



**Fluon<sup>®</sup> ETFE**  
ETHYLENE-TETRAFLUOROETHYLENE COPOLYMER

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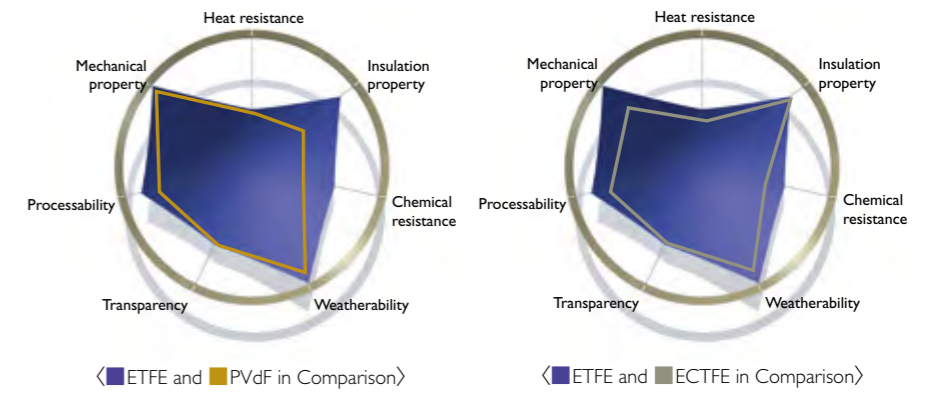
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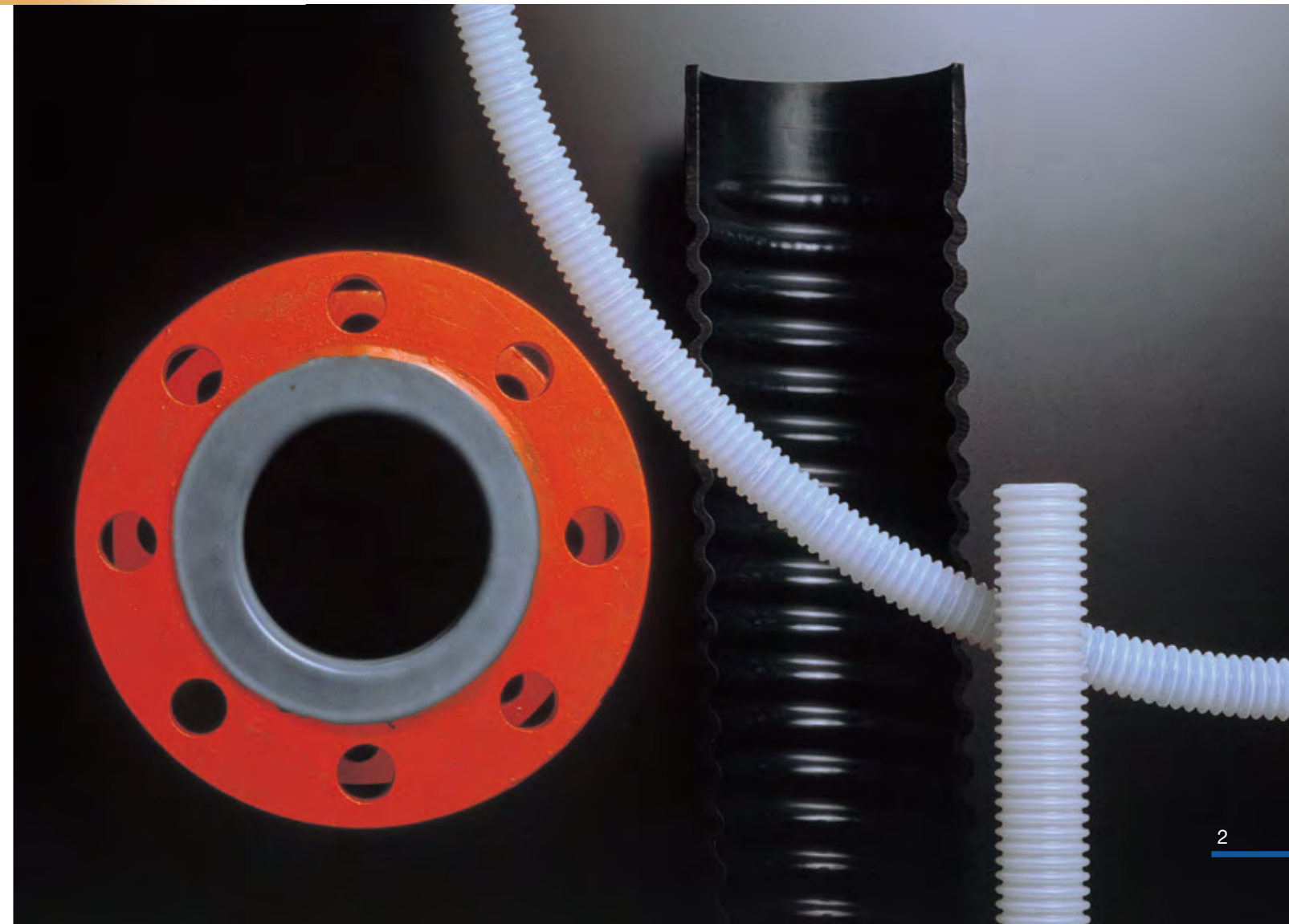
Fluon® ETFE can be flexibly adopted to various changing needs from simple and high-quality parts to complicated and high-performance products.

