

Material Safety Data Sheet



Polymics, Ltd.
High Performance Polymers & Compounds

2-6-2012

I. Product and Company Identification

Trade name: PYRAMID® Wear Grades: KD2219, KD4219
Part Number: N/A
Form: Compounded Pellet & Powder
Chemical Family: Polymer Resin. Poly(etheretherketone)
Molecular Weight: Polymer
Company: Polymics Ltd.
2215 High Tech Rd.
State College, Pa. 16803
Tel: 814-357-5860
Fax: 814-357-5863
Emergency Telephone: Polymics Ltd. 814-357-5860

II. Composition & Information on Ingredients

Substance	CAS #	wt %	Exposure Limit
Poly(etheretherketone)	29658-26-2	55-94%	None established
PTFE	-	2 – 15%	None established
Carbon Fiber	-	2 – 15%	OSHA PEL 8hr TWA 15 mg/m ³ and ACGIH TLV (8-hr TWA) 5 mg/m ³ for non respirable fiber and particulate. OSHA PEL 8hr TWA 5 mg/m ³ for respirable particulate.
Graphite	-	2 – 15%	OSHA PEL of 15 mg/m ³ total dust ACGIH TLV of 10 mg/m ³ total dust

III. Hazards Identification

EMERGENCY OVERVIEW:

- Spilled material may create slipping hazard.
- Can burn in a fire creating dense, toxic smoke
- Molten plastic can cause severe thermal burns.
- Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills, and fever.
- Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory hazard.

Material Safety Data Sheet



Polymics, Ltd.
High Performance Polymers & Compounds

2-6-2012

Hazard Rating:

Health	1
Flammability	1
Reactivity	0

Potential Physical Hazards

Electrical: Dust, powders and particles may be electrically conductive. Care should be taken to prevent penetration of dusts, powders, and particles into electrical enclosures and electrical equipment.

Potential Personal Hazards

Skin: Powder not likely to cause skin irritation. Hot product can cause skin burns

Eyes: Product may cause irritation or injury due to mechanical action. Hot fumes can cause eye irritation.

Inhalation: May cause irritation. Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills and fever.

Ingestion: Not toxic in normal use.

Precautions: Processing fumes inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

IV. First Aid Measures

Skin: Not anticipated under normal conditions. In case of molten product to skin contact, immerse and/or flush affected area with large amounts of cold water. Do not peel off. Seek medical attention immediately.

Eyes: If material gets in eyes, flush with water for at least 15 minutes. Have eyes examined and treated by medical physician.

Inhalation: Flu-like symptoms are expected if thermal decomposition products are inhaled. Chills, fever, headache, shortness of breath, and coughing are expected. If symptoms persist, consult a physician.

Material Safety Data Sheet



Polymics, Ltd.

High Performance Polymers & Compounds

2-6-2012

Ingestion: Not immediately anticipated under normal conditions. If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

V. Fire-Fighting Measures

Suitable Extinguishing Media: Water spray mist or foam. Carbon dioxide and dry chemical are not recommended because their lack of cooling capacity may permit re-ignition

Combustion Product Hazards: Fire will produce dense black smoke containing hazardous combustion products including hydrogen fluoride (HF), carbonyl fluoride (COF₂), carbon oxides, hydrocarbon fragments, and nitrogen oxides. Of particular concern is the HF and COF₂. These gases are toxic if inhaled or they come into contact with moist skin. HF has an ACGIH PEL TLV (8hr TWA) of 0.5 ppm and a ceiling limit of 2 ppm (1.7 mg/m³). COF₂ has an ACGIH TLV of 2 ppm (5.4 mg/m³) and an OSHA PEL TWA of 2 ppm (5 mg/m³).

Protective Equipment: Use of self contained breathing apparatus and protective clothing is required. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.

Specific Hazards: Take precautionary measures against static discharges. During processing, dust may form explosive mixture in air. Thermal decomposition can lead to release of irritating gases and vapors.

