

3M Advanced Materials Division

3M™ Dyneon™ Ultra High Purity PFA FLEX 8502UHPZ

Features and Benefits

- Meets SEMI C90-1015
- Extremely low extractable impurities
- Improved ESCR (Stress Crack Resistance)
- Excellent chemical resistance
- Improved surface smoothness
- Improved clarity
- Temperature capability up to 240°C

Typical Properties (Not for specification purposes)

Property	Units	Value
Melting Point [ISO 12086]	°C	298
Melt Index 372°C/5 kg [ISO 12086]	g/10 min	2
Specific Gravity @ 23°C [ISO 12086]	g/cm ³	2.13
Tensile Strength at Break @ 23°C [ISO 12086]	MPa (psi)	33 (4,800)
Elongation at Break @ 23°C [ISO 12086]	%	310
Flexural Modulus @ 23°C [ISO 178]	GPa	0.65
Hardness Shore D [ISO 868]		60
Limiting Oxygen Index (LOI) [ASTM D2863/Type IV/Proc.A]	%	>95

Product Description

3M™ Dyneon™ PFA FLEX 8502UHPZ is an excellent option for ultra high purity extruded tubing with enhanced stress crack resistance. This PFA combines the durability benefits from the higher molecular weight PFA polymer with Dyneon's enhanced stress crack architecture to create the highest degree of durability among our PFA resins. This material is an excellent option for ultra high purity extruded tubing and other articles from low shear processing 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.

Stress Crack Resistance

3M™ Dyneon™ PFA FLEX UHPZ series have enhanced environmental stress crack resistance (ESCR) compared to our standard PFA grades. This can be particularly useful when parts are subjected to aggressive stress cracking agents such as fluorosurfactant solutions.

Processing Recommendations

3M™ Dyneon™ Ultra High Purity PFA can be processed using typical melt processing techniques. Due to the higher melt viscosity, Dyneon PFA FLEX 8502UHPZ is processed using low shear methods including tube extrusion and transfer molding.

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.

'Hot end' temperatures for Dyneon PFA can be up to 400°C. Typical process heating systems are therefore designed to maintain at minimum a constant 400°C temperature. These processing temperatures are for melting, pumping, and mold-forming – they should not be confused with use temperatures of finished articles.

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 contaminants. 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.

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

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