

ETFE GS40

Everflon™ Fluoropolymers

Ethylene-tetra-fluoro-ethylene
Powders



DESCRIPTION

Everflon™ ETFE GS40 is a premium-grade fluoroplastic resin designed for use in rotational molding. To be effective as a rotational molding resin, Everflon™ ETFE GS40 is a free-flowing powder with controlled particle size, shape, and size distribution.

The properties of Everflon™ ETFE GS40 in molded form are similar to other grades of Everflon™ ETFE fluoroplastic resin.

Rotational molding is a favored process for making hollow parts (particularly large parts) or for parts with complex geometries. Depending on part design and processing conditions, Everflon™ ETFE GS40 can also be used to rotoline items; whereby, the Everflon™ binds to the inner surface of the part to form a lining.

Properly processed rotational moldings made from Everflon™ ETFE GS40 provide the superior properties typical of the fluoroplastic resins: retention of properties after service at 150 °C (302 °F), useful properties at -100 °C (-148 °F), and chemical inertness to most industrial chemicals and solvents. Molded products have excellent stiffness and high ultimate elongation.

DATA LIST

Typical Property Data for Everflon™ ETFE GS40 Fluoroplastic Resin

Property	Test Method	Unit	Typical Value
MECHANICAL			
Linear Coefficient of Expansion, 0–100 °C	ASTM D696	mm/mm/°C	9 x 10 ⁻⁵
Specific Gravity	ASTM D792	—	1.7
THERMAL			
Nominal Melting Point	ASTM D3418	°C	260
Melt Flow Rate	ASTM D3159	g/10 min	20–30
Continuous Service Temperature	—	°C (°F)	150 (302)
OTHER			
Water Absorption, 24 hr	ASTM D570	%	0.03
Weather and Chemical Resistance	—	—	Excellent
Average Particle Size	—	µm	250

Note: For more information of ETFE properties, please visit www.everflon.com or ETFE Tech Book. These results are based on laboratory tests, under controlled conditions, and do not reflect performance under actual fire conditions.

TYPICAL APPLICATIONS

Everflon™ ETFE GS40 is ideal for many fluid handling end products in the chemical process industry, including pump casings, vessels, columns, elbows, tees, and pipe sections with unusual shapes. In addition, any hollow structure with internal contours that allows for uniform coating by powder flow is suitable for lining, provided it can withstand high temperatures.

HANDLING & PACKAGE

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.

Everflon™ ETFE GS40 are packaged in 20-kg (44-lb) drums net weight.

PRECAUTION

Before using Everflon™ ETFE GS40, refer to the Safety Data Sheet and the latest edition of "The Guide to the Safe Handling of Fluoropolymer Resins.

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 Everflon™ ETFE GS40, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and typically pass within about 24 hr. 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.

PROCESSING GUIDE

For rotational molding, Everflon™ ETFE GS40 powder is placed inside a hollow metal structure that is slowly rotated biaxially and heated above the melting point of the powder around 257 °C.

Frequently, the mold or part containing the resin is preheated (with rotation) to a temperature just below the melting point of the resin. Then, the temperature is raised to above the melting point of the resin to allow for formation of the lining. As the powder melts, it is deposited on the inner surface of the structure. Powder flow and distribution are critical, because the high melt viscosity of Everflon™ ETFE limits the lateral flow of melted resin. A cooling step then causes the molten resin to solidify and densify in place, creating an integral lining or a removable, hollow plastic part. A typical thickness is about 2mm . A thickness as high as 5mm has been molded.

Good moldings and linings require close attention to many details, such as choice of metals for the mold, preparation of the metal surface, rate of rotation, venting, and heating/ cooling cycles. The equipment must operate at high temperature and resist thermal shock.

The times and temperatures of the preheat, fusion, and cooling cycles will vary according to the part, oven, and choice of cooling method, etc. For a wall/lining thickness of 2, the following times and temperatures are typical.

Preheat 5 min at 250 °C

Fusion 60 min at 288 °C

Cooling (ambient air)

Within certain limits, the fusion temperature can be increased to permit shorter cycle times. The minimum time/-temperature conditions can be defined as those times, at a specified temperature, that just allow for formation of bubble-free parts and linings. A typical minimum time/temperature relationship for Everflon™ ETFE GS40 is:

280°C/100 min

290°C/60min

295°C/50min

Everflon™ ETFE is relatively dense, compared to other resins. As a guide, to form a 2mm lining on a part with an interior surface of 0.1m², use 360g of Everflon™ ETFE GS40.

Rotations for major and minor axes that are conventionally used for rotocasting other polymer resins have been applied without modification to Everflon™ ETFE GS40. For example, 8 rpm major, 9 rpm minor for boxes, cylindrical pipe sections, tees, spool pieces, etc.; 8 rpm major, 10 rpm minor for spheres and ellipsoids. These conventional rotations have given acceptable fluoroplastic resin distribution and casting thicknesses.

Molds must be vented during the rotational molding/ rotolining cycle. For best results, use an appropriate tube as a vent with glass wool in the tube to restrict contaminants from entering the part.

ABOUT C&F AND EVERFLON FLUOROPOLYMERS

Everflon™ is brand of C&F Group dealing in fluoropolymers materials including PTFE.FEP.PFA.ETFE and PVDF. On the basis of Everflon, C&F also developing the fluoropolymer applications including tubing,coating and films.

More information could visit www.everflon.com or Everflon™ Fluoropolymers Introduction and C&F Chemicals Book



*For more information, visit www.everflon.com
For sales and technical support contact, please contact
info@everflon.com*

Everflon Fluoropolymer co.,ltd
Fuqiao Industrial Park,C&F Ave,Chaidian,Wuhan, China. 43100
Tel:+86-185-7168-9228

