



FluoroPel™ 1600V

Description: Perfluorinated vinyl copolymer in perfluoropolyether solvent with excellent UV and chemical resistance. When applied to clean surfaces, the solution dries to a thin, transparent film with excellent antimigration properties to all non-fluorinated liquids, including heptane, toluene, acetone, silicone oils and detergents. The PFC1600V polymer is also available in solvents with higher and lower boiling ranges and at various concentrations.

Application: Wear Gloves and eye protection. Dip, brush, spin or wipe thin coating onto clean, dry, oil-free surface. For best performance, heat to 180-200°C for 10 minutes. Clean up with PFC8, PFC16 or other fluorocarbon solvent. The addition of fluorosilane coupling agents are recommended on oxide surfaces.

AVOID PROLONGED OR REPEATED BREATHING OF CONCENTRATED VAPORS. DO NOT BREATH DECOMPOSITION PRODUCTS RESULTING FROM EXPOSURE TO TEMPERATURES ABOVE 250°C. DO NOT SMOKE WHILE APPLYING THIS PRODUCT.

Cytonix, LLC, 8000 Virginia Manor Road, Beltsville, Maryland, USA, 301-470-6267

% Polymer Additives Lot #

FluoroPel™ 1600V Test Data

<u>Film Property</u>	<u>Specification</u>
Appearance	Clear, colorless, non-fluorescing film
Surface Tension	15 dynes/cm (air-dried); 13 dynes/cm (heated)
Hardness	#2 pencil
Melting point	150-170°C
Flammability	non burning
Heat stability	150°C (continuous); 250°C (one hour)
Refractive index	1.35
Dielectric strength	170 volts/micron
Dielectric constant	2.00 @ 100 KHz
Volume resistivity	(10)18 ohm-cm

Product information and samples, contact Dr. Elaine Lanza, 703-929-5324, elanza@cytonix.com



Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: FluoroPel™ PFC1600V

MANUFACTURER: Cytonix, LLC, 8000 Virginia Manor Road, Beltsville, MD 20705

PHONE: Business Office 301-470-6267, Product Information 703-929-5324, fax 301-470-6269

WEB ADDRESS: <http://cytonix.com>

PRODUCT CONTACT: <mailto:elanza@cytonix.com>

BUSINESS CONTACT: <mailto:business@cytonix.com>

REVISION DATE: 3-3-2010

PRODUCT USE: Protective Barrier or liquid repellent Coating. Approved for use in a class I medical devices and meets ISO 10933 biocompatibility requirements, showing no cytotoxicity to L-929 cells.

SECTION 2: INGREDIENTS

INGREDIENT	Wt%	C.A.S. NUMBER
Perfluoro-Compounds	90-99	86508-42-1
Perfluorinated vinyl copolymer	1-10	PROPRIETARY

This formulation does not contain PFOA or PFOS and does not derive from compounds comprising these materials. The components of this product are in compliance with the chemical notification requirements of TSCA. All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS. Volatile components of Fluoro-Compounds are VOC exempt per Federal Register August 25, 1997 [Volume 62, Number 164].

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Liquid

Odor, Color, Grade: Colorless, slight ethereal.

General Physical Form: Liquid

Immediate health, physical, and environmental hazards: None known.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact: Contact with the eyes during product use is not expected to result in significant irritation.

Skin Contact: Contact with the skin during product use is not expected to result in significant irritation.

Inhalation: May be harmful if thermal degradation products inhaled.

Ingestion: No health effects are expected.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS

This compound resists degradation in most natural environments. Insignificant toxicity to aquatic organisms (Lowest LL50 or EL50 is >1000 mg/L). LL50 (Lethal Level) and EL50 are similar to LC50 and EC50, but tests the water phase from incompletely miscible mixtures.

Perfluoro compounds (PFCs) are photochemically stable and expected to persist in the atmosphere for more than 1000 years. PFCs have high global warming potentials (GWP), exceeding 5000 (100-yr-ITH). The Ozone Depletion Potential (ODP) is Zero.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed:

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

Inhalation: If signs/symptoms develop, remove person to fresh air. If signs/symptoms persist, get medical attention.

