DuPont™ Teflon® FEP 106

Moulding and Extrusion Resin

Product Information

For inventory control purposes product name may be followed by an X.

Products labeled FEP 106 and FEP 106 X are equivalent and all information in this document is applicable to both.

Typical Application

Small diameter, thin wall wire and cable insulations. Intricate or thin wall parts made by injection moulding.

Description

DuPont Teflon® FEP 106 is a melt-processible copolymer of tetrafluoroethylene and hexafluoropropylene without additives that meets the requirements of ASTM D 2116 type II.

It offers the excellent combination of properties characteristic of Teflon® fluoropolymer resins: non-ageing characteristics, chemical inertness, exceptional dielectric properties, heat resistance, toughness and flexibility, low coefficient of friction, non-stick characteristics, negligible moisture absorption, low flammability, performance at temperature extremes and excellent weather resistance.

Teflon® FEP 106 is a "high productivity" grade of Teflon® FEP. It is designed for the extrusion of thin wall, small diameter wire insulations. It can also be used for injection moulding of intricate and thin wall parts.

At processing temperatures it shows low viscosity and a high critical shear rate. In similar wire constructions it can be extruded at higher extrusion line speeds than the general purpose grade Teflon® FEP 100.

Stress-crack resistance is an important element in establishing end-use performance. Experience shows that the MIT folding endurance or flex life test, performed on a thin film of resin, has established a good correlation with extensive cable testing. The higher the MIT flex life, the higher the stress-crack resistance of the resin. MIT test results should be viewed as a guide to comparative performance of the various grades of resin. We recommend that for applications involving repeated thermal and flex cycling, specific tests on the final cable always should be undertaken. See also DuPont's bulletin "Grade selector for Wire and Cable applications".

Processing

Teflon® FEP 106 fluoropolymer resin can be processed by conventional melt extrusion and by injection, compression and blowmoulding processes. For smooth feeding to extrusion equipment it is supplied in 3 mm (0.12") pellets. The extruders and moulding machines used for Teflon® FEP 106 should be constructed of high nickel alloy corrosion-resistant materials and be capable of operating at temperatures up to 400 °C (750 °F).

Safety Precautions

Industrial experience has proven that adequate ventilation, in properly maintained processing and handling areas, will eliminate known hazards to personnel. Resin containers should be opened and used in well-ventilated areas.

Equipment used to process at melt temperatures should be provided with local exhaust ventilation to completely remove all fumes and vapours from the processing area. In addition, care should be exercised to avoid the contamination of cigarettes and other forms of smoking tobacco when using fluoropolymer resins. Before processing any fluoropolymers, read the Material Safety Data Sheet, available upon request from our Customer Care Group at (800) 207-0756 in the US or +1-302- 996-7906 (outside of the US). Also read the detailed information in the latest edition of the "Guide to the Safe Handling of Fluoropolymer Resins," published by the Fluoropolymers Division of The Society of the Plastics Industry (www.fluoropolymers.org) or by PlasticsEurope (www.plasticseurope.org).

Food Contact Compliance

Properly processed products made from Teflon® FEP 106 resin can qualify for use in contact with food in compliance with FDA 21 CFR 177.1550 and European Regulation (EU) No 10/2011. For details and information, please contact your DuPont representative.

Storage and Handling

The properties of Teflon® FEP 106 resins are not affected by storage time. Ambient storage conditions should be designed to avoid airborne contamination and water condensation on the resin when opening and emptying the packaging.

Packaging

Teflon® FEP 106 is packaged in 25 kg, single layer, plastic bags. For convenient shipment, orders of 1000 kg pallets are recommended. Bulk packaging in 1000 kg octabins is also available.

