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Daikin Neoflon® ETFE

Product Information Guide

Daikin ETFE is a copolymer of tetrafluoroethylene (TFE) and ethylene. Daikin Neoflon® ETFE consists of carbon, hydrogen, and fluorine atoms. Daikin ETFE has a lower melt viscosity than PTFE and can be processed like other thermoplastic resins by melt processing techniques such as extrusion, transfer molding, injection molding and compression molding. The ETFE polymer can also be crosslinked to provide improved heat resistance and mechanical properties.

Pellets

Due to its excellent melt flow properties, Daikin ETFE can be processed in the same way as other thermoplastic resins. Daikin ETFE is also highly suited to such secondary processes as welding and flaringpost-forming.

Property	Test Method	EP-506	EP-521	EP-526	EP-541	EP-546	EP-610	EP-620	EP-7000
Bulk Density (g/l)		1000	1000	1000	1000	1000	1000	1000	1000
Specific Gravity	ASTM D790	1.72-1.76	1.72-1.76	1.72-1.76	1.72-1.76	1.72-1.76	1.83-1.88	1.83-1.88	1.72-1.76
Melt Flow Rate (g/10min)	ASTM D2116	30-40	8.1-16.0	9.0-15.0	4.0-8.0	4.0-8.9	28-33	9-18	15.0-25.0
Melting Point °C	ASTM D2116	249-259	260-270	249-259	260-270	249-259	218-228	218-228	251-259
Continuous Service Temperature (°C)		150	150	150	150	150	150	150	150
Mechanical									
Tensile Strength (MPa), min	ASTM D638	39	40	40	40	40	28	28	30
Elongation (%), min	ASTM D2116	350	350	350	350	350	300	300	350
Compressive Strength (MPa)	ASTM D695 1% Deformation, 25°C	10.7	10.7	10.7	10.7	10.7	8.0	8.0	10.7
MIT Flex, cycles	ASTM D2176	13,000	14,000	24,000	18,000	79,000	100,000	600,000	8,500
Electrical									
Dielectric Breakdown Strength (V/mil)	ASTM D150 Short time 1/8 in	400	400	400	400	400	400	400	400
Volume Resistivity (Ohm-cm)	ASTM D257	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{17}$
Dielectric Constant	ASTM D150 10^3	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	10^6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Dielectric Dissipation Factor	ASTM D150 10^3	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$	$8x10^{-4}$
	10^6	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$	$5x10^{-3}$
Combustibility(%)	ASTM D2863/ Oxygen Concentration Index	31	31	31	31	31	50	50	31
Process Methods		Extrusion Injection	Extrusion Injection	Extrusion Injection	Extrusion Injection	Extrusion Injection	Extrusion Injection	Extrusion Injection	Extrusion
Uses		Thin wall wire insulation, small parts, films, tubing	Thin wall wire insulation, small parts, films, tubing	Thin wall wire insulation, small parts, films, tubing	Heavy wall wire insulation, cable jacketing, valve fittings, pipes	Heavy wall wire insulation, cable jacketing, valve fittings, pipes	Wire insulation, electrical & electronic parts, containers, tubes	Wire insulation, cables, films, sheets	Automotive tubing: straight, convoluted mon-, & multilayer

Polymer Processing of Daikin ETFE Pellets

The melting point of ETFE ranges from 220 to 265°C. Because of its relatively low melt viscosity, it can be processed at high shear rates without exhibiting melt fracture. Therefore, this resin can be molded into shapes relatively easily. ETFE can be molded by most of the conventional thermoplastic molding techniques.

Molding Machines

The molding machine should have all materials in contact with the molten resin made of a heat- and corrosion-resistant alloy. The equipment should have an exhaust duct installed right above the die where molten resin comes out to remove any toxic fumes or gaseous products resulting from thermal decomposition.

Coating Powders

Product No.	Color	Bulk Density	Description	Processing Methods
EC-6500	White	650	0.3-1.0mm thickness	Electro-static spray coating
EC-6510	White	650	0.3-2.0mm thickness	Electro-static spray coating
EC-6520	White	550	0.1-0.3mm thickness	Electro-static spray coating
EC-6820	White	700	0.5-5.0mm thickness	Roto lining
<Liquid Primers>				
EPW-1609BK	Black		10-60μm thickness	Air spray coating
EPW-1605GN	Green		10-60μm thickness	Air spray coating
EPW-1606BL	Blue		10-60μm thickness	Air spray coating

Daikin Neoflon® ETFE Properties

Thermal Properties:
Daikin ETFE offers good heat resistance and is rated for a maximum service temperature of 150°C (302°F).

Chemical Properties:
Daikin ETFE provides excellent chemical and permeation resistance including exposure to weathering and UV radiation.

Electrical Properties:
A low dielectric constant and dissipation factor exist along with high dielectric strength over a wide range of frequencies and temperatures.

Low Friction:
Daikin ETFE offers low critical surface energy in addition to excellent water and oil repellency for non-stick and mold release applications.

High Transparency:
Products prepared from Daikin ETFE are transparent with good transmittance of both ultraviolet and visible wavelengths; low refractive index and characterized by very low light reflection.

Quality/Regulatory:
Daikin America's manufacturing facility is registered to IS0-9001 (Quality System), IS0-14001 (Environmental System) and Responsible Care 14001 (Safety, Health, Environment and Security).

Safety:

When ETFE resins are heated to temperatures above 200°C-260°C, some decomposition products may be given off. These decomposition products may be harmful, and inhalation of these fumes must be avoided. Ovens, process equipment and working area must be adequately ventilated. For further information, please refer to the material safety data sheet for these products and the *Guide to the Safe Handling of Fluoropolymer Resins* published by SPI Inc., The Society of Plastics Industry, Inc., 1801 K Street, NW, Suite 600K, Washington, DC, 20006-1301 (202-972-5200).

Medical Use:
These products are not specifically designed or manufactured for use in implantable medical and/or dental devices. They have not been tested for such applications and will only be sold for such use pursuant to contract containing specific terms and conditions required by us.