Teflon™ FFR 880

Fluoroplastic Foam Resin

Product Information

Description

Teflon™ FFR 880 fluoroplastic foam resin was developed to meet the demand for superior micro-coaxial designs required for manufacturing compact electronic devices. Foamed insulation of Teflon™ FFR 880 fluoroplastic foam resin provides high-speed data transmissions with minimal distortion and exceptional signal return loss and attenuation performance in ultra-thin wire and cable applications. In addition, the resin's high thermal stability and melt flow rate (nominal MFR of 42) allow for high processing speeds and excellent heat resistance. Teflon™ FFR 880 fluoroplastic foam resin offers cable designers opportunities for miniaturization and weight savings or the use of larger conductors to construct low-loss cables, without the need for increased dielectric dimensions.

Teflon™ FFR 880 has been compounded with a proprietary foam nucleating package and is supplied as white pellets. This resin is used in a nitrogen gas-injected foam extrusion process to produce uniform foam cells in the dielectric insulation.

In micro-coaxial cables using Teflon™ FFR 880 fluoroplastic foam resin, a typical cable core would have conductor sizes of 26 AWG or smaller, wall thickness of 0.002 in or greater, with void content up to 55%. These voids are closed cell in nature and range from 0.0002 in (0.006 mm) to 0.0013 in (0.033 mm) in diameter. Achievable cell size and void content will vary based on wall thickness and processing conditions.

Safety Precautions

Before using Teflon™ FFR 880 resin, refer to the Safety Data Sheet and the latest edition of "The Guide to the Safe Handling of Fluoropolymer Resins," published by The Society of the Plastics Industry, Inc. (www.fluoropolymers.org) or by PlasticsEurope (www.plasticseurope.org).

Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing of Teflon™ FFR 880 should be exhausted completely from the work area. Contamination of tobacco with these polymers should be avoided. Vapors and fumes liberated during hot processing that are not properly exhausted, or from smoking tobacco or cigarettes contaminated with Teflon™ FFR 880, may cause flu-like symptoms, such as chills, fever, and sore throat. This may not occur until several hours after exposure and will typically pass within about 24 hours.

Mixtures of Teflon™ fluoroplastic resin with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Authorization

Chemours has developed proprietary technology for the compounding and processing of these products. Some of this technology is protected by patents. Customers wishing to purchase and process these products should consult their Chemours sales representative with a view to obtaining a license authorizing the purchaser to process the resin into cable primaries of various dimensions and to sell these foamed primaries in final cables.

Processing

Teflon™ FFR 880 fluoroplastic foam resin can be fabricated by conventional melt extrusion using similar processing techniques as other fluoroplastics. A brief description of general processing guidelines for Teflon™ FFR 880 fluoroplastic foam resin is given here. More detailed processing information is available to customers through their Chemours sales representative and the recommended Chemours technical bulletin, "Teflon™/Tefzel™ Melt Extrusion Guide."

Teflon™ FFR 880 fluoroplastic foam resin is a high-flow resin designed specifically for fine wire applications. The resin can be fed directly to a conventional single-screw extruder with nitrogen gas injection. Molten fluoroplastic resins are corrosive to many metals; therefore, special corrosion-resistant materials, such as high-nickel, low-iron alloys, must be used for all parts of extrusion equipment that come into contact with the melt.

The process should include devices to monitor diameter, capacitance, and gas flow. Color addition may affect cell formation and capacitance, requiring process adjustment. Insulation performance is determined by extruder output, wire line speed, and void content. Void content is controlled by nitrogen flow rate, process temperatures, and quench point. It is best for the voids to grow after the melt is drawn down onto the wire. Elongated voids in the insulation indicate early growth of the cells in the draw-down cone. Processing conditions will depend on the equipment used, the product being made, and the production rates needed. Further advice is available through your Chemours sales representative.

Storage and Handling

The properties of Teflon™ FFR 880 fluoroplastic foam resin are not affected by storage time. Ambient storage conditions should be designed to avoid airborne contamination and water condensation on the resin when it is removed from containers..

Packaging

Teflon™ FFR 880 resin is supplied as pellets packaged in 25-kg (55-lb) plastic bags.

Table 1: Typical Property Data for Teflon™ FFR 880 Fluoroplastic Foam Resin

Property	Test Method[1]		Unit	Typical Value
PROCESSING				
Melt Flow Rate (MFR at 372 °C [702 °F]/5.0 kg)	ISO 12086	D 2116	g/10 min	42
Melting Point	—	D 4591	°C (°F)	305 (580)
Specific Gravity	ISO 1183	D 792	—	2.14
ELECTRICAL				
Dielectric Constant				
1 kHz	IEC 250	D 150	—	2.04
1 MHz	IEC 250	D 150	—	2.04
1 GHz	IEC 250	D 2520	—	2.04
Dissipation Factor				
1 kHz	IEC 250	D 150	—	0.0001
1 MHz	IEC 250	D 150	—	0.0002
1 GHz	IEC 250	D 2520	—	0.0004

[1]ASTM method unless otherwise specified

HOW TO USE THE TEFLON™ BRAND NAME WITH YOUR PRODUCT

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

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