VI. Accidental Release Measures

General: Sweep or gather up material and place in proper container for disposal or recovery. Do not create a powder cloud by using a brush or compressed air. Avoid contact with skin and eyes. Ensure that there is sufficient ventilation. Avoid dust formation and keep away from sources of ignition. Take precautionary measures against static discharge..

Waste Disposal: Incinerate in a licensed facility. Do not discharge into waterways or sewer systems.

Container Disposal: Unused material and empty containers must be disposed of in accordance with local, state and federal regulations.

Environmental Caution: Do not flush into surface water or sanitary sewer system. Should not be released into the environment.

Material Safety Data Sheet



Polymics, Ltd.
High Performance Polymers & Compounds

2-6-2012

VII. Handling Storage

Handling: Follow good-standard industrial hygiene practice and provide adequate ventilation. Use adequate ventilation and aggressive housekeeping practice to prevent dust accumulation.

Storage: Inert material under normal storage conditions. No specific precautions required.

VIII. Exposure Control / Personal Protection

<u>Exposure Limit for Dust</u>		
Total Dust:	15 mg/m ³	Time weighted average (TWA) permissible exposure limit (PEL):(OSHA Z1)
Respirable Fraction:	5 mg/m ³	Time weighted average (TWA) permissible exposure limit (PEL):(OSHA Z1)
Inhalable Fraction:	10 mg/m ³	Time weighted average (TWA):(ACGIH)
Respirable Fraction	3 mg/m ³	Time weighted average (TWA):(ACGIH)

Exposure Controls

Engineering Controls: When handling powder, use non-sparking tools, grounding, bonding venting, and explosion relief provisions in accordance with accepted engineering practices. During melt processing, maintain a continuous supply of fresh air to the workplace together with the removal of processing fumes.

Personal Protection

Hand Protection Gloves in case of frequent contact with hot material.

Eye/Face Protection: Safety glasses with side-shields or chemical goggles. In addition, use full-face shield when cleaning processing fume condensates from hood, ducts, and other surfaces.

Material Safety Data Sheet



Polymics, Ltd.

High Performance Polymers & Compounds

2-6-2012

Skin Protection: Long sleeve shirt and full pants are recommended to avoid possibility of hot material coming into contact with skin. Impervious gloves and an apron are also suggested.

Respiratory Protection: Use supplied air equipment for protection from HF decomposition by-product. In situations where exposure to particulates is likely, NIOSH/MSHA approved respiratory protection. If airborne dust is produced through handling, grinding, sanding or sawing molded parts, and is not adequately controlled through ventilation, use a respirator approved for protection from dust. When using this product at elevated temperatures, implement engineering systems, administrative controls or a respiratory protection program (including a respirator approved for protection from organic vapors, acid gases and particulate matter) if processing fumes are not adequately controlled or operators experience symptoms of overexposure. If dust of powder is produced from secondary operations such as sawing or grinding, use a respirator approved for protection from dust.

Hygiene Measures: When using, do not eat, drink or smoke.

IX. Physical & Chemical Properties

Appearance:	Grey to black powder or pellets	Specific Gravity:	1.30-1.70
Boiling Point:	N/A	Solubility In Water	Insoluble
Melting Point:	310-360 °C	Vapor Pressure:	N/A
Flash Point:	Does not flash	Vapor Density:	N/A
% Volatiles:	< 0.5% by weight	Evaporation Rate:	N/A

X. Stability and Reactivity

Stability: Stable at normal conditions. Hazardous polymerization does not occur.

Hazardous Decomposition: Thermal decomposition of product can occur with prolonged exposure to temperatures above 626 F (330 C). This will generate Carbonyl Fluoride and hydrogen fluoride (HF) which is corrosive and may cause burns on contact with skin and other tissue. Processing fumes evolved above recommended processing conditions may also include trace levels of hydrocarbon fragments, phenols, other substituted hydrocarbons, carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of boron, oxides of titanium, silicone dioxide, hydrogen fluoride (HF) and carbonyl fluoride (COF₂).

