Polyfoam Fabrication

For general fabrication and panel manufacture

Strong | **Water resistant** | **Versatile** | **Lightweight** | **Ozone friendly** | **Recyclable**

Description

Polyfoam Fabrication solutions are high performance, 100% ozone friendly, extruded polystyrene, rigid board insulations. They are all lightweight, yet have excellent structural strength and long term effectiveness.

There are 3 types of solution to suit the intended end use of the finished item:

- Polyfoam Laminating Board – for general fabrication and panel manufacture, for use as both a thermal and structural solution.
- Polyfoam Panelboard – for fabrication and panel manufacture where the surface material is fine and the end use of the panel requires a 'flat' aesthetic appearance. Polyfoam Panelboard can be used as both a thermal and structural solution.
- Polyfoam RVB – for fabrication and panel manufacture especially in refrigerated vehicles, where strength and thermal performance are important. Polyfoam RVB can be used as both a thermal and structural solution in other types of construction where a higher grade material than Polyfoam Laminating and Panelboard is required.

Polyfoam Fabrication solutions are all straight edged and have keyed surfaces to suit lamination.

Application

Polyfoam Fabrication solutions are designed to cover a wide range of end use application, primarily as part of panels or other laminated solutions, they are both thermal AND structural solutions. In fabrication, a multitude of applications requiring a lightweight, yet strong, easy to cut and handle solution can present themselves, the actual solution required can differ based on the expected load / in use position of the material and the thickness of the surface finish material of the panel. The optimum solutions need to be:

- strong
- structurally stable in the long term
- available in different thicknesses
- lightweight
- easy to use

As the material is often viewed as a component the tolerances need to be specified, both on thickness and dimensions, to ensure optimum suitability.

The following range of applications are some of the key areas of use of Polyfoam Fabrication solutions:

- General panels (plasterboard, chipboard, cement boards etc.)
- Close tolerance panels (doors, plastisol faced etc.)
- Refrigerated vehicles

Product Data

Thickness (mm)	Length (mm)	Width (mm)	Nominal density (kg/m³)	Thermal performance Conductivity (W/mK)	Thermal performance Resistance (m²K/W)	Minimum compressive strength (KPa)	Water vapour resistance (MNs/gm)	Moisture absorption (by vol.)	Continuous service temp limits (°C)
Laminating Board									
50	2400	1200	30	0.030	1.65	200	456	0.4%	-50 to +75
45.5	2400	1200	30	0.030	1.50	200	456	0.4%	-50 to +75
36	2400	1200	30	0.030	1.20	200	456	0.4%	-50 to +75
30.5	2400	1200	30	0.030	1.00	200	456	0.4%	-50 to +75
25	2400	1200	30	0.030	0.85	200	456	0.4%	-50 to +75
20	2400	1200	30	0.030	0.65	200	456	0.4%	-50 to +75
17.5	2400	1200	30	0.030	0.55	200	456	0.4%	-50 to +75

Surface tolerance ± 0.5mm Shear strength 200 KPa
Tensile strength 600 KPaShear Modulus 2000 KPa
Tensile modulus 28000 KPa

Panel Board									
From 5m to 50mm*	3000	1200	38	0.031	–	300	456	0.4%	-50 to +75

** Panel Board is a bespoke component item supplied cut to customer specifications, the lengths and widths are maximums.*
Surface tolerance ± 0.25mmShear strength 200 KPa
Tensile strength 700 KPa Shear Modulus 2000 KPa
Tensile modulus 28000 KPa

RVB									
100	2400	600	42	0.034	2.90	420	456	0.4%	-50 to +75
75	2400	600	42	0.032	2.30	420	456	0.4%	-50 to +75
50	2400	600	42	0.030	1.65	420	456	0.4%	-50 to +75

Surface tolerance ± 0.5mmTensile modulus 28000 KPa
Compressive Modulus 23000 KPaShear strength 200 KPa
Tensile strength 700 KPaShear Modulus 2000 KPa

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Performance

Compression resistance

All materials are compressed under load. To be the most flexible solution for fabrication a material needs to be able to withstand some applied load. Polyfoam Laminating board is highly resistant to compression and withstands both occasional and long term static loads, for very high loads Polyfoam RVB can be used. A factor of safety for design loads of 3 (5 for long term static loads) is applied to the compressive strength of the products as outlined in the product data tables.

Moisture resistance

For optimum flexibility an assumption has to be made that Polyfoam Fabrication solutions could be exposed to water. The boards are resistant to moisture absorption and can be laid in standing water, moist factory conditions or up against wet surfaces with minimal impact on the performance of the product.

Thermal insulation

Polyfoam Fabrication solutions are high performance insulants, with aged quoted thermal performance values.

Fire Performance

Polyfoam General Application Laminate contains a fire retardant to inhibit localised ignition, but must not be exposed to ignition sources or naked flames. When installed as a component behind, and encapsulated in, fire rated surfaces it will not present an undue fire hazard.

Handling and storage

Polyfoam Laminating Board and Panelboard are supplied on pallets, Polyfoam RVB is supplied in polythene packs, all products are labelled with identifying product and manufacturing data.

