NATIONAL PETOCHEMICAL COMPANY	MATERIAL SAFETY DATA SHEET (MSDS)
NAME: High density Polyethylene	**COLLECTION:** Essential Polymers

1-MATERIAL IDENTIFICATION

CHEMICAL NAME :	High density Polyethylene
SYNONYM NAME :	Ethene homopolymer, Ethylene homopolymer, Ethylene polymer, Polythene, HDPE, High density polyethylene, Polyethylene wax, PE
CAS/UN NO. :	9002-88-4
EINECS NO. :	200-815-3
CHEMICAL FAMILY :	Hydrocarbon polymer
MOLECULAR WEIGHT :	300,000
CHEMICAL FORMULA :	(C2-H4)x

2-GENERAL INFORMATION (PROTECTIVE MARK)

Corrosive(c)	Irritating(i)	Flammable(f)	Toxic(t)	Diamond-shaped sign
				
Oxidizing	Explosive	Environment danger		

3-PROTECTIVE BEWARES

EYE CONTACT	DUST: Fine particles may cause mild eye irritation. FUMES: Thermal decomposition products may irritate the eyes and cause Tearing.
SKIN CONTACT	Pure solid polyethylene does not affect the skin.
INGESTION	No known effects. Large amounts might cause choking and nausea.
INHALATION	DUST: Inhalation of fine particles of polyethylene may cause mild irritation but does not seem to cause any significant health effects. FUMES: The fumes may cause lung irritation and, at very high levels, death
FIRE	Polyethylene can burn if strongly heated.
EXPLOSIVE	
ENVIRONMENT EFFECTS	

4- FIRST AID

EYE CONTACT	If irritation occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 minutes, by the clock, holding the eyelid(s) open. If irritation persists, obtain medical advice immediately.	
SKIN CONTACT	If irritation occurs, wash gently and thoroughly with water and non-abrasive soap. If irritation persists, obtain medical advice immediately.	
INGESTION	Have victim rinse mouth thoroughly with water. Obtain medical advice immediately.	
INHALATION	If symptoms are experienced, remove source of contamination or move victim to fresh air. Obtain medical advice immediately.	
MEDICAL DATA	Consult a physician and/or the nearest Poison Control Centre for all exposures	

5- FIRE FIGHTING

INFLAMMABLE HAZARDS	Polyethylene can burn if strongly heated.COMBUSTION AND THERMAL DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide and organic chemicals such as formaldehyde،acrolein and hydrocarbons.	
SUITABLE FIRE FIGHTING	Water, dry chemical, carbon dioxide, foam.	
REMAINDER EXPLANATION		

6- PERSONAL PROTECIVE EQUIPMENT

SKIN PROTECTION	No specific requirement, but it is good practice to avoid skin contact.
EYE PROTECTION	No specific requirement, but it is good practice to wear chemical safety glasses. Wear goggles or a face mask where dust or fumes may be present.
BODY PROTECTION	No specific requirement, but it is good practice to avoid skin contact.
INHALATION PROTECTION	No specific guidelines are available. An approved respirator suitable for protection from dusts and mists may be adequate.

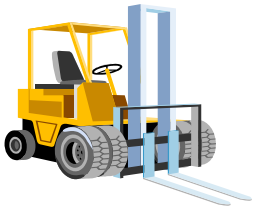
7- ENVIRONMENT PRECAUTION

ENVIRONMENT PROTECTION	Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Wear adequate personal protective equipment. Ventilate area. Extinguish or remove all ignition sources.
ENVIRONMENT CLEANLINESS	Shovel into clean, dry, labelled containers and cover. Flush area with water.

8- METHOD OF WASTAGE DISPOSAL

WASTAGE DISPOSAL	Review federal, provincial and local government requirements prior to disposal.
PAKING DISPOSAL	Disposal by controlled incineration or secure landfill may be acceptable.

