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2) Please refer to the SDS (Safety Data Sheet) for safety and details.

3) This product is not designed for use in the implantation of the human body or for medical applications that come in contact with body fluid or body tissues, AGC Inc. carries out no test as to the fitness of the product for any medical applications.

4) The contents are subject to change without prior notice.

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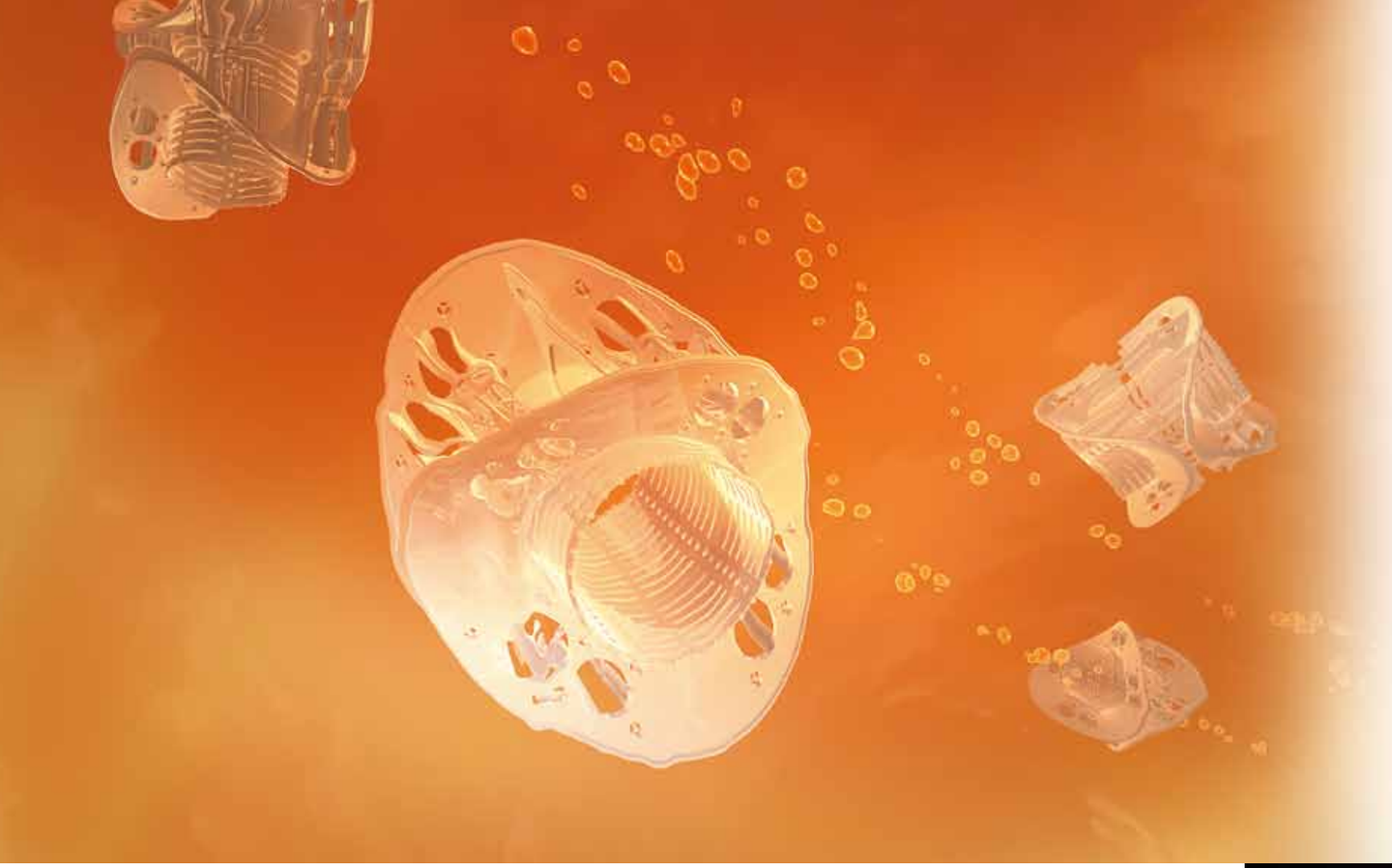
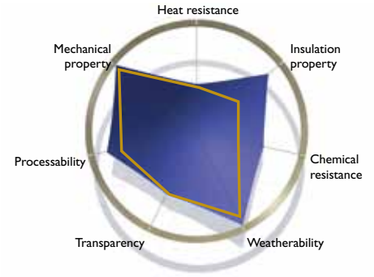
AGC
Your Dreams, Our Challenge

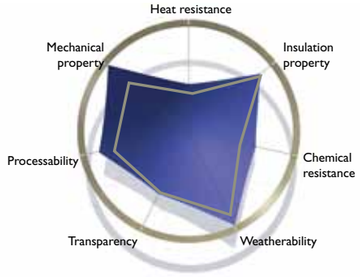
Fluon® ETFE

ETHYLENE-TETRAFLUOROETHYLENE COPOLYMER





〈■ETFE and ■PVdF in Comparison〉



〈■ETFE and ■ECTFE in Comparison〉

Fluon® ETFE can be flexibly adopted to various changing needs from simple and high-quality parts to complicated and high-performance products.

