Hyflon® MFA® F1540

Perfluoropolymer

Solvay Specialty Polymers

Message:

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 medium-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 10^3 cycles flex-life (on a 0.3 mm film, ASTM D2176).

General Information			
UL YellowCard	E109081-100037832		
Features	High ESCR (Stress Cracking Resistance) High liquidity Flame retardancy		
Uses	Wire and cable applications General		
RoHS Compliance	RoHS compliance		
Forms	Particle		
Processing Method	Extrusion coating		
Physical	**Nominal Value**	**Unit**	**Test Method**
Specific Gravity	2.10 - 2.15	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (372°C/5.0 kg)	8.0 - 18	g/10 min	ASTM D1238
Hardness	**Nominal Value**	**Unit**	**Test Method**
Durometer Hardness (Shore D)	55 - 60		ASTM D2240
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus [1] (23°C)	400 - 500	MPa	ASTM D3307
Tensile Strength [2] (Break, 23°C)	> 25.0	MPa	ASTM D3307
Tensile Elongation [3] (Break, 23°C)	> 300	%	ASTM D3307
Bending life [4]	4.0E+4 - 6.0E+4	Cycles	ASTM D2176
Heat of crystallization	16.0 - 24.0	J/g	DSC
Heat of Fusion	16.0 - 24.0	J/g	DSC
Flange temperature	370 - 400	°C	
Cross nose temperature	380 - 410	°C	
Steel wire preheating	120	°C	
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy Notched Impact Strength	No Break		
Thermal	**Nominal Value**	**Unit**	**Test Method**
Melting Temperature	265 - 275	°C	ASTM D3307
Peak Crystallization Temperature (DSC)	255 - 265	°C	DSC

CLTE - Flow	1.2E-4 - 2.0E-4	cm/cm/°C	ASTM D696
Specific Heat (23°C)	900 - 1100	J/kg/°C	DSC
Thermal Conductivity (40°C)	0.20	W/m/K	ASTM C177
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	> 1.0E+17	ohms	ASTM D257
Volume Resistivity	> 1.0E+17	ohms·cm	ASTM D257
Dielectric Strength [5] (1.00 mm)	35 - 40	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
23°C, 50 Hz	2.00		ASTM D150
23°C, 100 kHz	2.00		ASTM D150
Dissipation Factor			ASTM D150
23°C, 50 Hz	< 5.0E-4		ASTM D150
23°C, 100 kHz	< 5.0E-4		ASTM D150
Flammability	**Nominal 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 Solvay 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, it is not produced using APFO and contains no APFO. 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	Nominal Value	Unit
Cylinder Zone 1 Temp.	240 - 290	°C
Cylinder Zone 2 Temp.	270 - 320	°C
Cylinder Zone 3 Temp.	300 - 360	°C
Cylinder Zone 4 Temp.	330 - 380	°C
Cylinder Zone 5 Temp.	340 - 390	°C
Adapter Temperature	370 - 400	°C
Melt Temperature	390 - 420	°C
Die Temperature	390 - 420	°C

Extrusion instructions

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.

NOTE	
1.	1.0 mm/min
2.	50 mm/min
3.	50 mm/min
4.	0.3mm film
5.	50Hz

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China