



Teflon™ FFR 430

Fluoroplastic Foam Resin

Product Information

Description

Teflon™ FFR 430 fluoroplastic foam resin has been developed with a superior nucleant package to provide improved foam cell structure and a broader processing window. It has the lowest melt flow (7) of the FFR resins, making it best suited for the larger plenum coax cables, particularly when lowest smoke generation is a key design consideration. The foamed insulation of Teflon™ FFR 430 fluoroplastic foam resin provides high-speed data transmission with minimal distortion and good cable structural return loss with reduced attenuation. Teflon™ FFR 430 offers cable designers opportunities for reducing cable size with cable weight savings or the use of larger conductors to construct low-loss cables, without the need for increased dielectric dimensions.

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 insulation. Achievable cell size and void content will vary based on wall thickness and processing conditions.

Safety Precautions

Before using Teflon™ FFR 430 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 430 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 430, 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 the proprietary technology for 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 for obtaining the 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 430 fluoroplastic foam resin can be fabricated by conventional melt extrusion using similar equipment and process techniques as other fluoroplastics. A brief description of general processing guidelines for Teflon™ FFR 430 fluoropolymer foam resin is given here. 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 430 is a low-flow resin that is specifically designed for larger coax applications with a typical void content from 20% to 60%. These voids are closed cell in nature with a typical range from 0.001 in (0.025 mm) to 0.005 in (0.127 mm) in diameter. Achievable void content, cell size, and distribution will vary based on wall thickness and processing conditions. Teflon™ FFR 430 fluoroplastic foam resin can be fed directly to a conventional single-screw extruder equipped with nitrogen gas injection. The expansion rate is controlled by nitrogen flow rate, process temperatures, and the quench point. Sizing the nitrogen injector for the proper flow rate is critical for a stable process. Chemours technical service will provide guidance upon request to ensure proper injector sizing.

The process should include devices to monitor diameter, capacitance, gas pressure, gas flow, and barrel pressure. The addition of color concentrates may affect cell formation and

capacitance, requiring process adjustments. The final cable performance for the cable insulated with Teflon™ FFR 430 is determined by extruder output, wire line speed, wire handling, extruder heats, and expansion rate. The processing conditions may change as a result of the equipment used, the product being made, and the production speeds needed. Further advice is available through your Chemours sales representative.

Molten fluoroplastic resins are corrosive to many metals. 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.

Storage and Handling

The properties of Teflon™ FFR 430 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 430 is supplied as pellets and is available in 25-kg (55.1-lb) plastic bags.

Table 1: Typical Property Data for Teflon™ FFR 430 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	7
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	—	0.0009

Typical properties are not suited for specification purposes.

¹ASTM method unless otherwise specified

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Replaces: K-26518

C-10098 (7/15)