Material Safety Data Sheet



Polymics, Ltd.

High Performance Polymers & Compounds

2-6-2012

Conditions to Avoid: To avoid thermal decomposition, do not overheat. Heating can release hazardous gases. Do not exceed melt temperature recommendations in product literature. In order to avoid autoignition/hazardous decomposition of hot thick masses of plastic, purgings should be collected in small, flat, shapes or thin strands to allow for rapid cooling. Quench in water. Do not allow product to remain in barrel at elevated temperatures for extended periods of time: purge with a general purpose resin.

Incompatibility: Dissolved by concentrated sulfuric acid.

XI. Toxicological Information

LD50/oral/rat: >5000 mg/kg

LD50/dermal/rabbit: >2000 mg/kg

Exposure to fumes generated during the processing of fluoropolymer-containing compounds can cause an influenza-like condition called polymer fume fever. Symptoms include fever, chills, chest pains, shortness of breath, and coughing. Symptoms do not necessarily occur at the time of exposure, but may be delayed, passing in 48 to 72 hours. Inhalation from smoke from tobacco contaminated with fluoropolymers can also cause polymer fume fever. Limit work exposure to fumes generated during processing. Prohibit smoking in area where fluoropolymer-containing compounds are used and stored.

This product may contain small amounts of residual fluoropolymer monomer that can be released during processing. This has been shown to cause liver and kidney cancer in laboratory animals in a test conducted by the National Toxicology Program (NTP). It is also listed by the State of California under Proposition 65 as a carcinogen. Exposures to fluoropolymer monomer can occur in newly opened drums and in situations where processing temperatures exceed manufacturers recommendations. Avoid breathing fumes and gases produced in processing or burning of fluoropolymer containing parts. To minimize exposures to trace levels of fluoropolymer monomer, follow the handling instructions in Section 8 of the MSDS. For additional information, consult the current edition of the guide to the Safe Handling of Fluoropolymers published by the Society of Plastics Industry, Inc. (SPI) Fluoropolymer Division.

XII. Ecological Information

Ecological Information: Do not flush into surface water or sanitary sewer system.

Other Information: Ecological damages re not known or expected under normal use.

XIII. Disposal Considerations

Waste Disposal: Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.

US EPA Waste Number: None

Material Safety Data Sheet



Polymics, Ltd.
High Performance Polymers & Compounds

2-6-2012

XIV. Transport Information

Transport Classification: Not regulated as hazardous for shipment under current transportation guidelines.

XV. Regulatory Information

TSCA (USA): Not Listed
DSL/NDSL (Canada): Not Listed

Other Inventory Information:

A "Listed" entry above means all chemical components are on the respective inventory list and/or a qualifying exemption exists for one or more components.

SARA 313:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

XVI. Other Information

DISCLAIMER: This Materials Safety Data Sheet (MSDS) information is provided based on the requirement of Hazard Communication Regulations. Polymics Ltd. does not warrant the suitability for use of this MSDS for any other material or product not specifically identified herein. Polymics Ltd. does not warrant the accuracy or authenticity of this MSDS unless it was obtained directly from Polymics Ltd., or posted or viewed on the Polymics Ltd. website. Modification of this MSDS, unless specifically authorized by Polymics Ltd., is strictly prohibited. This MSDS is based on information which is believed to be reliable, but may be subject to change as new information becomes available. Since it is not possible to anticipate all conditions of use, additional safety precautions maybe required. As the use of this material is not under Polymics Ltd.'s control, each user is responsible for making its own determination as to the safe and proper handling of this material in its own particular use of this material. POLYMICS LTD MAKES NO REPRESENTATION OR WARRANTY, EITHER EXPRESS OR IMPLIED, INCLDUED AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR APPLICATION OR PURPOSE.