

ETFE Detailed Properties (Ethylene Tetrafluoroethylene)

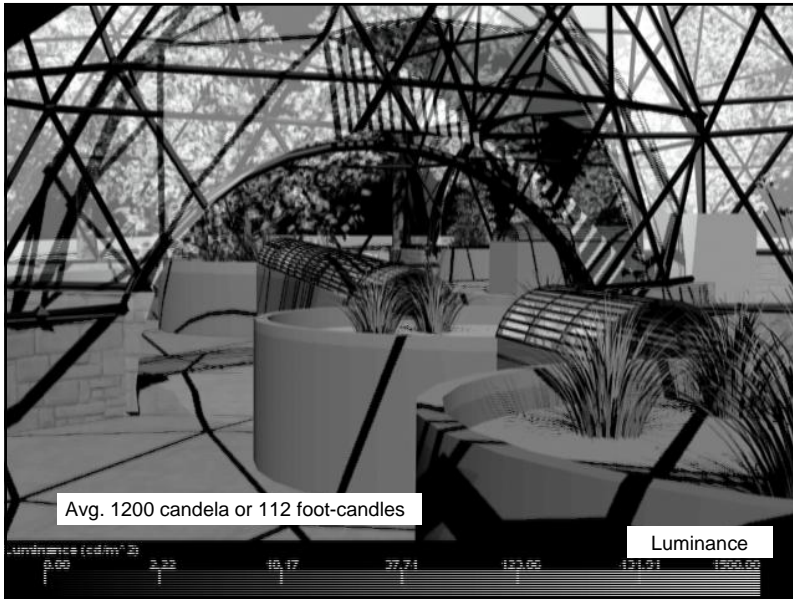
Properties	ASTM or Hall	ETFE
MECHANICAL PROPERTIES		
Specific Gravity	0.92	1.34
Elongation %	649	430-480
MECHANICAL PROPERTIES (continued)		
Modulus (Young's Modulus) (psi)	0.636	95,000
Modulus (Young's Modulus) (ksi)	0.090	13,600
Flexural Modulus (10 ³ psi)	0.390	58,000
Flexural Modulus (10 ³ MPa)	0.270	39.0
Tensile Strength (10 ³ psi)	0.2176	31,500
Tensile Strength (10 ³ MPa)	0.155	22,200
Hardness Durometer Shore D	0.036	0.075
Hardness Durometer Shore A	0.036	0.075
Coefficient of Friction on steel	0.26	0.26
Abrasion Resistance 1000 cycles	Taber	n.a.
Impact Strength (10 ³ ft-lb/in)	0.056	no break
THERMAL PROPERTIES		
Melting Point (°F)	302	302
Melting Point (°C)	150	150
Upper Service Temperature (20/50%) (°F)	200	200
Upper Service Temperature (20/50%) (°C)	93	93
Thermal Conductivity (BTU-in/deg-F-in)	1.86	0.7
Thermal Conductivity (W/m-K)	0.26	0.12
Linear Coefficient of Thermal Expansion (50-100 °C)	0.00018	0.00018
Heat of Fusion (BTU/lb)	100	100
Heat of Fusion (kJ/kg)	23	23
Heat of Combustion (BTU/lb)	14,000	14,000
Heat of Combustion (kJ/kg)	3,200	3,200
Low Temperature Embrittlement (°F)	1,180	1,180
ELECTRICAL PROPERTIES		
Dielectric Constant (10 ¹⁰ /Psi)	2.6	2.6
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Dielectric Strength (10 mil film)	1,000	1,000
Volume Resistivity (ohm-cm)	10 ¹⁴	10 ¹⁴
Surface Resistivity (ohm-cm)	10 ¹²	10 ¹²
GENERAL PROPERTIES		
Chemical Resistance	5543	Excellent
Water Absorption, 24h (%)	0.003	0.003
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Deformation Under Load (100/100°C)	2.3	2.3
Refractive Index	1.40	1.40
Limiting Oxygen Index	26	26
Properties	ASTM or Hall	ETFE

ETFE Pillows

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No of foils	U Value	R-VALUE
2	2.94 Wm ⁻² K	3.2
		COMPARED TO GLASS 2.0
4	1.47 Wm ⁻² K	
5	1.18 Wm ⁻² K	

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Carbon Neutrality

System	Material	Production	Transport	Lifetime
Structural	Concrete	High	Medium	Medium
Structural	Hollow Steel Tubing	High	High	Medium
Cladding	ETFE Pillows	High	High	Low
Exterior Finish	Stone Veneer	Medium	Low	Low
Living Machine	2350g Fiberglass Tank	High	High	Medium
Living Machine	PVC Piping	High	Low	Medium
Fish Tank	1/2" Rubber Liner	High	High	Medium
Fish Tank	Biofuel Filter	High	High	Low
Living Machine	Steel Biofuel Chamber	High	High	Low
Structural	Steel Cased Door Units	High	High	Medium
Natural Light	ETFE Pillows	High	High	Low
Passive Heating	ETFE/Concrete TM	High	Medium	Low
Passive Cooling	Plants/Cross Vent	Low	Low	Low
Living Machine	Waste	Low	Low	Low

