

# Plasti-Fab Design Manual

# Insulation for Radiant Floor Heating Systems





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Plasti-Fab PlastiSpan HD insulation board is used as a component in radiant floor heating systems where uniform heat distribution is desired throughout a floor area. PlastiSpan insulation ensures that heat loss will be minimized and the entire floor area will be warmed faster.

Radiant floor heating systems using PlastiSpan insulation spread the heat more uniformly by heating the entire floor area. 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.

PlastiSpan HD insulation boards are combined with hydronic tubing designed for use in radiant floor heating systems in concrete slab applications. PlastiSpan support blocks are available for support of hydronic heat tubing.

PlastiSpan HD insulation boards used in radiant floor heating systems is available in various thicknesses to provide the required thermal resistance value for the application. The closed cellular structure of PlastiSpan insulation provides excellent resistance to moisture and the long-term insulating value is not subject to thermal drift, because it contains no CFC's, HCFC's or HFC's.

PlastiSpan HD insulation board thickness to satisfy typical thermal insulation requirements is identified in the table below.

Product Application Description <sup>1</sup>	Required Thermal Resistance	PlastiSpan HD Insulation Thickness <sup>2</sup>
Slab-on ground containing pipes or heating ducts - 1997 Ontario Building Code, Table 9.25.2.1.	RSI-1.76 (R-10)	38 mm (2-1/2")
Radiant heating slabs on ground - 1998 British Columbia Building Code, Table 9.25.2.1.	RSI-2.1 (R-12)	RSI-2.1 (3")

1. Product application descriptions provided for reference only.

2. PlastiSpan HD insulation board meets requirements of CAN/ULC-S701-97, Type 2. Thickness calculated based upon RSI-0.74 m<sup>2</sup>•C/W•25 mm (R-4.04 ft<sup>2</sup>•hr•°F/BTU•inch). Alternatively, PlastiSpan insulation board meeting requirements of CAN/ULC-S701-97, Type 1 thickness can be used by adjusting thickness to meet minimum thermal resistance values based upon RSI-0.65 m<sup>2</sup>•C/W•25 mm (R-3.75 ft<sup>2</sup>•hr•°F/BTU•inch).

Radiant floor heating systems using PlastiSpan HD insulation is ideal for use beneath the concrete slab as an effective means to heat basements, turning your basement into comfortable living space. Radiant floor heating systems can also be used in a variety of other applications. Examples would be under exterior concrete slabs on walkways or driveways for melting snow and ice and beneath the concrete slab of your garage floor to keep your garage warm all year round.



### Features/Advantages:

- PlastiSpan HD insulation provides a monolithic insulation blanket to ensure uniform heat distribution throughout room areas.
- Floor areas will be noticeably warmer to anyone standing on floor.
- PlastiSpan HD insulation installs quickly and easily.
- No special skills, tools or equipment are required; no mechanical attachment is required.
- PlastiSpan HD insulation provides the best R-Value for your money.

## Application

The following instructions apply specifically to insulation installed under concrete floors.

### Preparation

Place and level 150 mm (6") thick layer of granular fill over floor area. Cover with a 6-mil polyethylene vapour barrier.

### Placing Insulation

Lay PlastiSpan insulation boards out over the vapour barrier ensuring that joints are tightly butted together. Trim around the perimeter and openings as required.

### Placing Concrete Reinforcing

Place required concrete reinforcing material (normally a heavy wire mesh) supported on 50 mm x 50 mm (2" x 2") wood blocks over PlastiSpan insulation board.

### Placing Hydronic Tubing

Twist tie hydronic tubing to concrete reinforcing steel or use hydronic tubing staples (see detail drawing) to attach tubing to PlastiSpan insulation board.

OR

Use specially cut PlastiSpan support blocks to support tubing and hydronic tubing staples (see detail drawings). Thickness of PlastiSpan support blocks is normally twice the diameter of hydronic tube and blocks are spaced at 600 mm (2 feet) o.c.

### Concrete Placing

Use wood plank runways to protect PlastiSpan insulation from concentrated loads of wheelbarrows or buggies when moving concrete. Place the concrete slab over the insulation using normal construction methods and equipment. Use baffles under pour spouts where necessary.

