

Fluon[®] LM-ETFE LH Series LH-8000 (Semi-commercial Product)

Introduction

Fluon[®] LH-8000 is a new addition to the LM-ETFE AH Series. This ETFE (tetrafluoroethylene-ethylene copolymer) has a functional group polymerized directly in to the chain backbone, allowing it to adhere to other materials. This resin is ideal for producing multi-layer structures in a one-step process without the need for surface treatment or a separate adhesive layer*. LH-8000 offers the lowest melting point of all the AH series resins, yet with the same desirable properties of other ETFEs, including non-stick, excellent processability, and superior chemical resistance.

*Use with certain polymers requires a tie layer. Contact your AGC representative for more information.

Features of LH-8000

- The lowest melting point in the LM-ETFE Adhesive materials (180°C vs. 240°C)
- Wide range of processing temperatures between the melting point of 180°C and the onset of degradation at 395 °C
- Excellent adhesion to other materials, such as polyamides, polyethylenes, or metals
- Corrosive off-gas levels at melt processing are very low
- Equivalent mechanical, chemical resistance, electrical, and non-stick properties to conventional ETFE resins
- High transparency, low mold shrinkage

Potential Applications of LH-8000

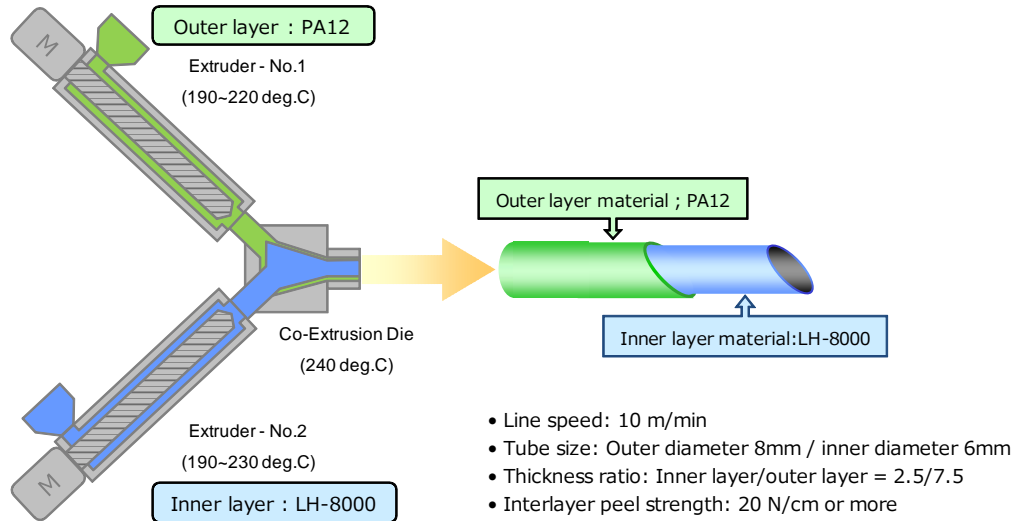
- Chemical tubing
- Sealing layer for LIB aluminum laminates
- Film for steel plate laminates
- Rope lighting
- Multi-layer monofilament
- Air hose
- Chemical bags
- Rubber hose mandrels
- Hot water hose
- Multilayer chemical storage containers
- Interlayer insulation film for electronic substrates

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Example of Processing Conditions with LH-8000 (1)

An example of the processing conditions for a co-extrusion two-layer tube of PA12 / LH-8000 is shown below.

