

Typical Physical Properties

of Carpenter Expanded Polystyrene

Carpenter expanded polystyrene is a rigid, foamed plastic with resilient closed cells in a range of densities, sizes and profiles to meet your application and specifications. The Carpenter EPS production systems have been crafted by the industry's leader in customer-critical timing technology and innovation. Carpenter customizes production and services to meet your customer's requirements and exceed their expectations, every day.

Advantages

- Low material and insulation costs
- Wide range of sizes and densities
- Easy to handle and apply
- Consistently well-fused products
- Accurate cuts
- Simple to cut and shape with common tools
- Provides an excellent surface for laminate base
- Accurate piece counts
- Excellent bond with drywall and non-solvent type adhesives
- Clean and odorless
- Restricts moisture penetration

Characteristics

- No CFC's or HCFC's
- Low thermal conductivity
- Reflective white color
- Effective over wide temperature range
- High strength-to-weight ratio
- Will not twist or warp under normal use
- Unaffected by vibration
- Minimal dusting
- Resistant to most acids and alkalis
- Does not support bacterial growth

Code Compliance

Carpenter's EPS can be manufactured to meet ASTM specifications C578-95; Types XI, I, VIII, II or IX. When ordering material please be specific as to which ASTM type product is necessary.

Certain systems are **Factory Mutual Approved** and are eligible to be **UL Classified**. Carpenter's EPS complies with the flammability requirements of **BOCA, ICBO and SBCCI** building codes. **RADCO** 3rd party certification on required products. **Dade County Compliance Approval**. Please contact your Carpenter representative for details.

CSI Division 7 is applicable to EPS construction products.



Typical Physical Properties of Carpenter EPS Insulation

Specification reference: ASTM C578			Type XI	Type I	Type VIII	Type II	Type IX	
Property	Units	ASTM Test						
Density, Minimum	pcf	D1622	.70	.90	1.15	1.35	1.80	
Density Range	pcf		.70-.89	.90-1.14	1.15-1.34	1.35-1.79	1.80-2.20	
Thermal Conductivity (k Factor)	at 40°F at 75°F	BTU/hr. (sq.ft.) (F/in.)	C518	0.28 0.30	0.24 0.26	0.23 0.25	0.22 0.24	0.21 0.23
Thermal Resistance (R Value)*	at 40°F at 75°F	at 1" thickness	—	3.6 3.3	4.17 3.85	4.25 3.92	4.55 4.17	4.76 4.35
Strength Properties								
Compressive 10% Deformation	psi	D1621	5-9	10-14	13-18	15-21	25-33	
Flexural	psi	C203	10-18	25-30	32-38	40-50	55-75	
Tensile	psi	D1623	14-18	16-20	17-21	18-22	23-27	
Shear	psi	D732	11-13	18-22	23-25	26-32	33-37	
Shear Modulus	psi	—	190-230	280-320	370-410	460-500	600-640	
Modulus of Elasticity	psi	—	110-150	180-220	250-310	320-360	460-500	
Moisture Resistance								
WVT	perm. in	E96 (Proc.A)	1.9-3.9	1.2-3.0	1.1-2.8	0.9-2.5	0.6-1.5	
Absorption (vol.)	%	C272	<4.0	<3.5	<3.0	<3.0	<2.0	
Capillarity	—	—	none	none	none	none	none	
Coefficient of Thermal Expansion	in./in. (F)	D696	0.000035	0.000035	0.000035	0.000035	0.000035	
Maximum Service Temperature	°F							
Long-term		—	167	167	167	167	167	
Intermittent			180	180	180	180	180	
Oxygen Index	%	D2863	24	24	24	24	24	
Dimensional Stability	% Change	D2126 (Proc. C & E)	max. 2.0	max. 2.0	max. 2.0	max. 2.0	max. 2.0	

* 'R' means resistance to heat flow. The higher the R-value, the greater the insulating power.

Warranty and Remedy Information. Carpenter Co. ("Carpenter") warrants it will replace without charge any Carpenter product that is not merchantable because of defects in materials or workmanship. Notice of a claim under this warranty must be given promptly in writing, in no case later than 45 days after the defect becomes known to the purchaser. THIS EXPRESS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDY OF REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY ARISING FROM THE SALE OF CARPENTER'S PRODUCTS. IN NO CASE WILL CARPENTER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE, including, without limitation, damage to other property, loss of profits, loss of goodwill, or other economic loss, whether such incidental or consequential loss or damage is claimed on account of breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory. GOODS SOLD FOR RESALE ARE ALL SUBJECT TO THESE TERMS, AND ALL OFFERS ARE EXPRESSLY CONDITIONED UPON ACCEPTANCE OF THESE TERMS.

Warning! EPS foam is flammable. Modified EPS, like most plastic foams, is flammable. Do not expose EPS to open flames or other direct or indirect high temperature ignition sources such as burning operations, welding, burning cigarettes, space heaters or naked lights. When burning, EPS will consume oxygen, releasing great heat and smoke and potentially toxic gases such as carbon monoxide and carbon dioxide. Do not use, install or store EPS except in strict compliance with BOCA, ICBO or SBCCI codes, as well as any fire-related laws/ordinances. Failure to comply with these codes/laws may increase the risk of fire and result in personal injury or property damage from smoke, flames or water.



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