PermaTherm
INSULATED METAL PANELS

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# Expanded Polystyrene Insulation

## Typical Physical Properties

| Specification Reference: PROPERTY | ASTM C 578-07 UNITS | ASTM TEST | Type I | Type VIII | Type II | Type 1X |
|---|---|---|---|---|---|---|
| **Density, minimum** | (pcf) | D303 or D 1622 | 0.90 | 1.15 | 1.35 | 1.80 |
| **Density Range** | | | 0.90-1.14 | 1.15 – 1.34 | 1.35-1.79 | 1.80-2.20 |
| **Thermal Conductivity** at 25 F | BTU/(hr.) | C177 Or C518 | 0.23 | 0.22 | 0.21 | 0.20 |
| **K Factor** at 40 F | (sp.Ft.)(F/in.) | | 0.24 | 0.235 | 0.22 | 0.21 |
| at 75 F | | | 0.26 | 0.255 | 0.24 | 0.23 |
| **Thermal Resistance** | at 25 F | at 1 inch | 4.35 | 4.54 | 4.76 | 5.00 |
| **R-value*** at 40 F | thickness | | 4.17 | 4.25 | 4.55 | 4.76 |
| At 75 F | | | 3.85 | 3.92 | 4.17 | 4.35 |
| STRENGTH PROPERTIES | | | | | | |
| Compressive 10% Deformation | psi | D 1621 | 10 – 24 | 13 - 18 | 15 - 21 | 25 - 33 |
| Flexural | psi | C 203 | 25 - 30 | 30 - 38 | 40 - 50 | 50 - 75 |
| Tensile | psi | D 1623 | 16 - 20 | 17 - 21 | 18 - 22 | 23 - 27 |
| Shear | psi | D 723 | 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 |
| Moisture Resistance | | | | | | |
| WVT | perm. in. | E 96 | 2.0-5.0 | 1.5 – 3.5 | 1.0 – 3.5 | 0.6 – 2.0 |
| Absorption (vol.) | % | C 272 | <4.0 | <3.0 | <3.0 | <2.0 |
| Capillarity | ---- | ---- | none | none | none | none |
| **Coefficient of Thermal Expansion** | in./(in.)(f) | D 696 | 0.000035 | 0.000035 | 0.000035 | 0.000035 |
| **Maximum Service Temperature** | F | ---- | | | | |
| Long term exposure | | | 167 | 167 | 167 | 167 |
| Intermittent exposure | | | 180 | 180 | 180 | 180 |
| **Oxygen Index** | % | D 2863 | 24.0 | 24.0 | 24.0 | 24.0 |

*R-value is a measure of resistance to heat flow. The higher the R-value, the greater the insulating effect.

NOTES:

1. All properties are measured at 70°F – 75°+ unless otherwise indicated and all test values from independent certified testing laboratories.
2. These are nominal values obtained from representative product samples, and are subject to normal manufacturing variances.