

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z

Product Description

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z is a fully fluorinated copolymer comprising tetrafluoroethylene and hexafluoropropylene. 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 (250 µm 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

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z

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 370 °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	290 °C	Flange	370 °C
Ext. Zone 2	310 °C	Head	370 °C
Ext. Zone 3	330 °C	Die	365 °C
Ext. Zone 4	370 °C	Water cooling	50 °C
Ext. Zone 5	370 °C	Wire preheat	150 °C

Hastelloy® and Haynes® 242 are registered Trademarks of Haynes International. Inconel® is a registered Trademark of Special Metals Corporation.

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

FEP 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.

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

3M™ Dyneon™ Fluoroplastic FEP FLEX6309Z

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. User is solely responsible for ensuring compliance of their products with all applicable regulations.

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.

No license under any Dyneon or third party intellectual rights is granted or implied by virtue of this information.

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.



Customer Service

Europe
Phone: 00 800 396 366 27
Fax: 00 800 396 366 39
Italy
Phone: 800 7 910 18
Fax: 800 7 810 19
USA
Phone : +1 800 810 8499
Fax : +1 800 635 8061

Technical Service Fluoroplastics

Dyneon GmbH
3M Advanced Materials Division
Industrieparkstraße 1
84508 Burgkirchen
Germany
Phone: +49 8679 7 4709
Fax : +49 8679 7 5037

Technical Service Fluoroelastomers & Polymer Processing Additives

3M Belgium N.V.
3M Advanced Materials Division
Canadastraat 11,
Haven 1005
2070 Zwijndrecht
Belgium
Phone: +32 3 250 7868
Fax: +32 3 250 7905

Technical Service PTFE Compounds

Dyneon B.V.
3M Advanced Materials Division
Tunnelweg 95
6468 EJ Kerkrade
The Netherlands
Phone: +31 45 567 9600
Fax: +31 45 567 9619

We will gladly supply further contact details for our full network of global sales offices. Alternatively, find them [here](#).



Web Site: www.dyneon.eu

Printed in Germany
© Dyneon 2023
Status: Feb. 2023

3M, Dyneon and Dynamar are Trademarks of 3M Company.
All Rights reserved. The present edition replaces all previous versions. Its content is being continuously adjusted to reflect the current level of knowledge. Please make sure and inquire if in doubt whether you have the latest edition.