The boards are easy to handle and non-irritant, no special protective clothing is required to install them.

Polyfoam products should not be left exposed to prolonged sunlight as this will result in surface degradation. Where outside storage for extended periods is required cover with opaque / light coloured sheeting.

Ensure the boards are not stored close to open flame or other ignition source, also avoiding volatile compounds and chemicals such as solvents.

Installation

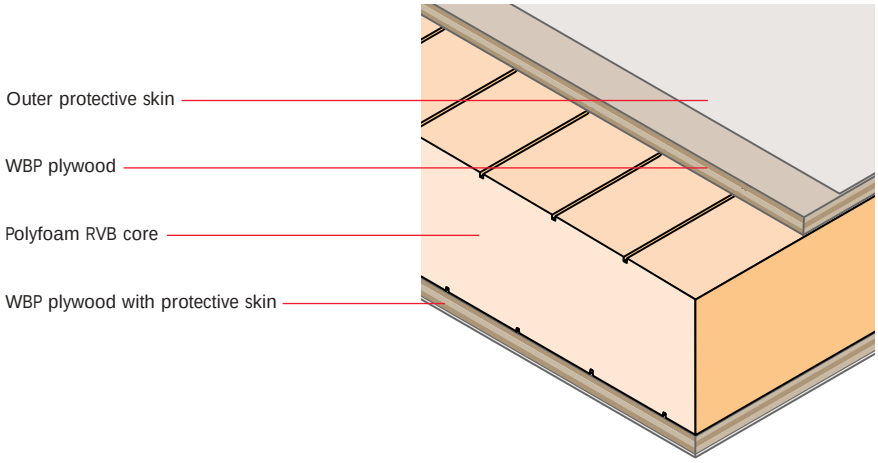
Refrigerated vehicles

Polyfoam RVB and Polyfoam Laminating Board are suitable for use in refrigerated vehicle roofs, floors and walls.

Polyfoam RVB has a greater compressive, shear and tensile strength, making it the premier product for insulation of refrigerated vehicles.

Polyfoam Laminating Board is more economical and has a low density, giving it a distinct weight advantage when it is necessary to maximise vehicle load capabilities.

Polyfoam RVB or Polyfoam Laminating Board core-insulated panels are assembled in the factory and fixed to the structural frame of the vehicle body



Typical U-Values (W/m²K) **of refrigerated vehicles insulated with Polyfoam RVB or Polyfoam Laminating Board**

Thickness (mm)	U-Value (W/m²K)	R-Value (m²K/W)
200 (100+100)	0.16	6.25
150 (75+75)	0.20	5.00
100	0.30	3.30
75	0.37	2.70
50	0.50	2.00
35	0.66	1.50
25	0.84	1.15

Note: The U-Values have been calculated assuming 12mm plywood facing either side with no thermal breaks in insulation. R-Value expressed to BS EN 13164

Polyfoam Laminating Board maximum thickness is 75mm.

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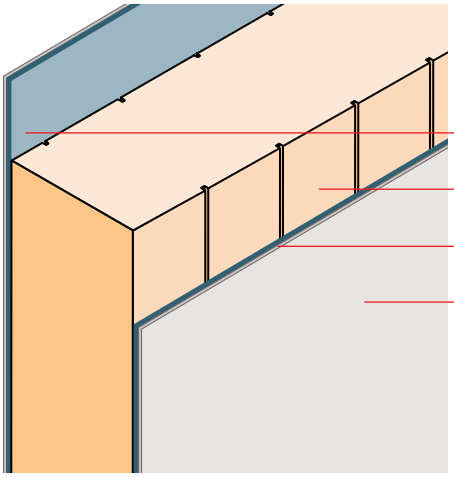


Typical cold store panel construction

Polyfoam RVB and Polyfoam Laminating Board are both suitable for use in cold store walls and ceilings.

Polyfoam RVB has a greater flexural and compressive strength, making it the premier product for insulation of cold stores. Polyfoam RVB is especially suited to vacuum forming,as the board's grooved surface allows trapped air to escape in the vacuum process.

Polyfoam Laminating Board is more economical and has a lower density, giving a distinct weight advantage for use in roofs.

Typical construction consists of laminated panels with galvanised steel or GRP facings and a core of Polyfoam RVB or Polyfoam Laminating Board. Joints between panels incorporate a vapour seal on the warm side and, where necessary, a hygienic seal on the cold side capable of being cleaned with a high pressure cleaning lance.

Several manufacturers produce proprietary panels with specially designed joints for specific use in cold store applications.

The panels are normally constructed within a building with its own weatherproof enclosure.

Typical U-Values (W/m²K) **of cold store panels insulated with Polyfoam RVB or Polyfoam Laminating Board**

Thickness (mm)	U-Value (W/m²K)	R-Value (m²K/W)
200 (100+100)	0.16	6.25
150 (75+75)	0.20	5.00
100	0.30	3.30
75	0.37	2.70
50	0.50	2.00
35	0.66	1.50
25	0.84	1.15

Note: The U-Values have been calculated assuming 12mm plywood facing either side with no thermal breaks in insulation. R-Value expressed to BS EN 13164

Polyfoam Laminating Board maximum thickness is 75mm.

