

## FOAMULAR® Extruded Polystyrene (XPS) Insulation ASTM C578—Types and Physical Properties

## Technical Bulletin

This table outlines the basic physical property requirements of ASTM C5781 and FOAMULAR® XPS insulation compliance. The products are organized, left to right, in ascending compressive strength. For complete details on board types, properties and other quality requirements see the actual ASTM standard.

| Polystyrene Board Type <sup>2</sup>   | EPS            | EPS            | EPS            | FOAMULAR®<br>150, XPS | EPS            | FOAMULAR®<br>250, XPS | EPS            | FOAMULAR®<br>400, XPS | EPS            | FOAMULAR®<br>600, XPS | EPS            | FOAMULAR®<br>1000, XPS |
|---|----------------|----------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|------------------------|
| ASTM C578 Classification  | Type XI        | Туре І         | Type VIII      | Туре Х                | Туре II        | Type IV               | Type IX        | Type VI               | Type XIV       | Type VII              | Type XV        | Type V                 |
| Compressive resistance at yield or 10 % deformation, whichever occurs first (with skins intact) min, psi (kPa)  | 5.0 (35)       | 10.0 (69)      | 13.0 (90)      | 15.0 (104)            | 15.0 (104)     | 25.0 (173)            | 25.0 (173)     | 40.0 (276)            | 40.0 (276)     | 60.0 (414)            | 60.0 (414)     | 100.0 (690)            |
| Density, min, lb/ft³ (kg/m³)  | 0.70 (12)      | 0.90 (15)      | 1.15 (18)      | 1.30 (21)             | 1.35 (22)      | 1.55 (25)             | 1.80 (29)      | 1.80 (29)             | 2.40 (38)      | 2.20 (35)             | 2.85 (46)      | 3.00 (48)              |
| Thermal resistance of 1.00-in. (25.4-mm) thickness, min, hr•ft²•°F/Btu (K·m²/W) Mean temperature: 75 2°(24 1°C) | 3.10<br>(0.55) | 3.60<br>(0.63) | 3.80<br>(0.67) | 5.00<br>(0.88)        | 4.00<br>(0.70) | 5.00<br>(0.88)        | 4.20<br>(0.74) | 5.00<br>(0.88)        | 4.20<br>(0.74) | 5.00<br>(0.88)        | 4.30<br>(0.76) | 5.00<br>(0.88)         |
| Flexural strength, min, psi (kPa)   | 10.0 (70)      | 25.0 (173)     | 30.0 (208)     | 40.0 (276)            | 35.0 (240)     | 50.0 (345)            | 50.0 (345)     | 60.0 (414)            | 60.0 (414)     | 75.0 (517)            | 75.0 (517)     | 100.0 (690)            |
| Water vapor permeance of 1.00-in. (25.4-mm) thickness, max, perm (ng/Pa·s·m²)                                   | 5.0 (287)      | 5.0 (287)      | 3.5 (201)      | 1.5 (86)              | 3.5 (201)      | 1.5 (86)              | 2.5 (143)      | 1.1 (63)              | 2.5 (143)      | 1.1 (63)              | 2.5 (143)      | 1.1 (63)               |
| Water absorption by total immersion, max, volume  | 4.0            | 4.0            | 3.0            | 0.3                   | 3.0            | 0.3                   | 2.0            | 0.3                   | 2.0            | 0.3                   | 2.0            | 0.3                    |

- 1. ASTM C578-10, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation"; published by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959
- 2. XPS is extruded polystyrene. EPS is expanded polystyrene, also known as molded polystyrene.

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