DUPONT®

The miracles of science™

Typical Property Data for Teflon® FEP 106

Property	Test method [1]		Unit	Typical Value
Processing				
Melt Flow Rate (MFR at 372 °C/5.0 kg)	ISO 12086	D 2116	g/10 min	22
Specific Gravity	ISO 1183	D 792		2.14
Critical shear rate (372 °C / 702 °F))		DuPont	1/s	155
Guide DDR range for cable extrusion				60 - 100
Mechanical				
Tensile strength, 23 °C (74 °F)	ISO 12086	D 638	MPa (psi)	22 (3190)
Elongation, 23 °C (74 °F)	ISO 12086	D 638	%	300
Hardness, Shore Durometer	ISO 868	D 2240		D 56
Impact Strength, Notched Izod, 23 °C (74 °F)	ISO 180	D 256	kJ/m^2	No Break
MIT Folding Endurance (0.20 mm, 8 mils film)		D 2176 [5]	cycles	5000
Electrical				
Relative Permittivity, at 1 kHz	IEC 250	D 150		2.03
Relative Permittivity, at 1 GHz	IEC 250	D 150		2.03
Dissipation Factor, tg δ , at 1 kHz	IEC 250	D 150		0.00007
Dissipation Factor, tg δ , at 1 GHz	IEC 250	D 150		0.0012
Dielectric Strength, short time	IEC 243	D 149		
0.25 mm film			kV/mm	> 85
Thermal				
Melting point		D 4591 / D 3418	°C (°F)	255 (491)
Continuous Service Temperature [2]		-	°C (°F)	205 (400)
Flammability classification [3] [4]		UL 94		V-0
Limiting Oxygen Index	ISO 4589	D 2863	%	> 95
Other				
Chemical resistance		D 543		Excellent
Water absorption, 24h		D 570	%	< 0.01
Weather Resistance				Excellent

Note: Teflon® FEP 106 meets the requirements of ASTM D 2116-07(2012), Type II
Typical properties are not suitable for specification purposes.

1) ASTM method unless otherwise specified
2) Definition of continuous service temperature:
The continuous service temperature is based on accelerated heat-aging tests, and represents the temperature at which tensile strength and ultimate elongation retains 50% of the original values, after 20 000 h thermal aging When considering the use of Teflon® FEP at elevated temperatures especially in combination with mechanical, electrical or chemical exposure, preliminary testing should be done to verify suitability.
3) These results are based on laboratory tests, under controlled conditions, and do not reflect performance under actual fire conditions.
4) Current rating is a typical theoretical value
5) Historical Standard

This product is manufactured with technology that meets the goals of the U.S. Environmental Protection Agency (EPA) 2010/15 PFOA stewardship program. See www.fluoropolymers.dupont.com for more details.

For more information, visit www.teflon.com/industrial

For sales and technical support contacts, visit www.teflon.com/industrialglobalsupport

HOW TO USE THE DUPONT™ TEFLON® BRAND NAME WITH YOUR PRODUCT

Teflon® is a registered trademark of DuPont for its brand of fluoropolymer resins, coatings, films and dispersions. The Teflon® brand name is licensed by DuPont in association with approved applications. Without a trademark license, customers may not identify their product with the Teflon® brand name as DuPont does not sell such offerings with the Teflon® trademark. Unlicensed customers may refer to the DuPont product offering with only the DuPont name and product code number descriptor as DuPont sells its product offerings. There are no fair use rights or exhaustion of rights to use the Teflon® trademark from buying from DuPont, a DuPont customer or a distributor without a trademark license from DuPont.

If you are interested in applying for a trademark licensing agreement for the DuPont™ Teflon® brand, please contact DuPont at (800) 207-0756 in the U.S., or call (302) 996-7906 (outside of the U.S.).

K-25883 9/12

CAUTION: Do not use DuPont materials in medical applications involving permanent implantation in the human body or contact with bodily fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also visit www.teflon.com/industrial to download a copy of the "DuPont POLICY Regarding Medical Applications" H-50103 and "DuPont CAUTION Regarding Medical Applications" H-50102.

For medical emergencies, spills, or other critical situations, call (800) 441-7515 within the United States. For those outside of the United States, call (302) 774-1000.

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable. It is intended for use by persons having technical skill, at their own discretion and risk. The handling precaution information contained herein is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Because conditions of product use are outside our control, DuPont makes no warranties, express or implied, and assumes no liability in connection with any use of this information. As with any material, evaluation of any compound under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents.

DUPONT®

The miracles of science™