If Swallowed: If signs/symptoms develop, get medical attention. No need for first aid is anticipated.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature None [ASTM E659-84]

Flash Point *Not Applicable*

Flammable Limits - LEL None [ASTM E681-94, @100 C]

Flammable Limits - UEL None [ASTM E681-94, @100 C]

5.2 EXTINGUISHING MEDIA

Material will not burn.

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may be used to blanket the fire. Exposure to extreme heat can give rise to thermal decomposition. Wear full protective equipment and a self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: No unusual fire or explosion hazards are anticipated. Avoid breathing the products and substances that may result from the thermal decomposition of the product or the other substances in the fire zone.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Observe precautions from other sections. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area with fresh air. Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Clean up residue with an appropriate organic solvent. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Avoid skin contact with hot material. For industrial or professional use only. Contents may be under pressure, open carefully. Store work clothes separately from other clothing, food and tobacco products. No smoking: Smoking while using this product can result in the formation of the hazardous decomposition products. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits. If ventilation is not adequate, use respiratory protection equipment. Avoid continuous exposure of the material to heat above 200 C.

7.2 STORAGE

Keep container tightly closed. Keep container in well-ventilated area. Store away from heat. Store away from strong bases or alkali metals.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Use with appropriate local exhaust ventilation. Provide local exhaust ventilation at transfer points. Provide appropriate local exhaust when product is heated.

8.2 PERSONAL PROTECTIVE EQUIPMENT

8.2.1 Eye/Face Protection

Avoid eye contact. Use Safety Glasses with side shields.

8.2.2 Skin Protection

Avoid skin contact with hot material. Wear Nitrile gloves when handling this material to prevent thermal burns.

8.2.3 Respiratory Protection

Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. If thermal degradation products are expected, use fullface supplied air respirator.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

None established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Physical Form: liquid

Odor, Color, Grade: clear, colorless, with slight ethereal odor.

General Physical Form: Liquid

Autoignition temperature 405 °C [ASTM E659-84]

Flash Point *Not Applicable*

Flammable Limits - LEL None [ASTM E681-94, @100 C]

Flammable Limits - UEL None [ASTM E681-94, @100 C]

Boiling point 160°C @ 760 mmHg
Density 1.7 g/ml
Vapor Density 13.4
Vapor Pressure 4 mmHg @ 25 °C
Specific Gravity 1.7
pH *Not Applicable*
Melting point -123 °C
Solubility In Water nil
Evaporation rate 1 [BUOAC=1]
Volatile Organic Compounds Exempt
Percent volatile 90-99 %
Viscosity ND

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Strong bases and alkali metals.

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Thermal Decomposition Products: Hydrogen Fluoride, Perfluoroisobutylene (PFIB) At Elevated Temperatures.

Hazardous Decomposition: Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure. Decomposition of this product at temperatures above 300 degrees C can form perfluoroisobutylene (PFIB), but PFIB will only accumulate with continuous exposure to excessive heat in a sealed vessel. The formation rate for PFIB is about 1000 times less than the rate for primary thermal decomposition products such as HF. During normal use conditions, no health hazard is associated with the use of this material due to PFIB exposure.

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

Fathead Minnow, Pimephales promelas, 96 hours, Lethal Concentration 50% >1000 mg/l

Water flea, Daphnia magna, 48 hours, Effect Concentration 50% >1500 mg/l

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Reclaim if feasible. As a disposal alternative, incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF.

EPA Hazardous Waste Number: Not regulated

SECTION 14: TRANSPORT INFORMATION

DOT Regulations: Not regulated by DOT.

SECTION 15: REGULATORY INFORMATION

311/312 Hazard Categories:

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

Immediate Hazard - Yes

Delayed Hazard - No

CHEMICAL INVENTORIES

One or more chemical components of this material have been commercialized under the TSCA polymer exemption at 40CFR723.250. Polymers subject to this exemption are not listed on the TSCA Inventory, but are in compliance with TSCA requirements. The components of this product are in compliance with the chemical notification requirements of TSCA. All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS. Contact Cytonix for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 1 Flammability: 0 Reactivity: 0 Special Hazards: None

HMIS Hazard Classification

Health: 0 Flammability: 0 Reactivity: 0 Protection: X - See PPE section.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued.

Copyright, 2005, Cytonix, LLC. All rights reserved.