

Product Information Bulletin

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DuroFoam® Plus Insulation for High Compressive Load Applications

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DuroFoam® Plus insulation is a closed cell expanded polystyrene (EPS) insulation with a laminated film applied to both faces. **DuroFoam Plus** insulation meets the requirements of CAN/ULC-S701, **Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering** and ASTM C578, **Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation**.

DuroFoam Plus insulation resists water absorption so it will retain its R-value even in applications where severe temperature differentials occur. Marking provided on the printed face of **DuroFoam Plus** insulation assist in cutting to required dimensions and spacing of fasteners into framing.

Material Property	Test	Units	DuroFoam Plus Insulation Types				
			HD ¹	20 ²	25 ³	30 ⁴	40 ⁵
Compressive Resistance <i>Minimum @ 10% Deformation</i>	ASTM D1621	kPa (psi)	110 (16)	140 (20)	170 (25)	210 (30)	276 (40)
Compressive Resistance <i>Minimum @ 1% Deformation</i>		kPa (psi)	45 (6.5)	50 (7.3)	60 (8.7)	75 (10.9)	103 (15.0)
Compressive Modulus <i>Minimum</i>		kPa (psi)	4,500 (650)	5,034 (730)	6,000 (870)	7,517 (1,090)	10,345 (1,500)
Thermal Resistance <i>Minimum per 25 mm (1 inch)</i>	ASTM C518	m ² ·°C/W (ft ² ·h·°F/Btu)	0.70 (4.04)	0.70 (4.04)	0.74 (4.27)	0.74 (4.27)	0.75 (4.3)
Flexural Strength <i>Minimum</i>	ASTM C203	kPa (psi)	240 (35)	280 (40)	300 (44)	345 (50)	414 (60)
Water Vapour Permeance ⁶ <i>Maximum</i>	ASTM E96	ng/(Pa·s·m ²) (Perms)	30 (0.5)				
Water Absorption ⁷ <i>Maximum</i>	ASTM D2842	% By volume	2.0				
Dimensional Stability <i>Maximum</i>	ASTM D2126	% Linear Change	1.5				
Limiting Oxygen Index <i>Minimum</i>	ASTM D2863	%	24				

1. DuroFoam Plus HD insulation meets or exceeds CAN/ULC-S701, type 2 and ASTM C578, type II.
2. DuroFoam Plus 20 insulation meets or exceeds CAN/ULC-S701, type 2 and ASTM C578, type II.
3. DuroFoam Plus 25 insulation meets or exceeds CAN/ULC-S701, type 3 and ASTM C578, type IX.
4. DuroFoam Plus 30 insulation meets or exceeds CAN/ULC-S701, type 3 and ASTM C578, type IX.
5. DuroFoam Plus 40 insulation meets or exceeds CAN/ULC-S701, type 3 and ASTM C578, type XIV.
6. WVP values quoted are maximum values for 25-mm thick samples with natural skins intact. Lower values will result for thicker materials.
7. The water absorption values are applicable to specific end-use design requirements only to the extent that the end-use conditions requires submersion under a head of water for an extended period of time.

DuroFoam Plus insulation has a range of compressive resistance values which makes it ideal for insulating floors, foundations or any application where heavy loads are expected. Dependent upon the initial deformation due to a compressive load, sustained loads on **DuroFoam Plus** insulation may result in deflection much greater over time. Figure 1 provides a series of curves representing the long term deflection over time for various EPS insulation densities based upon sustaining compressive loads at different initial % strain levels.

