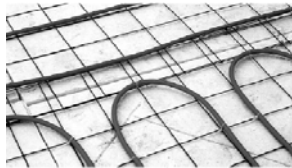


Product Information Bulletin

DuroFoam® HD Insulation for Radiant Floor Heating Systems Page 1 of 2



DuroFoam® HD insulation board is a moulded expanded polystyrene (EPS) insulation with a thin reflective film laminated to the top and bottom surfaces. The EPS insulation meets or exceeds material properties CAN/ULC-S701, **Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering**. The addition of the laminated films to DuroFoam HD insulation results in a more durable product that is less susceptible to handling damage.

Table 1 – DuroFoam Insulation Material Properties

Material Property ¹	ASTM Test Method	Units	Type 2
Thermal Resistance <i>Minimum RSI per 25 mm (R per inch)</i>	C518	m ² •°C/W (ft ² •hr•°F/BTU)	0.70 (4.04)
Compressive Resistance <i>Minimum @ 10% Deformation</i>	D1621	kPa (psi)	110 (16)
Flexural Strength <i>Minimum</i>	C203	kPa (psi)	240 (35)
Water Vapour Permeance² <i>Maximum</i>	E96	ng/Pa•s•m ² (perm)	30 (0.5)
Water Absorption³ <i>Maximum</i>	D2842	% By volume	4.0
Dimensional Stability <i>Maximum, 7 Days @ 70 ± 2°C (158 ± 4°F)</i>	D2126	% Linear Change	1.5
Limiting Oxygen Index <i>Minimum</i>	D2863	%	24


The reflective facers on DuroFoam HD insulation contain a thin layer of foil embedded within the film. The reflective facers do not increase nominal insulation R-value (for additional information see Plasti-Fab PIB 253 - **Facts About Thermal Resistance of Reflective Insulation**).

1. DuroFoam HD insulation properties are third party certified to CAN/ULC-S701 under a quality listing program administered by Intertek Testing Services. DuroFoam HD insulation is listed by the Canadian Construction Materials Centre under CCMC Evaluation Listing 12425-L.
2. **Maximum** vapour permeance value for EPS insulation is 300 ng/Pa•s•m² for 25-mm (5.2 perms for 1-inch) thickness. The vapour permeance value provided above for DuroFoam insulation is significantly lower as a result of laminated films. Where water vapour permeance is a design issue, contact Plasti-Fab technical services for additional information.
3. Water absorption % by volume is determined using ASTM D2842 which involves complete submersion under a head of water for 96 hours. The value provided in the table above is the **maximum** for CAN/ULC-S701, type 1 EPS insulation without facers.

DuroFoam HD Insulation for Basement Floor Radiant Heating System

DuroFoam HD insulation board is installed on a prepared ground surface as the first component in the radiant floor heating system. Radiant floor heating systems use thermoplastic tubing that is cast into the concrete floor slab above the insulation. Typically hot water is circulated through the tubing to keep all areas warm. DuroFoam HD insulation ensures that heat loss to the ground will be minimized and the entire floor area will be warmed faster.

Table 2 – DuroFoam HD Insulation – Insulation System

	Component Description	R-value
	Horizontal Air Film (above floor)	0.91
	Floor Finish (carpet and rubber pad)	1.25
	4" (102 mm) Concrete Slab	0.23
	DuroFoam HD insulation @ 2 ½" (63 mm) thickness	10.10
	6 mil polyethylene moisture barrier	---
	Effective R-value for Below Slab System	R-12.49

Conventional forced air heating systems rely upon convection to force hot air towards the ceiling resulting in non-uniform heat distribution throughout the room area. With radiant floor heating systems, there are no vents blowing air into specific areas. The tubing cast into the concrete slab covers the entire room and DuroFoam HD insulation provides a monolithic insulation layer to ensure that heat is spread uniformly throughout the entire floor area.

DuroFoam HD insulation with its laminated films on both faces is ideal for use with radiant floor heating systems. The closed cellular structure of DuroFoam HD insulation provides excellent resistance to moisture and the long-term insulating value is not subject to thermal drift.

The advantages of radiant floor heating systems using DuroFoam HD insulation include

- Provides continuous insulation layer to ensure uniform heat distribution throughout room areas.
- Floor area will be noticeably warmer to anyone standing on it.
- Insulation installs quickly and easily.
- No special skills, tools or equipment are required
- No mechanical attachment is required.
- Eliminates need for air vents that can circulate allergens or dust.
- Energy efficient method of heating the basement area.

Table 3 – DuroFoam HD Insulation Typical Dimensions and R-values

DuroFoam HD Insulation Board Size	Thickness	R-value
4-foot x 8-foot (1,220 mm x 2,440 mm)	2" (51 mm)	R-8
	2 ½" (63 mm)	R-10
	3" (76 mm)	R-12

DuroFoam HD insulation is available in various thicknesses for use in radiant floor heating systems to provide the required thermal resistance value.