

Hyflon® MFA F1540

perfluoropolymer

Hyflon® MFA is a unique family of perfluoro polymers which combine excellent mechanical characteristics to unique properties such as chemical inertness, high flexural endurance, inherent flame resistance, low surface energy and exceptional dielectric properties.

Hyflon® MFA F1540 is a high melt flow rate multi purpose resin with an exceptional stress crack resistance, continuous service temperature up to 225°C and a 13-15 x 10³ cycles flex-life (on a 0.3 mm film, ASTM D2176).

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Features	• Flame Retardant • High ESCR (Stress Crack Resist.)	• High Flow
Uses	• General Purpose	• Wire & Cable Applications
RoHS Compliance	• RoHS Compliant	
Forms	• Pellets	
Processing Method	• Extrusion Coating	

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	2.11 to 2.16		ASTM D792
Melt Mass-Flow Rate (MFR) (372°C/5.0 kg)	8.0 to 18	g/10 min	ASTM D1238

Mechanical	Typical Value	Unit	Test method
Tensile Modulus ¹ (23°C)	400 to 500	MPa	ASTM D3307
Tensile Strength ² (Break, 23°C)	> 25.0	MPa	ASTM D3307
Tensile Elongation ² (Break, 23°C)	> 300	%	ASTM D3307
Flex Life ³	1.3E+4 to 1.5E+4	Cycles	ASTM D2176

Impact	Typical Value	Unit
Charpy Notched Impact Strength	No Break	

Hardness	Typical Value	Unit	Test method
Durometer Hardness (Shore D)	55 to 60		ASTM D2240

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Thermal	Typical Value Unit	Test method
Melting Temperature	265 to 275 °C	ASTM D3307
Peak Crystallization Temperature (DSC)	255 to 265 °C	DSC
CLTE - Flow	1.2E-4 to 2.0E-4 cm/cm/°C	ASTM D696
Specific Heat (23°C)	900 to 1100 J/kg/°C	DSC
Thermal Conductivity (40°C)	0.20 W/m/K	ASTM C177
Crystallization Heat	16.0 to 24.0 J/g	DSC
Heat of Fusion	16.0 to 24.0 J/g	DSC

Electrical	Typical Value Unit	Test method
Surface Resistivity	> 1.0E+17 ohms	ASTM D257
Volume Resistivity	> 1.0E+17 ohms·cm	ASTM D257
Dielectric Strength ⁴ (1.00 mm)	35 to 40 kV/mm	ASTM D149
Dielectric Constant		ASTM D150
23°C, 50 Hz	2.00	
23°C, 100 kHz	2.00	
Dissipation Factor		ASTM D150
23°C, 50 Hz	< 5.0E-4	
23°C, 100 kHz	< 5.0E-4	

Flammability	Typical Value Unit	Test method
Flame Rating	V-0	UL 94
Oxygen Index	95 %	ASTM D2863

Additional Information

COLOR MASTER BATCHES

- We recommend that only Color Master Batches based in MFA be used. Master Batches based on other fluoropolymers can negatively influence the superior processing and electrical performance of the resin. A list of suppliers can be obtained from your Syensqo sales representative.

HEALTH SAFETY AND ENVIRONMENT

- Hyflon® MFA F1540 is a very inert polymer and it is not harmful if used and handled according to standard processing procedures. If handled inappropriately, it may release harmful toxic chemicals.
- Hyflon® MFA F1540 does not contain any RoHS or WEEE substances. Please refer to the Material Safety Data Sheets for more information on handling and safety.

PACKAGING AND STORAGE

- The Hyflon® MFA F1540 resin is available in 25 kg (55 lbs) and 500 kg (1102 lbs) packaging. Though it has an indefinite shelf life, it is recommended to store it in a clean area, protected by direct sun light and possible contamination.

Extrusion	Typical Value Unit
Cylinder Zone 1 Temp.	240 to 290 °C
Cylinder Zone 2 Temp.	270 to 320 °C
Cylinder Zone 3 Temp.	300 to 360 °C
Cylinder Zone 4 Temp.	330 to 380 °C
Cylinder Zone 5 Temp.	340 to 390 °C
Flange Temperature	370 to 400 °C

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Extrusion	Typical Value	Unit
Adapter Temperature	370 to 400	°C
Crosshead Temperature	380 to 410	°C
Melt Temperature	390 to 420	°C
Die Temperature	390 to 420	°C
Wire Preheat	120	°C

Extrusion Notes

WIRE AND CABLE PROCESSING GUIDELINES

- As with other fluoropolymers, MFA is corrosive in the melt. Therefore all parts coming into prolonged contact with the melt should be made with corrosion resistant materials such as Hastelloy®, Inconel®, Monel® or Xaloy®. Chrome or nickel plating is not recommended since they are typically only sufficient for brief processing tests.
- Hyflon MFA F1540 is applied onto wire using tubing extrusion techniques similar to other thermoplastic materials. An overview of the temperature, tooling and equipment requirements are in the following tables.
- Many different screw designs can be used. Single-flight screws are recommended while barrier-flights should be avoided. A typical screw design consist of a long feed section, followed by a 2 to 6 flight transition and a 5 to 7 flight metering section. The addition of a block mixing section can improve the processing performance.

EQUIPMENT/TOOLING REQUIREMENTS

- Line Speed: 200 to 350 m/min (700 to 1200 ft/min)
- Draw Down Ratio: 80 to 120
- Draw Balance: 0.96 to 1.04
- Extruder L/D: 20/1 to 30/1
- Screen Pack: Breaker plate only is required.

Notes

Typical properties: these are not to be construed as specifications.

¹ 1.0 mm/min

² 50 mm/min

³ 0.3 mm film

⁴ 50 Hz

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Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

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