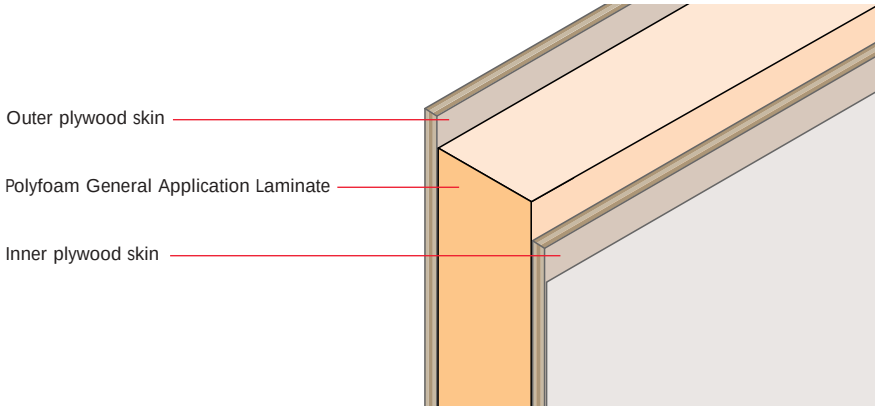
General panels

Polyfoam General Application Laminate and Polyfoam Laminating Board are both suitable for the thermal insulation and structural strengthening of general panels and fabrication.

There are two types of solution for general panels to suit the size, quantity and intended end use of the finished item:

- Polyfoam Laminating Board is a 1200mm wide solution with a close tolerance surface finish.
- Polyfoam General Application Laminate is a 600mm wide solution, also with a close tolerance surface finish.

Panels are manufactured with a core / backing of Polyfoam General Application Laminate or Polyfoam Laminating Board. The insulation boards are laminated to the designer's specified facing material with a polyurethane based adhesive. Adhesives used and conditions required for optimum adhesion will vary from adhesive to adhesive and by selected laminate facing material.



Typical U-Values (W/m²K) **of Panels insulated with Polyfoam General Application Laminate**

Thickness (mm)	U-Value (W/m²K)	R-Value (m²K/W)
150 (75+75)	0.20	5.00
125 (75+50)	0.24	4.15
100 (50+50)	0.30	3.30
75	0.38	2.60
50	0.54	1.85
25	0.90	1.10

Note: The U-Values have been calculated assuming 12mm plywood facing either side with no thermal breaks in insulation. R-Value expressed to BS EN 13164

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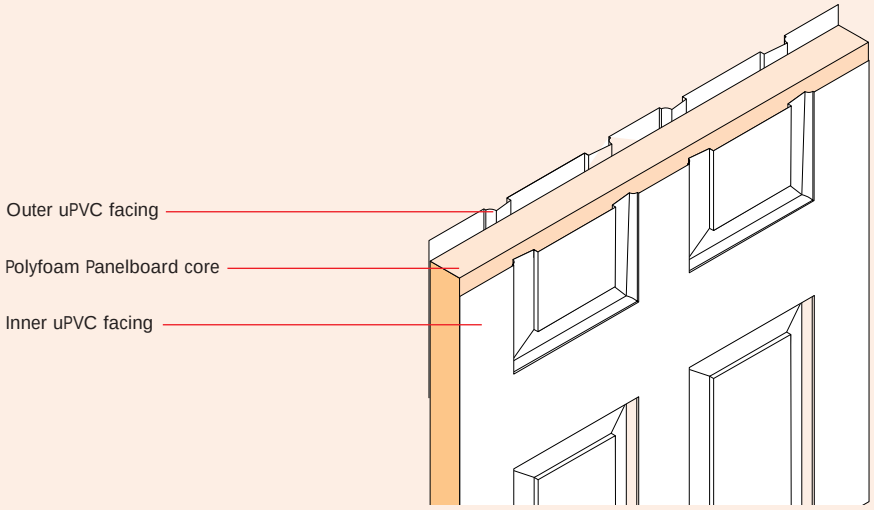
Close tolerance panel

The optimum solution for close tolerance panels is Polyfoam Panelboard, which is specifically designed for fabrication and panel manufacture where the surface material is fine and the end use of the panel requires a 'flat' aesthetic appearance.

Polyfoam Panelboard is a bespoke component item and available in a wide variety of sizes and thicknesses to suit the precise needs of the panel application.

Panels are manufactured with a core or backing of Polyfoam Panelboard. The boards can be laminated to the designer's specified facing material with a polyurethane based adhesive. Adhesives used and conditions required for optimum adhesion will vary from adhesive to adhesive and by selected laminate facing material.



Typical U-Values (W/m^2K) **of Close tolerance Panels insulated with Polyfoam Panelboard**

Thickness (mm)	U-Value (W/m^2K)	R-Value (m^2K/W)
50	0.54	1.85
30	0.86	1.15
20	1.20	0.80
10	1.99	0.50

Note: The U-Values have been calculated assuming a 1mm uPVC facing either side with no thermal breaks in insulation. R-Value expressed to BS EN 13164

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