9– DELIVERY & STORAGE

REMOVE PRECAUTION	Keep material away from sparks, flames and other ignition sources. Do not use near welding operations, flames or hot surfaces.Prevent accumulation of dust. Avoid generating dust. Wash hands thoroughly after handling this material.	
STORAGE CONDITION	Store polyethylene in a well-ventilated area, away from heat and ignition sources, combustible materials and incompatible chemicals. Avoid accumulation of dust by frequent cleaning and suitable construction of storage areas.	
SUITABLE PAKING		

10- PHYSICAL & CHEMICAL DATA

PHYSICAL STATE	solid
PHYSICAL SHAPE	partially crystalline solid
COLOUR	Colourless
ODOUR	odourless
PH	Not applicable
WATER SOLUBILITY	Insoluble
ORGANIC SOLVENT SOLUBILITY	Insoluble in almost all solvents at room temperature; soluble in many organic solvents above 93 deg C; may "swell" by absorption of solvents below 60 deg C.
SPECIFIC GRAVITY	0.941-0.965
LEL	Dust can explode violently above 390 deg C at airborne levels above 20 g/m3
AUTOIGNITION TEMP	349 deg C (660 deg F)
FLASH POINT	Polyethylene can burn if strongly heated. Flash ignition temperature is 341 deg C (646 deg F)
MELTING POINT	126-136 deg C
BOILING POINT	Not available
VAPOR PRESSURE	Zero
VISCOSITY	Not available
REMAINDER DATA	

11- BIOLOGY DATA

GENERAL REMARK	This section is subject to future development.	
BEHAVE IN ENVIRONMENT	This section is subject to future development.	
ANALYZE ABILITY	This section is subject to future development.	
MARINE ENVIRONMENT EFFECT	This section is subject to future development.	
REMAINDER DATA	This section is subject to future development.	

12- INTERACTION & STABILITY

STABILITY	Normally stable. Decomposes very slowly on exposure to sunlight and air.
AVOIDING OF ENVIRONMENT	Avoid temperatures over 650 F.
UNSUITABLE MATERIAL	STRONG OXIDIZING AGENTS (perchloric acid, nitric acid, fluorine) ORGANIC SOLVENTS such as benzene, petroleum ether, gasoline, lubricating oils, chlorinated hydrocarbons and aromatic hydrocarbons, STRONG ACIDS (e.g. fuming sulfuric acid)
ANALYZE HAZARD	carbon dioxide, carbon monoxide, water vapor, and trace volatile organic compounds.
REMAINDER DATA	

13- TOXICOLOGY

INHALATION POISONING	Inhalation of high levels of polyethylene fumes can cause lung damage and death.
FOOD POISONING	
SKIN POISONING	
EYE POISONING	
ACUTE EFFECT	Powder shows some evidence of tumorigenic activity in laboratory animals, but not classified as a human carcinogen. Respiratory irritant
REMAINDER DATA	Polyethylene is considered non-toxic to animals by inhalation of the dust and ingestion of the solid. Inhalation of high levels of polyethylene fumes (decomposition products from heated or burning polyethylene) can cause lung damage and death.

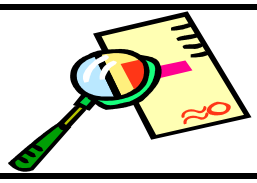
Approx. Cone. :
TLV TWA : 5 mg/m^3 (respirable dust)
15 mg/m^3 (total dust)
TLV STEL :

	Species	Routes	Value
LD 50			
LC 50			

14- TRANSPORT PROVISIONS

AIR TRANSPORT	Non-hazardous for air, sea and road freight
MARINE TRANSPORT	Non-hazardous for air, sea and road freight
RAILWAY & ROAD TRANSPORT	Non-hazardous for air, sea and road freight
REMAINDER DATA	This chemical is not specifically listed in the Canadian Transportation of Dangerous Goods Regulations. However it may be regulated as a part of a chemical family or group Not Otherwise Specified

15- ADMINISTER DATA

HAZARDS MARKS		
RISK PHRASE(S)		
SAFETY PHRASE(S)		

16- REMAINDER DATA

MATERIAL PROCES	containers for gasoline, oil, solvents, acids and other chemicals ؛film; utility and construction sheeting; piping and tubing; fibres