

Ajedium™ Films -- Halar® ECTFE ethylene chlorotrifluoroethylene copolymer

Halar® ECTFE is a semi-crystalline fluoropolymer with a chemical structure of a 1:1 alternating copolymer of ethylene and chlorotrifluoroethylene.

Halar® film is a strong, hard, tough, abrasion resistant film that retains its useful properties over a broad range of temperatures. Its low temperature properties, especially those related to impact, are particularly outstanding.

Halar® films have demonstrated excellent weathering properties and are extremely resistant to UV radiation and common industrial and environmental pollutants. The film also is an excellent barrier to water vapor at a wide range of temperatures. This lower permeability is a key advantage in applications where protection from water, oxygen, or other small gas molecules is required.

General

Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Features	• Low Viscosity	
Uses	• Aerospace Applications • Electrical/Electronic Applications	• Industrial Applications • Outdoor Applications
Appearance	• Clear/Transparent	

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.68		ASTM D792
Water Absorption (Equilibrium)	< 0.10	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Coefficient of Friction			ASTM D1894
vs. Itself - Dynamic	0.20		
vs. Itself - Static	0.20		
Taber Abrasion Resistance			
1000 Cycles, 500 g, CS-17 Wheel	5.00	mg	
Tear Resistance - MD	5.72		ASTM D1004

Films	Typical Value	Unit	Test method
Film Thickness - Tested			
--	50	µm	
-- 1	50	µm	
-- 2	130	µm	
Secant Modulus			ASTM D882
MD	1550	MPa	
TD	1500	MPa	



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Films	Typical Value	Unit	Test method
Tensile Strength			ASTM D882
MD : Yield	34.5	MPa	
MD : Break	53.0	MPa	
TD : Break	50.0	MPa	
Tensile Elongation			ASTM D882
MD : Yield	6.0	%	
MD : Break	280	%	
TD : Break	280	%	
Dart Drop Impact	610	g	ASTM D1709B
Water Vapor Transmission Rate	1.6	g·mm/m ² /at m/24 hr	ASTM F1249
Free Shrinkage (200°C)	4.4	%	ASTM D2732
Area Factor	115	ft ² /lb/mil	
Tear Propagation Resistance - MD	> 6400	gf	ASTM D1922
Thermal	Typical Value	Unit	Test method
Brittleness Temperature	< -76.0	°C	ASTM D746A
Glass Transition Temperature	85.0	°C	DMA
Melting Temperature	242	°C	ASTM D3418
Peak Crystallization Temperature (DSC)	222	°C	ASTM D3418
CLTE - Flow	1.0E-4	cm/cm/°C	ASTM D696
Specific Heat (23°C)	962	J/kg/°C	ASTM D3418
Thermal Conductivity (40°C)	0.15	W/m/K	ASTM C177
Electrical	Typical Value	Unit	Test method
Surface Resistivity	7.4E+16	ohms	ASTM D257
Volume Resistivity ³ (23°C)	5.5E+16	ohms·cm	ASTM D257
Dielectric Strength (23°C, 3.20 mm)	14	kV/mm	ASTM D149
Dielectric Constant (23°C, 1 MHz)	2.57		ASTM D150
Dissipation Factor			ASTM D150
1 kHz	4.1E-3		
1 MHz	0.013		
Flammability	Typical Value	Unit	Test method
Flame Rating	V-0		UL 94
Oxygen Index	52	%	ASTM D2863
Optical	Typical Value	Unit	Test method
Light Transmittance	96.6	%	ASTM D1003
Haze	32.4	%	ASTM D1003



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Additional Information

Standard Thicknesses and Widths

- Widths are available from 22" (559 mm) to 56" (1422 mm).
- Products with widths <22 inches or >56 inches are available upon request.
- Tolerances for widths are +/- 4mm.
- For Halar® film, the standard thicknesses are 8 microns (0.3 mil) to 1016 microns (40 mil).

Surface Finishes

- Standard surface finish is P/M (polished / matte).
- Custom finishes of P/P (polished / polished) and M/M (matte / matte) are available.

Packaging

- Film is supplied in a roll form of high quality, cardboard core of 3" (76mm) or 6" (152mm).
- PVC cores are available upon request in 3" and 6" sizes.

Labeling

- Products are labeled to comply with national and international standards.
 - Labels include product grade, unique batch number, roll length, roll width, product thickness, and net weight.
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Notes

Typical properties: these are not to be construed as specifications.

¹ Impact properties

² Tear properties

³ 50% RH