Fluon® ETFE is a thermoplastic fluoropolymer developed by Asahi Glass Co, Ltd.. It is a copolymer comprised of tetrafluoroethylene (C<sub>2</sub>F<sub>4</sub>) and ethylene (C<sub>2</sub>H<sub>4</sub>).

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

				Fluon®ETFE
				C-88AXP
	Item	Test Method	Unit	
Physical properties	MFR	ASTM-D3159 (297°C × 49N)	g/10min	9.9 ~ 12.9
	Specific gravity	ASTM-D792		1.74
	Melting point	DSC	°C	260
	Glass transition temperature		°C	80
	Linear thermal expansion coefficient	ASTM-D696	10 <sup>-5</sup> /k	11 ~ 14
	Heat distortion temperature (181N)	ASTM-D7207	°C	63
	10% weight loss temperature	TGA	°C	390
	Specific heat		kJ/(kg · K)	1.2
	Thermal conductivity	ASTM-D177	W/(m · K)	0.17
	Gas permeability (oxygen)	ASTM-D1434	10 <sup>-16</sup> mol · m/m <sup>2</sup> · s · Pa	3.1
	Gas permeability (nitrogen)	ASTM-D1434	10 <sup>-16</sup> mol · m/m <sup>2</sup> · s · Pa	1.0
	Flammability	UL94V		V-0
	Poisson's ratio			0.43
	Mechanical properties	Tensile strength at break	ASTM-D638	MPa
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 <sup>3</sup> Hz	2.5
			10 <sup>4</sup> Hz	2.5
	Dielectric loss tangen	ASTM-D150	10 <sup>3</sup> Hz	0.0007
			10 <sup>4</sup> Hz	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

	Grade	MFR(g/10min)	Composition	Molding Method/Purpose
Pellet	C-55AP	4.5 ~ 6.7	Natural	General injection, extrusion molding
	C-88AP	9.9 ~ 12.9		
	C-55AXP	4.5 ~ 6.7	Natural	General injection, extrusion molding, blow Molding (improved stress crack resistance grade)
	C-88AXP	9.9 ~ 12.9		
	C-88AXMP	30 ~ 47		
	CB-8015X	1 ~ 3.5		
Powder	CF-5020-X	5 ~ 10	Carbon fiber 20%	Injection molding
	Z-8820X	7 ~ 14	Natural	Electrostatic powder coating (30-50 μm thick)
	Z-885C	7 ~ 14	Natural	Electrostatic powder coating (50-150 μm thick)
	ZL-520N	5 ~ 11	Carbon fiber 20%	Fluid dip coating (50-400 μm thick)
				Electrostatic powder coating (to 1000 μm thick, re-coating)
	ZL-521N	3 ~ 7	Carbon fiber 5%	ZL-520N overcoating
	ZL-522F	1 ~ 14	Natural	Rotomolding
TL-581	20 ~ 30	Natural	Rotomolding (2-5 mm thick)	

## Fluoropolymer as Environment-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.