



Teflon™ FFR 770

Fluoroplastic Foam Resin

Product Information

Description

Teflon™ FFR 770 is a fluoroplastic resin compounded with a foam nucleating package. This resin is supplied as white pellets and is used in a nitrogen gas-injected foam extrusion process to produce uniform foam cells in the dielectric insulation. Foaming the fluoroplastic reduces its dielectric constant, providing opportunities for miniaturization and weight savings. Foamed insulation of Teflon™ FFR 770 produces cables for high frequency signal transmission with minimal distortion.

Teflon™ FFR 770 is ideal for producing foamed primary dielectric insulation for twisted pair cables and miniature coaxial cables. A typical cable core would have conductor sizes of 32 AWG or greater, wall thickness of 0.004 in or greater, with void content from 20% to 65%.

These voids are closed cell in nature and range from 0.0007 in (0.018 mm) to 0.0013 in (0.033 mm) in diameter. Achievable void content will vary based on wall thickness and processing conditions.

Safety Precautions

Before using Teflon™ FFR 770 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 770 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 770, 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 technology for the compounding and processing of these products. Some of that 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 770 can be fed directly to a conventional single-screw extruder with nitrogen gas injection. The process contact metals must be high-nickel, low-iron alloys suitable for fluoroplastic processing. The process should include devices to monitor diameter, capacitance, and gas flow. When adding color concentrate, use one compounded in FEP fluoroplastic. 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.

More detailed processing information is available to customers through their Chemours sales representative.

Packaging

Teflon™ FFR 770 is supplied as pellets packaged in 55-lb (25-kg) bags or 1,000-kg boxes.

Storage and Handling

The properties of Teflon™ FFR 770 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.

Table 1: Typical Property Data for Teflon™ FFR 770 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	30
Melting Point	—	D 4591	°C (°F)	260 (500)
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	—	0.0006
1 GHz	IEC 250	D 2520	—	0.0005

¹ASTM method unless otherwise specified

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