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3M Advanced Materials Division

3M™ Dyneon™ Ultra High Purity PFA 6502UHPZ

Features and Benefits

- Meets SEMI C90-1015
- Extremely low extractable impurities
- Excellent chemical resistance
- Temperature capability up to 260°C

Typical Properties (Not for specification purposes)

Property	Units	Value
Melting Point [ISO 12086]	°C	307
Melt Index 372°C/5 kg [ISO 12086]	g/10 min	2
Specific Gravity @ 23°C [ISO 12086]	g/cm^3	2.14
Tensile Strength at Break @ 23°C [ISO 12086]	MPa (psi)	32 (4,600)
Elongation at Break @ 23°C [ISO 12086]	%	340
Flexural Modulus @ 23°C [ISO 178]	GPa	0.6
Hardness Shore D [ISO 868]		60
Limiting Oxygen Index (LOI) [ASTM D2863/Type IV/Proc. A]	%	>95
Flame Class [UL 94]		V-0

Product Description

3M™ Dyneon™ PFA 6502UHPZ is an excellent option for ultra high purity extruded tubing as well as other articles from low shear processes including transfer moldings and molded sheets.

Ultra High Purity

3M™ Dyneon™ Ultra High Purity PFA "UHPZ" materials offer very low levels of extractable impurities making them an exceptional option for critical semiconductor liquid chemical components. Dyneon PFA UHPZ materials have been shown to meet low extractable levels required by SEMI C90-1015 for raw material pellets.

Processing Recommendations

3M™ Dyneon™ Ultra High Purity PFA can be processed using typical melt processing methods. Due to the higher melt viscosity, Dyneon PFA 6502UHPZ is typically processed using low shear methods including tube extrusion and transfer molding. 'Hot end' temperatures for Dyneon PFA can be up to 400°C. Typical process heating systems are designed to maintain at least 400°C. These processing temperatures are for melting, pumping, and mold-forming - they should not be confused with use temperatures of finished articles.

Note: Data in this document are not for specification purposes.

ISO Registrations

3M™ Dyneon™ UHP PFA is manufactured at ISO 9001 and 14001 registered facilities.

Corrosion Resistant Tools

To avoid breakdown and contamination due to corrosion, processing equipment that contacts molten PFA or fumes should be made from highly corrosion resistant materials such as high-nickel alloys. In the case of lower wear elements, nickel plating may be used. In addition to longer process tool lifespan, use of corrosion resistant materials is a very important step to help reduce impurities introduced into the final parts during processing of the PFA.

Processing EHS

Hazardous off-gases are generated during hot processing of PFA resins. These gases must be managed via an appropriate exhaust fume management system. Such care is often required for areas where the materials are in a hot 'in-process' condition and also where molded articles cool. For additional information on safe processing for PFA, consult the health/safety section on this data sheet, the material label, Safety Data Sheet (SDS), and industry guidance on safe handling of fluoropolymer materials.

Product Form and Packaging

3M™ Dyneon™ Ultra High Purity PFA are supplied in pellet form and packaged in 25 kg (55 lbs.) plastic bags 2 each inside a plastic container for a package unit of 50 kg (110 lbs).

Storage and Material Handling

3M™ Dyneon™ Ultra High Purity PFA shelf life has not been determined. Storage time has not been shown to have a material impact on PFA properties. It should be stored in a clean, dry place. Containers should only be opened in clean environments and should be tightly resealed and stored in a clean area away from contaminates. Static charge, such as those that can result from transport, may exacerbate the risk of contamination. PFA is hydrophobic and generally does not require drying. If ambient humidity is high, drying may be used to reduce the risk of water inclusion from condensation on pellet surfaces.

Safety/Toxicology

PFA is a fluoropolymer, so standard precautions observed with fluoropolymers should be followed. Read and follow all precautions and directions for use. Additional safe handling information can be found on the process safety section on this data sheet, the product label, Safety Data Sheet, and in published industry guides. General handling/processing precautions include, but are not limited to: (1) Processing and equipment cleaning only in well ventilated areas; (2) Do not smoke in areas contaminated with powder/residue from these products; (3) Avoid eye contact; (4) After handling these products wash any contacted skin with soap and water. Potential hazards, including evolution of toxic vapors, can exist when processing occurs under typical temperature conditions. Appropriate exhaust ventilation such as vapor extractor units should be installed above processing equipment. When cleaning processing equipment: do so under proper ventilation, use the lowest temperature possible and never use open flame as a heat source.

Customer Service

Europe

Dyneon GmbH
3M Advanced Materials Division
Carl-Schurz-Straße
41453 Neuss
Germany
Phone: +00 800 396 366 27
Fax: +00 800 396 366 39

USA

3M Advanced Materials Division
3M Center, 280-01W-03
St. Paul, MN 55144-1000
United States
Phone: 1 800 810 8499

Latin America

3M Brasil
Via Anhanguera km
110 Sumare
Sao Paulo CEP 13181-900
Brasil
Phone: 0800 0132333

3M Mexico
Santa Fe 190, Col. Santa Fe
Deleg. Alvaro Obregon
Mexico D.F., C.P. 01210
México
Phone: 0052 5552700 400
Ext 82935

Asia

3M Japan
6-7-29, Kita-Shinagawa
Shinagawa-ku
Tokyo 141-8684
Japan
Phone: 81 570 022 123

3M Korea
19F, 82, Uisadang-daero
Yeongdeungpo-gu, Seoul, 150-705
Korea
Phone: 82 2 3771 4027

3M Taiwan
6F, No.95, Sec. 2
Dunhua S. Rd.
Taipei 10682
Taiwan
Phone: 886 2 2704 9011

3M Thailand
150 Soi Chalongkrung 31
Ladkrabang Bangkok, 10520
Thailand
Phone: 66 2739 4803 9
Ext 2354

Please visit 3M.com/semifluidhandling or 3M.com/fluoropolymers for additional information.

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3M Advanced Materials Division
Oakdale, MN 55128
Phone 1-800-810-8499
Web www.3m.com/advancedmaterials

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