Fluon® ETFE is a thermoplastic fluoropolymer developed by AGC.

It is a copolymer comprised of tetrafluoroethylene (C_2F_4) and ethylene (C_2H_4).

It has excellent mechanical property and processability, and can be molded in various methods such as extrusion molding, injection molding, blow molding, coating and lining, etc.

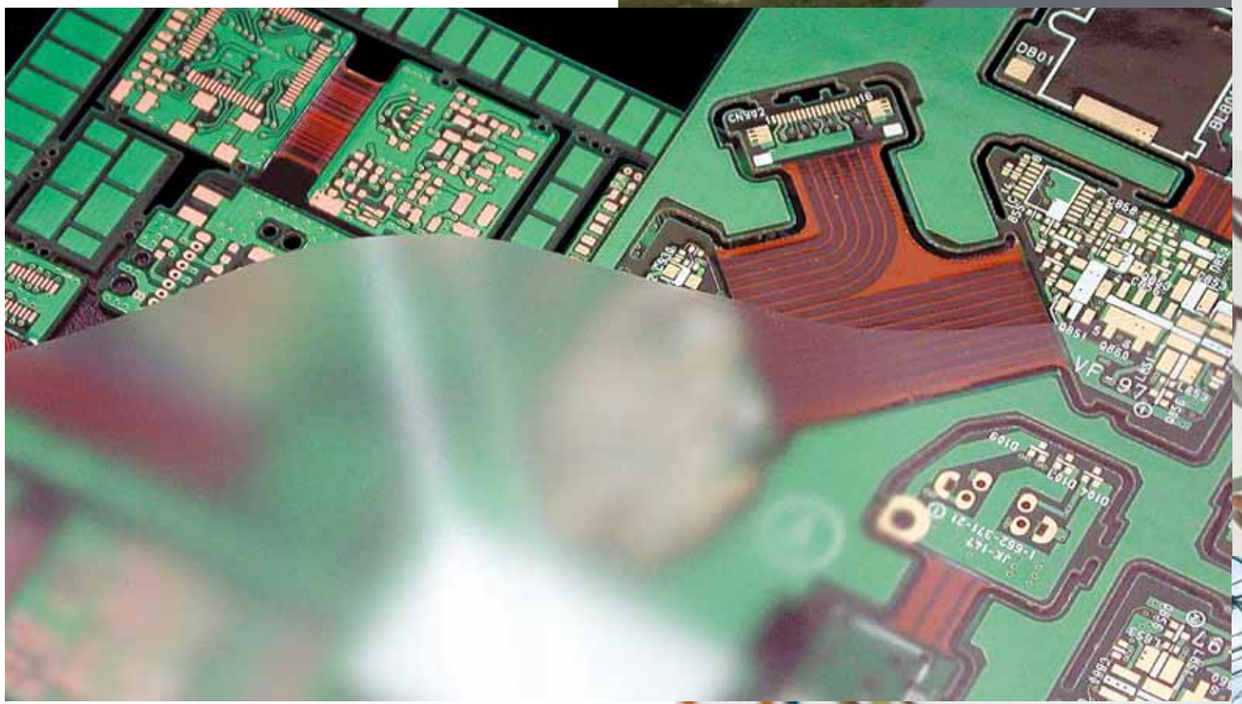
Moreover, with its excellent chemical resistance, electrical property and usability, it provides high performances and versatility in various fields.

Recommended for flexible, high- performance designs

Fluon® ETFE is a fluoropolymer with excellent processability.

Fluon® ETFE supports in technological innovation and improves the quality of production.

Fluon® ETFE is used for various fields including various injection parts, electric wires coating, tubes and hoses, film for membrane structure, mold releasing film, and anticorrosion linings and coatings, etc.



Excellent processability

Fluon® ETFE has excellent processability. Various molding methods are available as general thermoplastic resins. Film processing and various secondary processing are also available.

High performance within a wide range of temperatures

It is usable over a wide temperature range from -200 to +150°C, while maintaining stable mechanical and electrical properties. Continuous usage at +150°C is also possible.

Excellent chemical resistance and electrical properties

It has excellent resistance to almost all chemical agents and solvents. It has excellent electric insulation property, and exhibits higher dielectric strength even in the form of a thin film. It has a lower dielectric constant and dielectric loss tangent over a wide frequency range.

Nonflammable and safety

Nonflammable material conforming to UL standards 94V-O. Tasteless, odorless, and nonpoisonous. Recommended for the food industry. Moreover, Fluon® ETFE is US FDA compliance, and registered in the inventory of Food Contact Substances at #481.

