated

Chile. Substances Dangerous to Health, Exempt Resolution No. 714 of 2002 Not Regulated

# Inventory Status

Canada DSL Inventory List:

On or in compliance with the inventory

On or in compliance with the inventory

US TSCA Inventory:

**SECTION 16: Other information** 

**Revision Information:** 15.12.2021: SDS Update

- Key literature references and Available on request. sources for data:
- Wording of the H-statements in section 2 and 3: none

Training information:	Suitable information on safety in handling, storage and processing the product should be given to employees based on the existing information.

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

NOVA Chemicals has monitored worker exposures to emissions during commercial-scale processing of polyethylene. Concentrations of hazardous decomposition products were determined to be well below established exposure limits in the workplace. "Quantitation of Employee Exposure to Emission Products Generated By Commercial-Scale Processing of Polyethylene" is available in the Am. Ind. Hyg. Assoc. J. 56:809-814 (1995) and "Quantification of Emission Compounds Generated During Commercial-Scale Processing of Advanced SCLAIRTECH™ Polyethylene" is available in the Journal of Plastic Film & Sheeting Volume 26 Issue 2, April 2010.

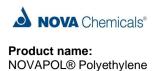
For information on ventilation considerations for the control of volatile air contaminants from polyethylene, please request a copy of NOVA Chemicals' publication, "Ventilation Guidelines for Heat-Processing Polyethylene Resins".

For additional information on unloading hopper cars containing plastic resins,

For information on processing properties, selection of NOVAPOL resin grades, refer to the NOVAPOL Product Data Sheets available on our web site, under Products & Applications: http://www.novachemicals.com. For additional information on preventing pellet loss, refer to published plastic industry publications and resources under 'Operation Clean Sweep'; now downloadable from the web at http://www.opcleansweep.org/. Polyethylene fines and dust particles are listed as a Class I combustible dust by the National Fire Protection Association (see NFPA-68, Table F.1 (e)). For additional information on control of static and minimizing potential dust and fire hazards, refer to NFPA-654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids, 2013 Edition". Explosivity testing was done on one NOVAPOL® LLDPE, one LDPE and one HDPE resins with Pmax = 4.8-5.7 bar, Kst = 12-17 (bar m/s) and Minimum Ignition Energy (MIE) = 1000-10,000; dust explosion class = St 1; this data was obtained for polyethylene with a final particle size of 100% <250 um and moisture content between 0 and 0.2%. Similar results are expected for the remaining NOVAPOL® polyethylene resin grades. For NOVAPOL resin grade specific information including food contact compliance statements, please contact your sales representative or refer to NOVA Chemicals' polyethylene Product Data Sheets. ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Key/Legend: Oxygen Demand; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; DOT = Department of Transportation; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association ICAO = International Civil Aviation Organization; IMDG = International Maritime Dangerous Goods; Kow = Octanol/water partition coefficient; LD50 = Lethal Dose 50%; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PPE = Personal Protective Equipment; RCRA = Resource Conservation and Recovery Act; SARA = Superfund Amendments and Reauthorization Act; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; SEPA = State Environmental Protection Administration; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average **Issue Date:** 15.12.2021 SDS No.: NOVA-0029C **Disclaimer:** ALTHOUGH THE INFORMATION CONTAINED IN THIS DOCUMENT IS PRESENTED IN GOOD FAITH, BASED ON AVAILABLE INFORMATION BELIEVED TO BE RELIABLE AT THE TIME OF PREPARATION OF THIS DOCUMENT. NOVA CHEMICALS MAKES NO WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION OR THE PRODUCT/MATERIALS DESCRIBED HEREIN, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES AND CONDITIONS (INCLUDING ALL WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). NO FREEDOM FROM INFRINGEMENT OF ANY PATENT OWNED BY NOVA CHEMICALS OR OTHERS IS TO BE INFERRED. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE CONTACT NOVA CHEMICALS FOR THE MOST CURRENT VERSION OF THIS SDS. NOVA CHEMICALS DOES NOT ASSUME RESPONSIBILITY FOR SDS OBTAINED FROM THIRD PARTY SOURCES.

refer to NOVA Chemicals' publication, "Hopper Car Unloading Guide".

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