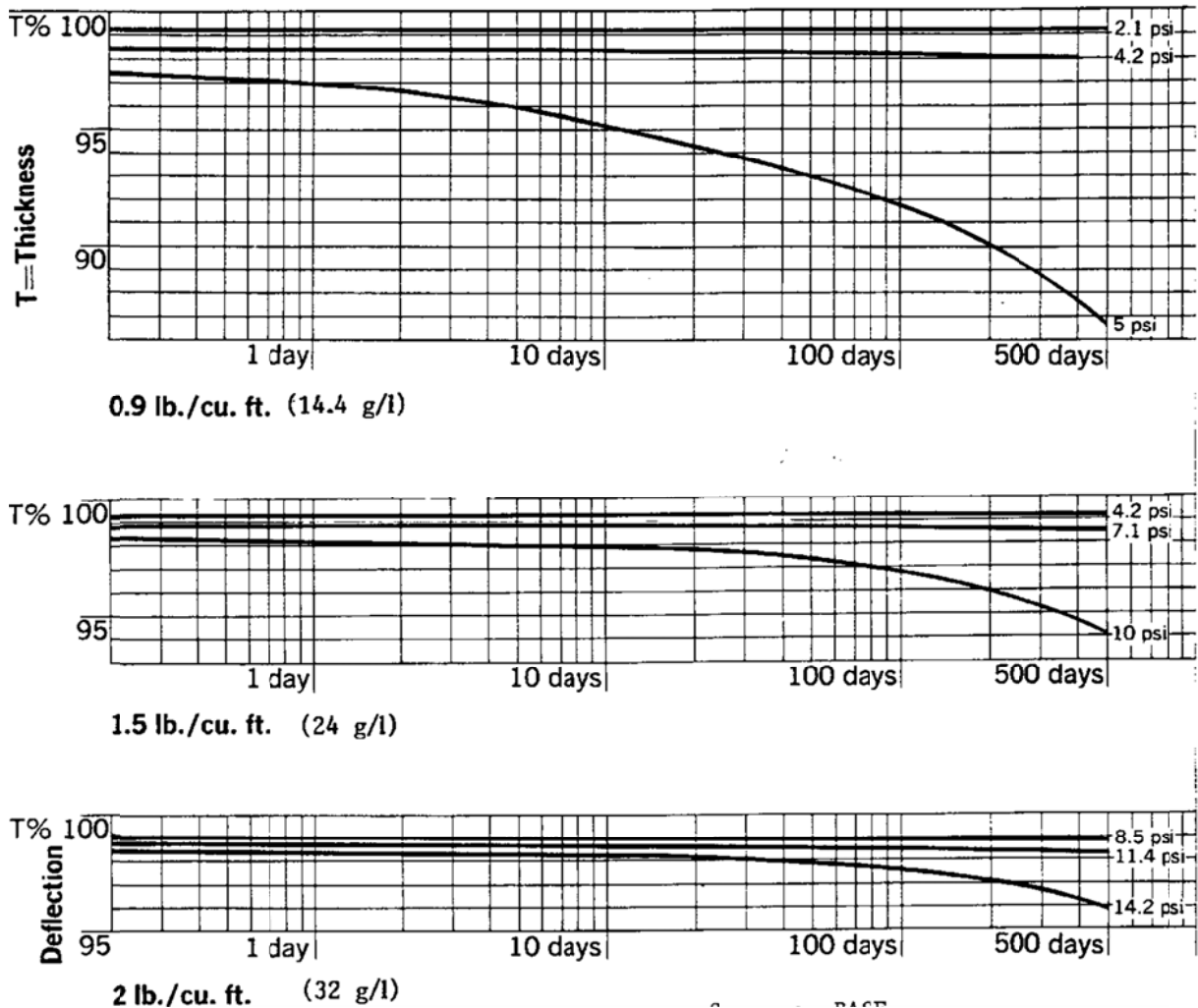


Figure 1 – Deflection Under Various Long Term Loads

Source: BASF- The Compressive Strength of EPS

It should be noted that compressive resistance at 1% strain is within the elastic limit for the **DuroFoam Plus** insulation provide in the table of material properties and is accepted as the design compressive resistance to limit long-term deformation under structural load.

Compressive resistance at 10% strain is not used for design purposes when an insulation material will be under compressive load. It is typically used for quality control purposes or may be applicable for end-uses where the application requires long-term deformation under structural load – i.e., a compressible product.