Excellent weatherability

Resistant to ultraviolet light, and can be used outdoors over a long period.

Low surface energy

It possesses lower frictionality, anti-stick, and excellent water and oil repellency.

Properties

	Item	Test Method	Unit	Fluon®ETFE C-88AXP
Physical Properties	MFR	ASTM-D3159 (297℃× 49N)	g/10min	9.9 ～ 12.9
	Specific gravity	ASTM-D792		1.74
	Melting point	DSC	℃	260
	Glass transition temperature		℃	80
	Linear thermal expansion coefficient	ASTM-D696	10^{-5}/K	11 ～ 14
	Heat distortion temperature (18N)	ASTM-D7207	℃	63
	10% weight loss temperature	TGA	℃	390
	Specific heat		kJ/(kg・K)	1.2
	Thermal conductivity	ASTM-C177	W/(m・K)	0.17
	Flammability	UL94V		V-0
	Poisson's ratio			0.43
Mechanical Properties	Tensile strength at break	ASTM-D638	MPa	48
	Tensile elongation at break	ASTM-D638	%	415
	Flexural strength	ASTM-D790	MPa	25
	Flexural modulus	ASTM-D790	MPa	890
	Compression modulus	ASTM-D695	MPa	720
	Durometer hardness	D method		67
	Stress crack resistance	Mandrel Wrap method	Numbers of cracks/tests	0/3 (OK)
Electrical Properties	Dielectric constant	ASTM-D150 10^3Hz		2.5
		10^6Hz		2.5
	Dielectric loss tangen	ASTM-D150 10^3Hz		0.0007
		10^6Hz		0.0080

Comparison to other polymers on chemical properties

	Fluon®ETFE	PVdF	ECTFE
Acid	◎	○	◎
Base	◎	△ Solving in alkalis and amines	○ Appearance of crack
Organic Solvents	◎	△ Solving in polar solvents	△ Appearance of swell
Gas Barrier Property	○	◎	○

Grades (Pellet)

Grade	Melt Flow Rate*	Characteristics	Molding Method
C-55AP	4.5 ～ 6.7	Standard	Extrusion
C-88AP	9.9 ～ 12.9	Standard	Extrusion, injection moulding
C-55AXP	4.5 ～ 6.7	Stress crack resistant	Extrusion
C-88AXP	9.9 ～ 12.9	Stress crack resistant	Extrusion, injection moulding
C-88AXMP	30.0 ～ 47.4	High flow	Extrusion, injection moulding
CF-5020X	5 ～ 10	Low shrinkage、Carbon fiber 20%	Injection moulding
CB-8015X	1 ～ 3.5	Conductivity、Carbon fiber 15%	Extrusion molding

＊Melt flow rate in accordance with ASTM D 3159 (297°C, 49N)

Grades (Powder)

Grade	Mean particle size	Coating Thickness	Coating Method	Characteristics and Usage
Z-8820X	10～40μm	50～100μm	Electrostatic powder coating	Non-stick coating for cookware
Z-885C	40～80μm	50～100μm	Electrostatic powder coating	Non-stick coating
		50～400μm	Fluid dip coating	Corrosion protection
TL-081	80～120μm	～500μm	Electrostatic powder coating	Corrosion protection for chemical equipment
		～1000μm	Rotolining	
ZL-522F	100～140μm	2000μm～5000μm	Rotolining	Corrosion protection for chemical equipment
TL-581	230～310μm	2000μm～5000μm	Rotolining	Corrosion protection for chemical equipment
ZL-520N	40～80μm	～500μm	Electrostatic powder coating	Corrosion protection contains 20% carbon
		～1000μm	Rotolining	
ZL-521N	40～80μm	50～150μm	Electrostatic powder coating	For top coating on ZL−520, contains 5% carbon fiber
		50～400μm	Rotolining	
CP-801XGN	80～120μm	50～500μm	Electrostatic powder coating	Green color,protection for chemical equipment

Fluoropolymer as Environmental-symbiotic Technology

Nowadays, environmental protection is regarded as the highest priority theme in every industrial field. Fluoropolymer and fluoroelastomer have been applied into environmental friendly products and process techniques. The properties of fluoropolymer and fluoroelastomer such as weatherability, nonflammability and chemical resistance, give longer life to various products and save resources and reduce industrial wastes. For examples, Fluon® ETFE is used for fuel hose of automobile to reduce its fuel permeation, and F-CLEAN® ETFE film is used as film for agricultural house because of its long life. AGC helps your continuous effort for environment protection, through our development, improvement, and enhanced applications of these products. Simultaneously, AGC as a manufacturer of fluorine chemicals establishes recycling process technique and anti-pollution process technique in actual production sites, to continuously effort to reduce the environmental load by the fluorine products themselves. AGC believes that the technology of fluoropolymer with advantageous possibilities contributes to solve environmental problems and plays an important role in realizing a safe and comfortable society of environment-symbiotic type.