Section 1 - Product and Company Identification

Product:

Product Identifier:	HDPE Process Aid Masterbatch (all grades including PA 0835 HD and PPA Blend)
Synonyms:	HDPE Process Aid, Process Aid, PA
Chemical Name:	Polyethylene with fluoro-elastomer
Product Form:	Clear to white, solid pellets having minimal odour

Intended Uses of the Product:

Material Use:	Process aid masterbatch for extrusion of crosslinkable polyethylene pipes, tubing and other profile shapes. PA promotes a glossy surface finish and decreases die pressures.
Chemical Formula:	$-(CH_2-CH_2)_x-$ plus process aid and stabilizer

Details of the Manufacturer/Importer:

Manufactured by:	Kafrit NA Ltd. 5411 275th Street, Langley, British Columbia, Canada, V4W 3X8
SDS Information:	1-604-607-6730 lab@kafrit.ca

Section 2 - Hazards Identification

Classification of the Substance:

Not classified as Dangerous Goods for transport purposes

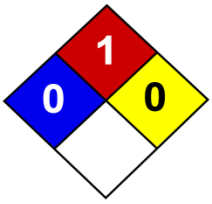
Not classified as a controlled product under Canadian WHMIS regulations

GHS Hazard Categories: Not classified

OSHA Hazard Category: Combustible Dust

OSHA-US Label Elements:

Signal Word: WARNING



Hazard statement:

If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air

Precautionary Statements:

Prevention	---	Prevent dust formation or accumulation
	P243	Take action to prevent static discharges
	P261	Avoid breathing dust/fumes/gas/mist/vapors/spray
	P273	Avoid release to the environment
	P281	Use personal protective equipment as required
Disposal	P501	Dispose of contents/container in accordance to local, regional, national, and international regulations

Hazards Overview:

Small particles may be generated during further processing, handling or by other means. Accumulated fine dusts may form combustible dust concentrations in air. Contact with molten material may cause serious thermal burns. Dust and released vapors may be irritating to the eyes, skin, or respiratory system. Spilled product may create a dangerous slipping hazard. This product may be harmful if ingested by wildlife. Under fire conditions, this product will readily burn and emit irritating smoke.

NFPA and HMIS® Ratings: See graphics. Wear safety glasses. Wear gloves especially when handling molten material.

Section 3 - Composition/Information on Ingredients

Substances:

CAS#	Component	Percent by Weight
9002-88-04	Polyethylene*	>80
9011-17-0	Vinylidenefluoride-hexafluoropropylene polymer	≤3
Not Available	Antioxidants	≤6
14807-96-6	Talc**	<0.1
556-67-2	Octamethylecyclotetrasiloxane	<0.2
112945-52-5	Synthetic amorphous silica**	<0.1
471-34-1	Calcium carbonate**	<0.05

Additional Information:

* The polyethylene may also be described as 1-butene, copolymer with ethene (CAS# 25087-37-7), or as 1 hexene, polymer with ethene (CAS#25213-02-9). Ethene and ethylene are interchangeable.

** These components may not be present in all formulations.

This product is NOT 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 or as dangerous goods for transportation.

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

Section 4 – First Aid Measures

First Aid: Eyes

Remove contact lenses, if it can be done safely. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention if symptoms develop or persist. Seek medical treatment for burns to the eye.

First Aid: Skin

In case of contact with molten plastic, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten plastics, or molten plastic that has cooled, from skin without medical assistance.

In case of contact with cool material, remove dusty or contaminated clothing and shoes. Wash affected area with soap and water. Seek medical attention if symptoms develop or persist.

First Aid: Inhalation

Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt, or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist. Inhalation of smoke following a fire may result in delayed pulmonary oedema; seek immediate medical attention.

First Aid: Ingestion

Material is not expected to be absorbed from the gastrointestinal tract. DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt, or waistband. Seek immediate medical attention if symptoms develop.

First Aid: Notes to Physician

After adequate first aid, no further treatment is necessary, unless symptoms reappear. 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. Ingested material should pass through the digestive system without injury.

Section 5 - Fire Fighting Measures

See Section 9: Physical Properties for flammability limits, flash point and auto-ignition information.

