


R-Shield® expanded polystyrene is an industrial grade closed cell, moisture resistant rigid foam used for all types of industrial, packaging, and construction applications. R-Shield conforms to ASTM C578, “Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation”.

R-Shield is manufactured under an industry leading quality control program monitored by UL and further recognized in UL Evaluation Report UL ER40361-01 and ICC ESR-4743.




PRODUCT									
			50	100	130	150	250	400	600
Compressive Resistance ¹ ASTM D1621	@1%	psi (kPa)	2.2 (15)	3.6 (25)	5.8 (40)	7.3 (50)	10.9 (75)	15.0 (103)	18.6 (128)
	@5%	psi (kPa)	4.0 (28)	8.0 (55)	11.7 (81)	13.5 (93)	22.5 (155)	35.0 (241)	43.5 (300)
	@10%	psi (kPa)	5.0 (35)	10.0 (69)	13.0 (90)	15.0 (104)	25.0 (173)	40.0 (276)	60.0 (414)
R-value ² , Thermal Resistance per inch ASTM C518	25°F	°F·ft ² ·h/Btu (°K·m ² /W)	3.6 (0.63)	4.4 (0.77)	4.5 (0.80)	4.8 (0.84)	5.0 (0.88)	5.0 (0.88)	5.1 (0.90)
	40°F	°F·ft ² ·h/Btu (°K·m ² /W)	3.4 (0.60)	4.2 (0.73)	4.3 (0.75)	4.6 (0.80)	4.8 (0.84)	4.8 (0.84)	4.9 (0.86)
	75°F	°F·ft ² ·h/Btu (°K·m ² /W)	3.2 (0.56)	3.9 (0.68)	3.9 (0.69)	4.2 (0.73)	4.4 (0.77)	4.4 (0.77)	4.5 (0.78)
k-value, Thermal Conductivity ASTM C518	25°F	Btu·in/°F·ft ² ·h (W/°K·m)	0.28 (0.040)	0.23 (0.033)	0.22 (0.032)	0.21 (0.030)	0.20 (0.029)	0.20 (0.029)	0.20 (0.028)
	40°F	Btu·in/°F·ft ² ·h (W/°K·m)	0.29 (0.042)	0.24 (0.035)	0.24 (0.034)	0.22 (0.032)	0.21 (0.030)	0.21 (0.030)	0.21 (0.030)
	75°F	Btu·in/°F·ft ² ·h (W/°K·m)	0.31 (0.045)	0.26 (0.037)	0.26 (0.037)	0.24 (0.035)	0.23 (0.033)	0.23 (0.033)	0.22 (0.032)
Density, Nominal ASTM C303		lb/ft ³ (kg/m ³)	0.75 (12)	1.0 (16)	1.25 (20)	1.5 (24)	2.0 (32)	2.5 (40)	3.0 (48)

¹ Value obtained from short duration testing. Appropriate factor of safety required when designing for sustained loads.

² Please refer to ASTM C578 specification for complete information.

Additional Properties on Next Page

PRODUCT								
		50	100	130	150	250	400	600
Elastic Modulus ASTM D1621	psi (kPa)	220 (1500)	360 (2500)	580 (4000)	730 (5000)	1090 (7500)	1500 (10300)	1860 (12800)
Tensile Strength ASTM D1263	psi (kPa)	10 (69)	20 (138)	25 (173)	30 (208)	40 (276)	50 (345)	60 (414)
Flexural Strength ¹ ASTM C203	psi (kPa)	10 (69)	25 (173)	30 (208)	35 (242)	50 (345)	60 (414)	75 (517)
Shear Strength ASTM C273	psi (kPa)	7 (48)	12 (83)	15.5 (107)	18 (124)	24 (166)	30 (208)	35 (242)
Maximum Long-Term Exposure Temperature	F° (C°)	165 (74)	165 (74)	165 (74)	165 (74)	165 (74)	165 (74)	165 (74)
Coefficient of Thermal Expansion	x10 ⁻⁶ /°F (x10 ⁻⁶ /°C)	35 (63)	35 (63)	35 (63)	35 (63)	35 (63)	35 (63)	35 (63)
ASTM C578 Compliance, Type		XI	I	VIII	II	IX	XIV	XV

¹Please refer to ASTM C578 specification for complete information.

Thermal Performance.

The R-value of R-Shield insulation remains constant and does not suffer from R-value loss over time.

Exposure to Water and Water Vapor.

The mechanical properties of expanded polystyrene are unaffected by moisture.

Temperature Exposure/Flame Retardants.

Although flame retardants used in the manufacture of expanded polystyrene provide an important margin of safety, all expanded polystyrene products must be considered combustible.

Weathering.

Long-term exposure to sunlight causes yellowing and a slight embrittlement of the surface due to ultraviolet light. This has little effect on mechanical properties.

Resistance to Mold and Mildew.

Expanded polystyrene will not decompose and will not support mold or mildew growth. Expanded polystyrene provides no nutrient value to plants or animals.

Adhesives, Coatings, and Chemicals.

Solvents which attack expanded polystyrene include esters, ketones, ethers, aromatic, and aliphatic hydrocarbons and their emulsions, among others.

Warranty.

Premier Building Systems offers a product warranty ensuring thermal performance.

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