

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z

Product Description

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z is a fully fluorinated copolymer comprising tetrafluoroethylene and hexafluoropropylene and is belonging to the product class FEP. It was developed mainly for wire and cable extrusion and features greatly enhanced flexibility and stress cracking behavior.

Special Features

- Excellent dielectric properties
- High thermal stability
- Service temperature rating up to more than 200 °C
- Outstanding chemical resistance
- Wide processing window
- Greatly enhanced flex life properties
- Extremely low flammability (high LOI)
- Smooth surface
- Excellent anti-stick properties
- Low coefficient of friction
- Very high weathering and UV stability
- Improved mechanical properties

Properties	Test method	Unit	Value
Specific Gravity	DIN EN ISO 12086	g/cm ³	2.14
Melt Flow Index (372 °C / 5kg)	DIN EN ISO 1133	g/10min	9
Melting Point	DIN EN ISO 12086	°C	255
Tensile Strength at Break (23 °C)	DIN EN ISO 527-1	MPa	30
Elongation at Break (23 °C)	DIN EN ISO 527-1	%	350
Tensile Modulus	DIN EN ISO 527-1	MPa	630
MIT Folding Endurance (200 µm film)	ASTM D 2176	double folds	110,000
Dielectric Strength (250µm film)	ASTM D 149	kV/mm	65
Dielectric Constant (23 °C) at 1 MHz	ASTM D 150	-	2.05
Dielectric Constant (23 °C) at 9,4 GHz	ASTM D 150	-	2.04
Dissipation Factor at 1 MHz	ASTM D 150	-	0.0005
Dissipation Factor at 9,4 GHz	ASTM D 150	-	0.0003
Vertical Burn (UL 94)	UL Bulletin 94	-	-
Limiting Oxygen Index	ASTM D 2863	%	> 95

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Typical Properties

As compared to the former standard 3M™ Dyneon™ Fluoroplastic FEP 6309Z, 3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z is chemically modified to feature enhanced flexibility, stress cracking behaviour and mechanical strength.

Typical Applications

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z is mainly used for heavier gauge primary wire insulation and for cable jacketing. Its high flexibility makes it an ideal candidate for use in mechanical systems and other applications where mechanical values are important. It may also be used for injection moulding or the extrusion of films or smaller size tubing.

Processing Recommendations

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z can be processed using the methods common to thermoplastic polymers. As typical for the processing of all fully fluorinated polymers, highly corrosion resistant materials need to be used for all machine parts that come into contact with melt or fumes. Such materials are e.g. alloys like Inconel 625, Haynes 242 or Hastelloy C4. Typical processing equipment temperatures for 3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z range from 300 to 400 °C. For safety precautions please see also the topic "Safety Instructions" in this data sheet.

Below is an example for typical process conditions for wire extrusion:

Extruder: 50 mm

Screw: Linear L/D 30

DDR = 100; DRB = 0.95-1.05

Temperature Settings

Ext. Zone 1 330 °C	Flange	390 °C
Ext. Zone 2 345 °C	Head	395 °C
Ext. Zone 3 360 °C	Die	395 °C
Ext. Zone 4 370 °C	Water cooling	50 °C
Ext. Zone 5 385 °C	Wire preheat	150 °C

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Storage and Handling

When stored in a clean and dry place, 3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z will have a relatively long shelf life. Partially used containers should be reclosed carefully to avoid contamination. Drying the material before use is typically not necessary.

Safety Instructions

Follow the normal precautions observed with all fluorothermoplastic materials.

Please consult the Material Safety Data Sheet and Product Label for information regarding the safe handling of the material. By following all precautions and safety measures, processing these products poses no known health risks. General handling/processing precautions include: 1) Process only in well-ventilated areas. 2) Do not smoke in areas contaminated with powder/residue from these products. 3) Avoid eye contact. 4) If skin comes into contact with these products during handling, wash with soap and water afterwards. 5) Avoid contact with hot fluoropolymer.

Potential hazards, including release of toxic vapours, can arise if processing occurs under excessively high temperature conditions. Vapour extractor units should be installed above processing equipment. When cleaning processing equipment, do not burn off any of this product with a naked flame or in a furnace.

Delivery Form

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z is delivered in pellet form.

Packaging size is:

- 50 kg cardboard box, containing two PE-bags with 25 kg content each

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Important Notice

All information set forth herein is based on our present state of knowledge and is intended to provide general notes regarding products and their uses. It should not therefore be construed as a guarantee of specific properties of the products described or their suitability for a particular application. Because conditions of product use are outside Dyneon's control and vary widely, user must evaluate and determine whether a Dyneon product will be suitable for user's intended application before using it.

The quality of our products is warranted under our General Terms and Conditions of Sale as now are or hereafter may be in force.

Technical information, test data, and advice provided by Dyneon personnel are based on information and tests we believe are reliable and are intended for persons with knowledge and technical skills sufficient to analyze test types and conditions, and to handle and use raw polymers and related compounding ingredients.

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General recommendations on health and safety in processing, on work hygiene and on measures to be taken in the event of accident are detailed in our material safety data sheets.

You will find further notes on the safe handling of fluoropolymers in the brochure "[Guide for the safe handling of Fluoropolymers Resins](#)" (download link) by PlasticsEurope, Box 3, B-1160 Brussels, Tel. +32 (2) 676 17 32.

You can also download it with your smartphone using the QR code below.



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