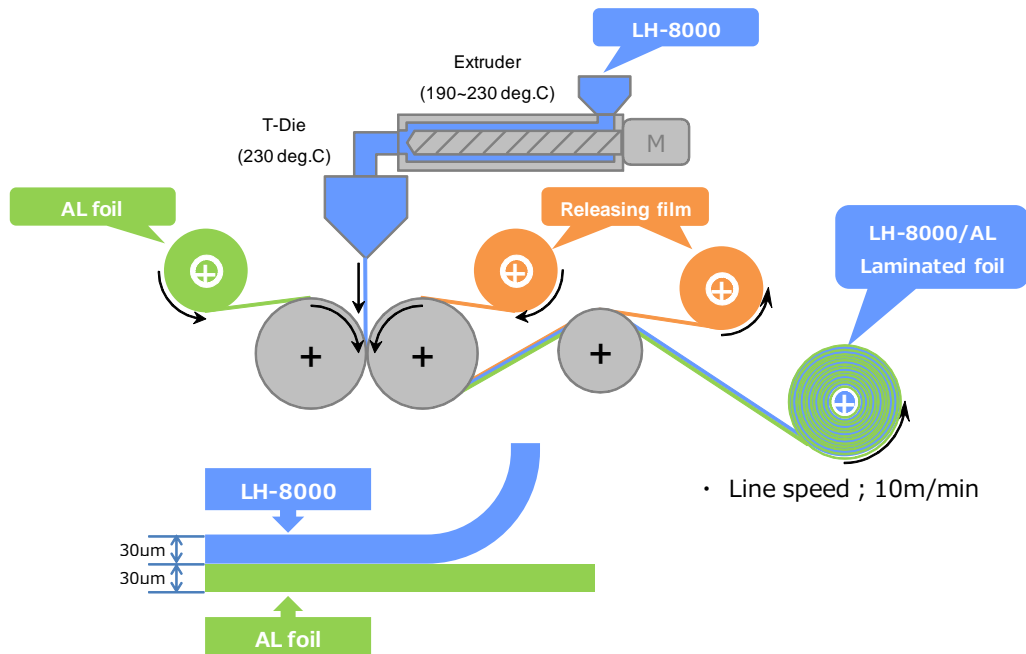
Composition	Extruder temperature						Co-extrusion die temperature		
	C1	C2	C3	C4	Hd	Ad	D1	D2	D3
Outer Layer PA12	190°C	200°C	210°C	220°C	220°C	220°C	240°C	240°C	240°C
Inner Layer LH-8000	190°C	200°C	210°C	220°C	230°C	230°C			



Example of Molding Conditions with LH-8000 (2)

An example of the processing conditions for LH-8000/Al laminated foil is shown below.

Composition	Extruder temperature						Roll temperature
	C1	C2	C3	C4	H	D	Nip roll temperature
LH-8000	190°C	200°C	210°C	220°C	230°C	230°C	200°C



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Basic Properties of LH-8000

Item	Unit	Test method	LH-8000 (R&D Sample)	AH-2000	LM-730AP (non-adhesive grade)
MFR	g/10 minutes	ASTM D1238 (230°C, 21.2N)	4	-	-
		ASTM D3159 (297°C, 49 N)	-	25	25
Melting point	°C	DSC	180	240	225
Specific gravity		ASTM D792	1.75	1.78	1.78
Hardness		Shore D	65	65	65
Tensile strength at break	MPa	ASTM D638	48	49	40
Tensile elongation at break	%	ASTM D638	460	420	400
Flexural modulus	MPa	ASTM D790	970	790	716
Izod impact strength (23°C, notched)	J/m	ASTM D256	Non Break	Non Break	Non Break
Dielectric constant (1 MHz)		ASTM D150	2.5	2.6	2.4
Dissipation factor (1 MHz)		ASTM D150	9.30E-03	8.40E-03	8.20E-03
Volume resistivity	Ω-cm	ASTM D257	>10 ¹⁷	>10 ¹⁷	10 ¹⁵
Specific heat	kJ/(kg•K)		1.2	1.2	1.2
MIT folding endurance	cycles	ASTM D2176	1.0 × 10 ⁵	1.0 × 10 ⁵	1.5 × 10 ⁵

Handling Precautions

All Fluon ETFE grades should be stored in clean and dry conditions. No special pre-heating or conditioning is required. As with most fluoropolymers, care is needed when heating ETFE pellets and local exhaust ventilation is required. Please refer to our Safety data sheets (SDS) for guidance.

Technical information

The information and data stated in this material (and any information and data provided to customers) are based on actual data obtained from reliable sources and should not be considered as guaranteed values for matters not stated in this material. We hereby disclaim any warranties, whether express or implied, regarding this material. The user is responsible for complying with all relevant laws and regulations irrespective of whether stated in this material or not. The provision of this material does not grant a license to any patents, trademarks, or licenses for those products, or any licenses to other intellectual properties

Handling precautions

The Fluon® products are manufactured and sold for industrial applications. The purchasers are responsible for confirming whether the product quality is appropriate for their applications. The product is not designed for special application such as pharmaceutical or medical use. Not all grades are appropriate for end products or materials for substances that come in contact with food. For the latest information, contact our representatives. Carefully examine how to handle the products stated in this material with reference to our Safety Data Sheet (SDS).

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More Information and Samples

For details and samples, please contact **AGC Chemicals Americas, Inc.**

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