

## Product Information Bulletin

### PlastiSpan Insulation

#### ASTM C578 - Types and Material Properties

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Plasti-Fab offers a variety of expanded polystyrene (EPS) insulation types. This bulletin provides an overview of material properties for PlastiSpan insulation types complying with ASTM C578, **Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation**. The attached table also includes a cross-reference to the common extruded polystyrene (XPS) insulation products within the same product type range as PlastiSpan insulation types.

The following notes provide additional information related to the material properties in the attached table:

1. R-values at a mean temperature of 24 °C (75 °F) for PlastiSpan insulation are R-values per inch of thickness as published by Plasti-Fab (see Plasti-Fab PIB 208).
2. R-values at a mean temperature of 24 °C (75 °F) for XPS insulation types are R-values published by XPS insulation manufacturers.
3. R-values for XPS insulation types does not address long term thermal resistance (LTTR) determined from either of the currently accepted test methods, CAN/ULC-S770, **Standard Test Method for Determination of Long-Term Thermal Resistance of Closed-Cell Insulating Foams** or ASTM C1303, **Standard Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation**. LTTR is deemed equivalent to the thermal resistance value for a product measured after 5-year storage in a laboratory condition – i.e. the LTTR is equivalent to the aged R-value after 5 years.
4. “Long-term” (LTTR) R-value of foam plastic insulation such as XPS insulation is applicable to products manufactured with blowing agents intended to be retained for greater than 180 days. **EPS insulation R-value is not affected by LTTR because it is not manufactured with a blowing agent that is intended to be retained within the cellular structure.**
5. Water absorption % by volume values for EPS and XPS insulation types in the table are determined using a laboratory test method that involves submersion under a head of water. The water absorption values are applicable to specific end-use design requirements only to the extent that the end-use conditions would require submersion under a head of water.
6. Water vapour permeance values in the tables are maximum values for 1-inch thick insulation with natural skins intact. Lower values will result for thicker or laminated materials.
7. While an insulation material with a lower vapour permeance characteristic may resist moisture diffusion into it and provide lower water absorption values based upon laboratory test methods, it will also dry more slowly in the event moisture gets into the cellular structure as a result of long term in-service applications. See Plasti-Fab PIBs 268, 303 and 307 for additional information on these performance properties.

| Insulation Type  | PlastiSpan<br>0.75 pcf | PlastiSpan<br>1.00 pcf | PlastiSpan<br>1.25 pcf | PlastiSpan<br>1.50 pcf | PlastiSpan<br>2.00 pcf | PlastiSpan<br>2.50 pcf | XPS  |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------|
| <b>ASTM C578 Type No.</b>  | XI                     | I                      | VIII                   | II                     | X                      | XIV                    | VI   |
| <b>Compressive resistance</b><br><i>Minimum, psi</i>                                       | 5.0                    | 10.0                   | 13.0                   | 15.0                   | 15.0                   | 40.0                   | 25.0 |
| <b>Thermal resistance</b><br><i>Minimum R-value per inch,<br/>ft<sup>2</sup>-hr-°F/BTU</i> | 3.2                    | 3.9                    | 3.9                    | 4.2                    | 5.0                    | 4.4                    | 5.0  |
| <b>R-value) warranty</b><br><i>Minimum % of Original</i>                                   | 100                    | 100                    | 100                    | 100                    | 90                     | 100                    | 90   |
| <b>Water vapour permeance</b><br><i>Maximum, Perms</i>                                     | 5.0                    | 5.0                    | 3.5                    | 3.5                    | 1.5                    | 2.5                    | 1.5  |
| <b>Dimensional stability</b><br><i>Maximum % linear change</i>                             | 2.0                    | 2.0                    | 2.0                    | 2.0                    | 2.0                    | 2.0                    | 2.0  |
| <b>Flexural strength</b><br><i>minimum, kPa (psi)</i>                                      | 10.0                   | 25.0                   | 30.0                   | 35.0                   | 40.0                   | 60.0                   | 50.0 |
| <b>Water absorption</b><br><i>Maximum % by volume</i>                                      | 4.0                    | 4.0                    | 3.0                    | 2.0                    | 0.3                    | 2.0                    | 0.3  |
| <b>Standard Dimensions, in.</b>  |                        |                        |                        |                        |                        |                        |      |
| <b>Length</b>  | 96                     | 96                     | 96                     | 96                     | 96                     | 96                     | 96   |
| <b>Width</b>   | 48                     | 48                     | 48                     | 48                     | 48                     | 48                     | 24   |
| <b>Thickness – Minimum and Maximum, in.</b>  |                        |                        |                        |                        |                        |                        |      |
| <b>Minimum</b>   | 0.5                    | 0.5                    | 0.5                    | 0.5                    | 0.5                    | 0.5                    | 1    |
| <b>Maximum</b>   | 48                     | 48                     | 48                     | 48                     | 48                     | 48                     | 3    |