

# AVILITE CORPORATION

## Typical Physical Properties of EPS Insulation

Property	Units	ASTM Test	Density (pcf)				
			1.0	1.25	1.5	2.0	
Thermal Conductivity K Factor	at 25F	BTU/(hr.) (sq. ft.) (F/in.)	C177 or C518	0.23	0.22	0.21	0.20
	at 40F			0.24	0.235	0.22	0.21
	at 75F			0.26	0.255	0.24	0.23
Thermal Resistance Values (R)	at 25F	per inch thickness	—	4.35	4.54	4.76	5.00
	at 40F			4.17	4.25	4.55	4.76
	at 75F			3.85	3.92	4.17	4.35
<b>Strength Properties</b>							
Compressive 10% Deformation	psi	D1621	10-14	13-18	15-21	25-33	
Flexural	psi	C203	25-30	32-38	40-50	55-75	
Tensile	psi	D1623	16-20	17-21	18-22	23-27	
Shear	psi	D732	18-22	23-25	26-32	33-37	
Shear Modulus	psi	—	280-320	370-410	460-500	600-640	
Modulus of Elasticity	psi	—	180-220	250-310	320-360	460-500	
<b>Moisture Resistance</b>							
WVT	perm. in.	C355	1.2-3.0	1.1-2.8	0.9-2.5	0.6-1.5	
Absorption (vol.)	%	C272	less than 2.5	less than 2.5	less than 2.0	less than 1.0	
Capillarity	—	—	none	none	none	none	
<b>Coefficient of Thermal Expansion</b>							
Coefficient of Thermal Expansion	in./in. (F)	D696	0.000035	0.000035	0.000035	0.000035	
<b>Maximum Service Temperature</b>							
Long-term	°F	—	167	167	167	167	
Intermittent			180	180	180	180	

All values based on data available from American Hoechst Corporation and ARCO Chemical Company.

## Insulating Properties Definition of Terms

### “K” — Thermal Conductivity:

The measurement of heat flow through one-inch thickness of any single material per hour × square foot × °F.  $K = \text{BTU}/(\text{hr.}) (\text{sq. ft.}) (°\text{F}/\text{inch})$ .

### “C” — Thermal Conductance:

The measurement of heat flow through any single material that is more or less than one-inch thick.  $C = K/\text{thickness}$ .

### “R” Factor — Thermal Resistance:

Reciprocal of the materials “C”.  $R = 1/“C”$ .

### “U” Factor:

The measurement, in BTU of heat flow, per hour-square foot (°F) through a combination of materials.  $U = \text{BTU}/(\text{hr.}) (\text{sq. ft.}) (°\text{F}) U = 1/R$ .

## Long-Term Insulation Value

EPS Insulation (1.00 pcf) provides a typical R value of 4.17 per inch (K factor = 0.24) at a mean temperature of 40° F. Unlike that of many other insulation products, the R value of EPS insulation is permanent because the cellular structure of the EPS contains only stabilized air. Aging has no effect upon the performance of EPS.

## Fire Hazard Classification

ASTM E-84, NFPA 255, and UL Procedure 723. These tests are of laboratory scale (commonly referred to as the Steiner Tunnel Test) and are intended only as a means of comparison with other building materials subjected to the same test. The test results, reported on a scale with asbestos board rated as zero and red oak as 100, are listed in the following table:

Thickness	1/2"	1"	1 5/8"	2"	4"
Flame Spread*	5	5	5	5	5
Smoke Developed	60	15	20	30	40-85

This data is applicable to material with densities of 1.0, 1.25 and 1.5 pounds per cubic foot. Flame spread and smoke developed figures were recorded while material remained in the original test position and do not include ignition of molten residue on the test furnace floor.

\*This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

## CAUTION

The foamed plastic polystyrene described in this bulletin is combustible and should not be exposed to open flame or other ignition sources. Plastic foam products should be used in accordance with applicable building code requirements.

## SPECIFICATION COMPLIANCE



For EPS ceiling tiles (1/2" & 1" thicknesses, pebble texture).

### Approved

AviLite EPS is manufactured to comply with the following military and Federal specifications:

- Federal Specification HHI-524-C
- Military Specification MIL-P-0019644-B
- Military Specification MIL-P-40619
- Military Specification MIL-P-43110
- Army Corps of Engineers CE-204
- Coast Guard CG-256
- Air Force AFM 88-15

AviLite EPS conforms with the uniform building code, ICBO; the basic building code BOCA; the standard building code, SBCC; and FHA. Use of Materials Bulletin #71.