General Fire Hazards

Solid resins support combustion but do not meet combustible definition. Product will burn at high temperatures but is not considered flammable. Under fire conditions, this product will readily burn and emit irritating smoke. A high concentration of airborne powders or dust may form an explosive mixture with air.

Explosion Hazards

Accumulated fine dust may form an explosive mixture with air. Risk of dust-air explosion is increased if flammable vapours are also present. The product may accumulate hazardous static charge.

Hazardous Combustion Products

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). The fluoro-elastomer will release fluorine compounds such as hydrogen fluoride and carbonyl fluoride. Inhalation of these decomposition products may be hazardous.

Extinguishing Media

Water fog or water spray. In the case of small fires, dry chemical, carbon dioxide, or foam extinguishing media may be used. Avoid high pressure, direct water stream that may spread molten or burning resins.

Fire Fighting Equipment/Instructions

Position personnel upwind. Keep unnecessary 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. Fire fighters should wear full-face, self-contained breathing apparatus and full turnout gear. Avoid inhaling any smoke and combustion materials. Remove and clean or dispose of any contaminated clothing. Cool containers with flooding quantities of water until well after the fire is out. Control runoff waters to prevent entry into sewers, drains, ditches, underground or confines spaces and waterways.

Section 6 - Accidental Release Measures

Evacuation Procedures

Isolate area. Keep unnecessary personnel away. Alert emergency and fire fighting personnel to stand-by.

Spills

Stop leaks, isolate, and contain spill. Prevent entry into sewers, drains, ditches, underground or confined spaces, water intakes 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.

Special Procedures

Contact local police/emergency services and appropriate emergency telephone numbers provided in Section 1. Ensure that statutory and regulatory reporting requirements in the applicable jurisdiction are met. Wear appropriate protective equipment and clothing during cleanup. Individuals without appropriate protective equipment should be excluded from the spill area until cleanup has been completed.

See Section 8 for recommended Personal Protective Equipment and see Section 13 for waste disposal considerations.

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 and incompatible materials. Ground all material handling and transfer equipment to dissipate build-up of static electricity. Keep handling areas free of loose pellets, powders and dust build-up. Every effort should be made to prevent the accumulation of powders or fine dusts around material handling systems. Accumulated powders or fine dusts may form explosive air-dust mixtures. 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, 2006 Edition”. Spilled product may create a dangerous slipping hazard.

Storage Procedures

Storage area should be clearly identified, well illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store product in closed, grounded and properly designed vessels, away from uncontrolled heat and incompatible materials. Outdoor storage of product of this product must be avoided. Avoid accumulation of dust by frequent cleaning and suitable construction of storage and handling areas. Keep shovels and vacuum systems readily available for cleanup of loose material. DO NOT enter bulk containers.

See Section 8 for appropriate Personal Protective Equipment, and see Section 10 for information on Incompatibilities.

Section 8 - Exposure Controls / Personal Protection

EXPOSURE GUIDELINES

A: General Product Information

Refer to published exposure limits - 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.

B: Component Exposure Limits

ACGIH, OSHA, NIOSH, EPA, Alberta, and Ontario exposure limit lists have been checked for major components listed with CAS registry numbers. Other exposure limits may apply, check with proper authorities.

Polyethylene (Ethene homopolymer) (CAS# 9002-88-4)

ACGIH:	10 mg/m^3 TWA (inhalable particles, recommended); 3 mg/m^3 TWA (respirable particles, recommended) (related to Particulates (insoluble or poorly soluble) not otherwise specified (PNOS))
OSHA:	(vacated) 15 mg/m^3 TWA (total dust); 5mg/m^3 TWA (respirable fraction) (related to Nuisance particulates)
Alberta:	10 mg/m^3 TWA (total); 3 mg/m^3 TWA (respirable) (related to Particulate Not Otherwise Regulated)
Ontario:	10 mg/m^3 TWA (inhalable fraction); 3 mg/m^3 TWA (respirable fraction) (related to Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS))

Talc (CAS# 14807-96-6)

ACGIH	2 mg/m^3 TWA-respirable fraction
CMRG	0.5mg/m^3 TWA-respirable dust
OSHA	0.1mg/m^3 TWA-concentration respirable dust, 0.1mg/m^3 TWA-concentration as total dust, TWA 20 x 10^6 particles per cubic foot

Calcium Carbonate (CAS#471-34-1)

CMRG:	10 mg/m^3 TWA; 20 mg/m^3 STEL

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.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses during normal handling. Wear full-face shield during thermal processing if contact with molten material is likely.

