

Physical Property Comparison of Expanded Polyethylene (EPE) and Two Stage Chemical Crosslinked PE (XLPE)

Physical Properties	Test Method	Units	Expanded Polyethylene (EPE)							Crosslinked PE (XLPE)			
			1.3	1.5	1.9	2.3	2.8	4.2	4.6	2.0	3.0	4.0	6.0
Density (Grade)	ASTM-D3575	pcf	1.3	1.5	1.9	2.3	2.8	4.2	4.6	2.0	3.0	4.0	6.0
Density	ASTM-D3575	g/l	20	24	30	37	45	67	74	32	48	64	96
Compressive Strength @ 10%	ASTM-D3575	psi	6	8	10	13	17	29	35	n/a	n/a	n/a	n/a
Compressive Strength @ 25%		psi	9	10	13	17	21	36	43	9	12	14	33
Compressive Strength @ 50%		psi	17	18	22	28	33	56	70	17	21	25	46
Compressive Strength @ 75%		psi	43	48	56	64	75	113	130	n/a	n/a	n/a	n/a
Tensile Strength	ASTM-D3575	psi	40	45	52	62	70	98	120	40	70	85	125
Tensile Elongation	ASTM-D3575	%	38	35	32	31	30	22	22	225	240	250	250
Tear Strength	ASTM-D3575	lbs/in	14	16	17	19	21	28	34	10	15	18	32
Compressive Set @ 25%	ASTM-D3575	%	3	4	4	4	4	7	7	n/a	n/a	n/a	n/a
Compressive Set @ 50%	ASTM D3575	%	14	13	12	12	12	15	15	<20	<15	<12	<10
Buoyancy	ASTM-D3575	lbs/ft ³	61	60	60	59	59	58	57	n/a	n/a	n/a	n/a
Thermal Conductivity	ASTM-C177	(K) BTU-in/ft ² -hr-°F	0.26	0.24	0.24	0.24	0.24	0.28	0.30	n/a	n/a	n/a	n/a
Thermal Resistance	ASTM-C177	(R) @70°F	4.0	4.2	4.2	4.2	4.1	3.6	3.3	n/a	n/a	n/a	n/a
Coeff. of Lin. Thermal Expansion (CLTE)	ASTM-D696	in/in/°F x 10 ⁻⁵	8.2	7.2	6.2	5.5	4.8	4.2	4.0	n/a	n/a	n/a	n/a
Service Temperature	ASTM-D3575	°F (Min.) °F (Max.)	-40 176	-40 176	-40 176	-40 176	-40 176	-40 176	-40 176	-40 200	-40 200	-40 200	-40 200
Water Absorption (7 Day)	ASTM-D1667	% (vol) / lb/ft ²	<5.0 / <0.01	<5.0 / <0.01	<5.0 / <0.01	<5.0 / <0.01	<5.0 / <0.01	<5.0 / <0.01	<5.0 / <0.01	0.001	0.001	0.001	0.001
Compressive Creep	ASTM-D3575	1000hr, % (psi)	2.8 (1)	3.0 (1)	3.3 (1)	3.5 (1.5)	3.0 (1.5)	5.5 (10)	4.0 (10)	n/a	n/a	n/a	n/a
Flammability	FMVSS-302	Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Chemical Resistance	Various	1 hr exposure (solvents, acids, and alkalines)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	n/a	n/a	n/a	n/a
Fuel Immersion Coast Guard/SOLAS	Fuel B per 33 CFR §183.114	<5% (chg in vol)	Complies	Complies	Complies	Complies	Complies	Complies	Complies	n/a	n/a	n/a	n/a
Melt Reprocessable Recyclability	n/a	n/a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No