**Insulation Systems for Roofing Applications**

**Selection, Application and Specification**

The installation method for PlastiSpan insulation varies dependent upon the type of roof assembly. The selection chart below indicates various types of roof assemblies that use PlastiSpan insulation. A Plasti-Fab brochure is available for more information on the use of PlastiSpan insulation for each type of roof assembly indicated.

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**Sloped Insulation**
- Provides positive slope to drain while maintaining the structural and economic advantages of a flat roof deck system.

**Standing Seam**
- Variety of profiles and colours.
- Install at any temperature.
- Easily installed over thermal barriers on steel decks.

**Built-Up Roofing**
- Economical for high thermal resistance.
- Fibreboard provides an excellent and familiar surface for the application of built-up roofing.
- Easily installed over thermal barriers on steel deck.

**Fire-Rated Assemblies**
- Can be used in roof assemblies for either non-combustible or combustible construction.
- Listed as component in a number of ULC rated roof deck constructions.

**Single Ply Roofing**
- PlastiSpan insulation adapts to requirements of single ply membrane.
- Economical for high thermal resistance.
- Easily installed over thermal barriers on steel decks.

**Cathedral Ceilings**
- Ideal where exposed timber deck is chosen inside building finish and slope is sufficient to allow the use of shingles, shakes or tiles.
Design Notes

PlastiSpan insulation board is a rigid expanded polystyrene (EPS) product. The closed cell structure of PlastiSpan insulation does not contain CFC’s, HCFC’s or HFC’s, which assures long lasting thermal insulation properties. It is chemically inert to a wide range of chemicals; it has no food value and it will not sustain insects, parasites, animals or plant life.

PlastiSpan roof insulation is incorporated into a roofing system in order to reduce the energy loss through the roof. The thickness of the insulation required will depend to some extent on the comfort factor required in the building. The main criteria for thickness will be a cost/benefit analysis designed to balance the capital cost of the insulation against the saving in energy costs over the life of the building. Many Building Codes require minimum thermal resistance for various types of construction in different geographical areas. See applicable Building code in your jurisdiction.

The Model National Energy Code for Buildings (MNECB) is a model code prepared by the Canadian Commission on Building and Fire Codes and published by the National Research Council of Canada. The MNECB essentially provide a set of minimum requirements for energy efficiency in buildings. These requirements are, for the most part, based on extensive cost-benefit analysis that takes into consideration climate, fuel types and costs, and construction costs.

PlastiSpan insulation board is available as CAN/ULC-S701, type 1, 2 or 3. The choice of the appropriate type of PlastiSpan insulation board will depend upon the characteristics required by the roofing system. PlastiSpan Type 1 insulation will generally provide the required insulation level most economically. Where additional compressive strength is required, PlastiSpan type 2 or 3 insulation board may be required.

General Application Instructions

The insulation application may vary based upon the membrane used or the material and equipment used to apply the system.

Application clauses specific to the types of membrane are listed in the applicable PlastiSpan Roof & Deck Insulation brochure; however, the following sections provide general application instructions for PlastiSpan insulation when used with various roof components:

Decks

Ensure that decks are clean, dry and free from oil, grease, rust, snow and other foreign matter. Clean flutes of steel deck as necessary. Prime concrete deck that is to receive direct application of asphalt with asphalt base primer. Keep primer back 50 mm (2") from joints of precast deck.

Thermal Barrier to Steel Deck

Apply fire retardant adhesive to deck ridges with a dispenser at a rate recommended by adhesive manufacturer. Lay thermal barrier onto adhesive while still tacky.

OR

Mechanically fasten thermal barrier to steel deck using non-corroding self-tapping fasteners in accordance with fastener manufacturer’s instructions.

Vapour Barrier to Various Decks

Apply proprietary vapour barrier in accordance with vapour barrier manufacturer’s instructions for the type of deck.

Attachment of Vapour Barrier to Thermal Barrier

Apply proprietary vapour barrier in accordance with vapour barrier manufacturer’s instructions to steel deck.

Attachment of Air Barrier to Steel or Timber Deck

If an air barrier is not otherwise provided for, apply approved air barrier material to deck.

Insulation

Butt boards in moderate contact and stagger joints. Ensure that joints occur over solid bearing (e.g. not over flutes of steel deck).

Lay sloped insulation as detailed on approved drawings.

Insulation to Steel Deck, Vapour Barrier, or to Thermal Barrier

Apply fire retardant adhesive over deck ridges, vapour barrier, thermal barrier, using a brush or long handled paint roller.

Allow open time for solvents to evaporate and then lay insulation onto adhesive while it is still tacky.

Insulation Mechanically Fastened to Wood, Steel, or Concrete Deck

Choose number of layers based on thickness of insulation required. Use protection board if required based upon membrane type and/or protection required for the insulation from solvents, adhesives, torches or other.

Stagger joints of insulation with joints in thermal barrier (if thermal barrier is used). Lay first layer of insulation board across flutes in steel deck so that butt joints occur over solid bearing.

If second layer is required, stagger joints with joints in second layer with those in first layer.

Single Insulation Layer Direct to Metal Deck

Fastener spacing will be as per the specific roof design and/or fastener manufacturer requirements.

Note: Roof systems including thermal barriers, double layer insulation and protection board can be assembled and mechanically fastened as a single layer.

Single Insulation Layer with Protection Board

Stagger joints of insulation and protection board. Fastener spacing will be as per the specific roof design and/or fastener manufacturer requirements. Protection board can be fastened to nailer or Z-bar.

Double Insulation Layer

Lay first layer or first row of insulation across steel deck. Lay nailer (or Z-bar) against insulation or into routed groove in insulation.

Lay insulation and nailers (or Z-bars) across roof and fasten to deck.

Lay second layer or Lay first row of second layer of insulation across the roof perpendicular to first layer. Lay nailer (or Z-bar) against insulation or into routed groove in insulation.

Lay insulation and nailers (or Z-bars) across roof and fasten to deck or to first layer nailer (or Z-bar) at each intersection. Protection board can be fastened along with second layer of insulation; or fastened to nailer or Z-bar.
### PlastiSpan Insulation Properties

<table>
<thead>
<tr>
<th>MATERIAL PROPERTIES</th>
<th>TEST METHOD</th>
<th>METRIC (SI) UNITS</th>
<th>CAN/ULC-S701</th>
<th>CAN/ULC-S701</th>
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<tr>
<td></td>
<td></td>
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<td>TYPE 1</td>
<td>TYPE 2</td>
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<td>Thermal Resistance 1</td>
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<td>Minimum @ 10% Deformation</td>
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<tr>
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<td>ASTM C 203 Procedure B</td>
<td>kPa</td>
<td>170</td>
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<td>Water Vapour Permeance 4</td>
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<td>ASTM D 2863</td>
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NOTES:
1. Thermal resistance measured at mean temperature of 24°C (75°F) for 25 mm (1 inch) thick material.
2. Values quoted are maximum for 25 mm (1 inch) thick material. Lower values will result for thicker materials.
3. PlastiSpan insulation board has a maximum Flame Spread Rating of 290 and a Smoke Developed Rating greater than 500 for minimum thickness of 25 mm classified in accordance with CAN/ULC–S102.2M.

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For more information about using PlastiSpan Insulation for Roofing Applications visit [www.plastifab.com](http://www.plastifab.com)