Personal Protective Equipment: Skin/Hands/Feet

Wear thermal insulating gloves and other protective clothing (such as long sleeved shirts and long pants) whenever molten material is present. Safety footwear with good traction is recommended to help prevent slipping. Static Dissipative (SD) rated footwear is recommended.

Personal Protective Equipment: Respiratory

If engineering controls and ventilation are not sufficient to prevent build-up of aerosols, vapours or dusts, appropriate NIOSH approved air-purifying respirators or self-contained breathing apparatus (SCBA) appropriate for exposure potential 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.

Personal Protective Equipment: General

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.

Section 9 - Physical & Chemical Properties

Physical State and Appearance:	Solid, pellets	Color:	Cream/light beige
Odour:	Minimal	pH:	Not applicable
Vapour Pressure:	Not applicable	Vapour Density at 0°C (Air=1):	Not applicable
Boiling Point:	Not applicable	Melting Point:	Range: 105°C to 135°C (221°F to 275°F)
Solubility (H_20):	Insoluble	Specific Gravity (Water=1):	Range: 0.9 to 1.1
Evaporation Rate (n-Butyl Acetate = 1):	Not applicable	Octanol/H_2O Coefficient:	Not applicable
Decomposition Temperature:	Varies: >300°C (>572°F)	Softening Point:	Range: 85°C to 127°C (185°F to 261°F)
Auto Ignition:	Range: 330°C to 410°C (630° F to 770° F)	Flash Point:	>343°C (>649°F)
Flash Point Method:	Closed Cup	Upper Flammable Limit (U FL):	Not applicable
Lower Flammable Limit (LFL):	Not applicable	Flammability Classification:	Not flammable

Section 10 - Stability & Reactivity Information

Chemical Stability

This product is stable under normal use conditions for shock, vibration, pressure, or temperature.

Chemical Stability: Conditions to Avoid

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

Incompatibility

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

Possibility of Hazardous Reactions or Hazardous Polymerization

Hazardous polymerization of this product is not likely to occur.

Corrosivity

Not corrosive to the common metals.

Hazardous Decomposition

Upon heating, polyethylene may emit various oligomers, waxes and oxygenated hydrocarbons as well as carbon dioxide, carbon monoxide and small amounts of other organic vapours (e.g. aldehydes, acrolein). The fluoro-elastomer will release fluorine compounds such as hydrogen fluoride and carbonyl fluoride. Inhalation of these decomposition products may be hazardous.

Section 11 -Toxicological Information

A: Acute Toxicity - General Product Information

The product is considered essentially inert and non-toxic. Exposures to high levels of dust or heated fumes may cause irritation and possible pulmonary oedema. Contact with molten material may cause severe thermal burns. There is no available animal toxicity information for the product. The product is expected to present a lesser degree of hazard since the hazardous components are incorporated in a polymer matrix.

B: Acute Toxicity - LD50/LC50

Polyethylene (Ethene homopolymer) (CAS# 9002-88-4)

Inhalation LC50 Mouse: 12 g/m^3/30M

Polyethylene (1 -Butene, polymer with ethene) (CAS# 25087-34-7)

Oral LD50 Rat: 4 g/kg

The other components in this product are inextricably bound in the polyethylene, are in low concentrations and are therefore not likely to result in an additional hazard.

Chronic Toxicity - General Product Information

Product has minimal chronic toxicity. Most polyethylene catalyst dust particles are large and non-respirable. There are no known or reported reproductive or genetic effects. The product is expected to present a lesser degree of hazard since the hazardous components are incorporated in a polymer matrix.

Chronic Toxicity - Carcinogenic Effects

ACGIH, EPA, IARC, OS HA, and NTP carcinogen lists have been checked for selected similar materials or those components with CAS registry numbers. No component of this product at levels greater than 0.1% is identified as a carcinogen.

Section 12 - Ecological Information

Product Information

Polyethylene is an essentially biologically inert solid and considered non-toxic to the aquatic environment. It is stable (does not decompose) in landfills or in aquatic systems.

