

Tefzel™ ETFE 207

Fluoroplastic Resin

Product Information

Description

Tefzel™ ETFE 207 is a special-purpose fluoroplastic resin available in translucent, 2.5-mm (0.1-in) pellets. Compared with other grades of Tefzel™, it has a higher flow rate and still maintains a service temperature of 150 °C (302 °F).

Tefzel™ ETFE 207 and the other Tefzel™ fluoroplastics are melt processible, modified copolymers of ethylene and tetrafluoroethylene. They are high-performance resins that can be processed at relatively high rates compared with fluorocarbon resins. They are mechanically tough and offer an excellent balance of properties.

The relatively high flow rate (see Table 1) of Tefzel™ ETFE 207 makes it uniquely suitable for high-speed processing, especially for extruded coatings and injection molding of slender, thin-walled, or intricate shapes. Properly processed products made from neat Tefzel™ ETFE 207 are inert to most solvents and chemicals, hydrolytically stable, and weather-resistant. Recommended upper service temperature is 150 °C (302 °F); useful properties are retained at cryogenic ranges. The level and stability of dielectric properties are excellent, and the flame rating is V-0 by the UL94 method. Mechanical properties include outstanding impact strength, cut-through, and abrasion resistance.

Statements, or data, regarding behavior in a flame situation are not intended to reflect hazards presented by this or any other material when under actual fire conditions.

Processing

Tefzel™ ETFE 207 can be processed by conventional, melt-extrusion techniques and injection, compression, transfer, and blow molding processes. Compared with other grades of Tefzel™, it can be processed with greater ease and speed because of its high flow rate. Also, the

melt viscosity of Tefzel™ is reduced with increasing shear rate; thus, permitting the use of pressure extrusions through narrow dies without requiring appreciable drawdown. Reciprocating screw injection molding machines are preferred. Corrosion-resistant metals are recommended for contact with molten resin.

Extruder barrels should be long, relative to diameter, to provide residence time for heating the resin to approximately 340 °C (640 °F).

Typical End Products

Tefzel™ ETFE 207 is ideal for many end products, including electrical components, such as sleeving, coil forms, sockets, connectors, and switches; lab ware, such as tubing, valves, containers, and fasteners; battery or instrument components that require chemical inertness; and mechanical parts. The high melt flow rate of this product makes it ideal for injection molding and thin wall extrusion.

Safety Precautions

Before using Tefzel™ ETFE 207, 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, or from smoking tobacco or cigarettes contaminated with Tefzel™ ETFE 207, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and typically pass within about 24 hours. Vapors and fumes liberated during hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided.

Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Storage and Handling

The properties of Tefzel™ ETFE 207 resins are not affected by storage time. Ambient storage conditions should be designed to avoid airborne contamination and the formation of water condensation on the resin when it is removed from containers.

Packaging

Tefzel™ ETFE 207 fluoroplastic resins are packaged in 20.3-kg (45-lb) plastic bags.

Table 1. Typical Property Data for Tefzel™ ETFE 207 Fluoroplastic Resin

Property	Test Method*	Unit	Value
Thermal			
Nominal Melting Point	D3159	°C (°F)	250-280 (491-536)
Flow Rate	D3159	g/10 min	30
Upper Service Temperature	UL746	°C (°F)	150 (300)
Mechanical			
Tensile Strength, 23 °C (73 °F)	D3159	MPa (psi)	40 (5,800)
Specific Gravity	D792	—	1.7
Ultimate Elongation, 23 °C (73 °F)	D3159	%	300
Flexural Modulus, 23 °C (73 °F)	D790	MPa (psi)	1,000 (150,000)
Impact Strength, 23 °C (73 °F)	D256	J/m (ft·lb/in)	No Break
Electrical			
Dielectric Strength, 0.25 mm (0.010 in)	D149	KV/mm (V/0.001 in)	65 (1,700)
Dielectric Constant, 1 MHz, 23 °C (73 °F)	D150	—	2.6-2.8
Dissipation Factor, 1 MHz, 23 °C (73 °F)	D150	—	0.009
Volume Resistivity	D257	ohm·m (ohm·cm)	1×10^{15} (1×10^{17})
General Properties			
Water Absorption, 24 hr	D570	%	0.007
Weather and Chemical Resistance	—	—	Excellent
Limiting Oxygen Index	D2863	%	30-32

*ASTM method unless otherwise specified.

Typical properties are not suitable for specification purposes.

Tefzel™ ETFE 207 meets the requirements of ASTM D3159, Type I, Grade 3

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