product information

Fluon® ETFE Rotational Molding & Lining Resins

DESCRIPTION

Fluon® ETFE is a melt-processable copolymer of tetrafluoroethylene and ethylene. Fluon ETFE possesses a unique combination of desirable properties such as higher resistance to heat and chemical attack and outstanding physical toughness. Rotational molding and lining grades are designed to be free-flowing powders with particle morphologies necessary to uniformly coat the most challenging and complex parts.

BENEFITS

- High resistance to heat: Fluon ETFE has a continuous use temperature of 150°C.
- Excellent chemical resistance
- Outstanding physical toughness: Fluon ETFE has better physical properties than most other fluoropolymers.
- Low smoke and flame characteristics: Fluon ETFE is rated 94 V-0 by Underwriters Laboratories Inc.
- Outstanding resistance to weather and aging
- Good dielectric properties
- Non-stick characteristics

APPLICATIONS

- Rotational lined Chemical Process Industry (CPI) components for fluid handling such as valves, pumps, pipes, fittings, tanks and other complex design parts.

FDA COMPLIANCE

AGC Chemicals Americas, Inc., a wholly owned subsidiary of the Asahi Glass Company, confirms FDA compliance for Food Contact Notification (FCN) number 481 for its Fluon ETFE manufactured by Asahi Glass Company. The U.S. Food and Drug Administration concurs compliance on the FDA website.

Fluon ETFE is the *only* ETFE resin in the world that is FDA compliant, permitting use as base resins or coatings in repeat use applications in contact with all food types at temperatures up to 150°C in listed applications.

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FLUON® ETFE ROTATIONAL MOLDING & LINING GRADES AVAILABLE

Grade	Characteristics & Usage	Particle Size (µm)	Thickness (µm)
ZL-522F	Rotomolding & Rotolining – clear, high erosion resistance, thermally stabilized for severe anticorrosion in reaction vessels, storage tanks, pipes, pumps, tank trucks, etc.	100 to 200	>2000
TL-581	Rotomolding & Rotolining – clear, thermally stabilized, abrasion resistant, high fluidity, stress-crack resistant, for severe anticorrosion in reaction vessels, storage tanks, pipes, pumps, etc.	200 to 300	>2000
TL-584	Rotomolding & Rotolining – clear, improved thermal stability, high fluidity, stress-crack resistant, chemical resistant linings for reaction vessels, storage tanks, pipes, pumps, etc.	200 to 300	>2000
LM2300N	Rotomolding & Rotolining – clear, low melting temperature, top coat (smooth surface), chemical resistant linings for reaction vessels, storage tanks, pipes, pumps, etc.	300 to 500	>2000
LM2300K	Rotomolding & Rotolining – clear, low melting temperature, low metals for semiconductor applications such as pipes, tanks, and pumps, etc.	300 to 500	>2000

PROCESSING

It is strongly recommended that process equipment exposed to molten resin be made of corrosion-resistant metals such as Monel®, Inconel®, or Hastelloy®.

Your AGC Chemicals Americas, Inc. technical service representative can provide specific recommendations for process equipment and process conditions.

FLUON® ETFE ROTATIONAL MOLDING & LINING GRADES TYPICAL PROPERTIES

Property	Units	Test Method	ZL-522F	TL-581	TL-584	LM2300N	LM2300K
Melt Flow Rate (as raw material)	grams/ 10 minutes	ASTM D-3159	7.0～14.0	20～30	20～30	20～30	20～30
Melting Point	°C	ASTM D-3418	265 +/- 10	265 +/- 10	265 +/- 10	230 +/- 10	230 +/- 10
Bulk Density	g/cm^3	ASTM D-3159	0.6～0.9	0.75～0.95	0.7～0.9	0.6～0.9	0.6～0.9
Average Particle Diameter (D50)	microns	Laser Diffraction	100～140	230～310	230～310	300～500	300～500
Specific Gravity	-	ASTM D792	1.74	1.73	1.73	1.76	1.76
Tensile Strength (23°C)	psi	ASTM D-638	7400	6700	NA	5685 MIN.	5685 MIN.
Tensile Elongation (23°C)	%	ASTM D-638	420	465	350 MIN.	350 MIN.	350 MIN.
Flexural Modulus (23°C)	psi	ASTM D-790	145,000	128,000	NA	NA	NA

NOTE: The data listed here represents typical values for the stated grades of Fluon® ETFE. This information should be used as a guide only and not to establish specification limits or design criteria. AGC Chemicals Americas assumes no obligation or liability for any advice furnished by us or for results obtained with respect to this product. All such advice is provided free of charge and the buyer assumes sole responsibility for results obtained in reliance thereon.

HANDLING PRECAUTIONS

Heating Fluon products in excess of 750°F (399°C) can produce toxic fumes. It is, therefore, necessary to provide local exhaust ventilation in areas where Fluon products are exposed to high temperatures. Avoid breathing fumes or contaminating smoking tobacco with fumes, powder, or dust.

Thermal decomposition of this product will generate hydrogen fluoride, which is corrosive. Corrosion resistance materials are required for prolonged contact with molten resin.

For additional information and handling instructions read AGC Chemicals Americas, Inc. Material Safety Data Sheet. It is also recommended that the user consult the latest edition of the "Guide to the Safe Handling of Fluoropolymer Resins" published by the Fluoropolymers Division of the Society of the Plastics Industry (SPI) for important handling and ventilation recommendations. Both publications are available from your AGC Chemicals Americas representative.

SAFE HANDLING INFORMATION

The properties of Fluon ETFE are not impacted by storage time. Storage and handling facilities should be designed to minimize contact with airborne contamination and the formulation of condensation on the resin. Fluoropolymers are not hydroscopic and will not typically need to be dried prior to use.

FREIGHT CLASSIFICATION

Fluon ETFE when shipped by rail or express is classified "Plastics, Synthetic, O.T.L., NOIBN." Resin shipped by truck is classified "Plastics, Materials O.T.F.C.E. or S. Granules."

ASTM CLASSIFICATIONS

Fluon ETFE grade ZL-522F is ASTM D-3159 type I, grade 1. ETFE grade TL-581 and TL-584 are ASTM D 3159 type I, grade 3. Fluon LM-ETFE grades LM2300N and LM2300K are ASTM D-3159 type IV, grade 1.

Your AGC Chemicals Americas Inc. representative can advise you of the ASTM classifications of the other ETFE materials.

UL YELLOW CARDS

Fluon ETFE resins are listed under the *QMFZ2.GuideInfo Plastics - Component* section in the Underwriters Laboratories, Inc. certification directory. See File E54077 under Asahi Glass Co LTD for specific information on ETFE resins. Copies of UL Yellow Cards for Fluon ETFE resins are available online from the UL Online Certifications Directory at http://database.ul.com/.

For more information and samples contact

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