Component Analysis – Ecotoxicity - Aquatic/Terrestrial Toxicity

No data available

Environmental Fate/Mobility

If released into watercourses, most polyethylene pellets float. Pellets are persistent in aquatic and terrestrial systems. Product should be recovered from water and land following spills. 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 (becomes brittle) in the presence of sunlight, but will not breakdown. Product buried in landfill has been found to be stable over time. No toxic degradation products known to be produced.

Bioaccumulation/Accumulation

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

Section 13 - Disposal Considerations

U.S./Canadian Waste Information

A: General Product Information

This product is not known to generate hazardous wastes according to US and Canadian regulations. The use, mixing or processing of this product may alter its properties or hazards. Check federal, provincial/state and local environmental regulations prior to disposal. Preferred disposal methods for polymers 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. Reuse, recycling, storing, transportation and disposal must be in accordance with applicable federal, provincial/state and local regulations. DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED INCINERATION. Open burning of plastics at landfills should not be undertaken.

See Section 7 - Handling and Storage and Section 8 - Exposure Controls / Personal Protection for additional handling information that may be applicable for safe handling and protection of employees.

Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.

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 Dangerous Goods for Transportation.

International Air Transport Association (IATA) & International Civil Aviation Organization (ICAO) Information

Shipping Name: NOT REGULATED as Dangerous Goods for Transportation.

International Maritime Dangerous Goods (IMDG) Code

Shipping Name: NOT REGULATED as Dangerous Goods for Transportation.

Section 15 - Regulatory Information

A: International Regulations

Component Analysis - International Inventory Status

Component	CAS #	US - TSCA	CANADA - DSL	EU - EINECS
Polyethylene (Ethene homopolymer)	9002-88-4	Yes	Yes	Exempt
Polyethylene (1-Butene, polymer with ethene)	25087-34-7	Yes	Yes	Exempt
Polyethylene (1-Hexene, polymer with ethene)	25213-02-9	Yes	Yes	Exempt
Vinylidenefluoride-hexafluoropropylene polymer	9011-17-0	Yes	Yes	Exempt
Talc	14807-96-6	Yes	Yes	Yes
Calcium carbonate	471-34-1	Yes	Yes	Yes
Synthetic amorphous silica	112945-52-5	Yes	Yes	Yes

B: USA Federal & State Regulations

Ongoing occupational hygiene, medical surveillance programs, site emission or spill reporting may be required by Federal or State regulations. Check for applicable regulations.

The EPA Storm Water Regulations classify resin pellets as “significant materials”. Prevent pellets from entering drains, ditches or waterways. Site emission reporting may be required. Check applicable regulations.

USA OSHA Hazard Communication Class

According to 29 CFR 1910.1200 (Hazard Communication), polyethylene polymer product are not hazardous.

USA Right-to-Know - Federal

No component is known to be listed under SARA 313.

According to SARA 311/312 this product does not meet any of the hazard categories.

USA Right-to-Know - State

No components appear on one or more of the 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 various U.S. states.

California Proposition 65

This product does not contain any chemicals known in the State of California to cause cancer, birth defects, or any other reproductive harm.

C: Canadian Regulations - Federal and Provincial

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.

WHMIS Classification

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

NOT CONTROLLED under WHMIS.

Other Regulations

Ongoing occupational hygiene, medical surveillance programs, site emission or spill reporting may be required by Federal or Provincial regulations. Check for applicable regulations.

Section 16 - Other Information

Label Requirements

This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CEPA = Canadian Environmental Protection Act; CERCLA = Comprehensive Environmental Response Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; HCS = Hazard Communication Standard; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association: ICAO = International Civil Aviation Organization; Kow = Octanol/water partition coefficient; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; LEL = Lower Explosive Limit: LFL = Lower Flammable Limit; SDS = Safety Data Sheet; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; PPE = Personal Protective Equipment; REACH = Registration, Evaluation, Authorisation and Restriction of Chemical Substances; REL = Recommended Exposure Limit; SARA = Superfund Amendments and Reauthorization Act; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; SEPA = State Environmental Protection Administration; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average; UEL = Upper Explosive Limit: UFL = Upper Flammable Limit; WHMIS = Workplace Hazardous Materials Information Systems

SDS Prepared by: Robert Samplonius
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Notice to Reader:

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Prior Issue Dates: August 15, 2018
October 6, 2021

Reviewed/Revised: October 6, 2021