

# ISOBOARD®

## What is **ISOBOARD®** Extruded Polystyrene Sheet

**ISOBOARD®** thermal insulation is a rigid, relatively high density, extruded polystyrene insulation board. It has a 100% closed cell structure and is produced in a fully automated continuous extrusion process in accordance with international specifications and standards.

It is produced using **NON CFC / NON HCFC - Zero Rating Ozone Depleting Potential [ODP]** Blowing Agent gases.

**ISOBOARD®** is supplied as sheets nominally 2500 mm in length x 600 mm wide in a range of set thicknesses. It is available as 'square' edge sheets or with a 'tongue and groove' joint system.

The Thermal Resistance - R factor for 100 mm thickness ND Grade product is 3.33 m<sup>2</sup> K/W [based on an **aged k** factor of 0.030 W/m.K]

## Benefits

With the use of advanced, state-of-the-art technology in the manufacture of **ISOBOARD®**, it is possible to provide a wide range of exceptional properties to the product, such as:

- high resistance to heat flow i.e. low thermal conductivity
- resistance to water vapour diffusion and water absorption
- uniform density distribution
- relatively high compressive strength
- ageing resistance
- resistance to bacteria and micro-organism growth.

As a result of all these, as well as many other benefits, **ISOBOARD®** is sufficiently versatile to make it an innovative and cost effective alternative to conventional insulation products. It also means that **ISOBOARD®** can be used in various applications across different market areas.

The cost of energy and demand for air-conditioning in buildings is constantly increasing. With increased energy conservation becoming more and more important, the ability of the product selected to effectively insulate a building - of whatever type - is equally important.

Insulation should be viewed as a long-term investment, consequently, one of the best ways to optimise this investment is to conserve energy by providing high quality effective insulation for buildings.

In controlled environments, e.g. air-conditioned office blocks, food and wine storage areas, the product's payback period is typically from three to five years, due to savings on energy costs.

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## Applications

**ISOBOARD®** is ideal for energy conservation and efficiency in a wide range of industrial and commercial buildings and in private dwellings.

Other applications include warehousing and factories, agricultural sheds (where clean and healthy environments are essential), cold storage, cavity wall insulation, flooring, dry-lining and sandwich panels with various laminates.

### Applications

- **Agricultural**  
Chicken and Turkey Sheds, Piggeries, Mushroom Farms, Fish Farms, Wineries, Apiaries
- **Cold Storage**  
Cool Rooms, Truck Bodies, Refrigeration, under Concrete Slabs.
- **Construction - Residential - Commercial**  
Under Concrete Slabs, Roofs, Walls, Suspended concrete Slabs, Tilt Slab inter-wall insulation

## Installations

- **Inverted Roof System**

**ISOBOARD®** is placed above instead of below the waterproofing membrane. This system protects the reinforced concrete slab as well as the waterproofing membrane against thermal shock, thereby extending the life of both.

- **Cavity Wall Insulation**

**ISOBOARD®** is placed in the cavity to prevent inside walls from heating up in the summer and cooling down in the winter. This helps in providing you with comfortable living temperature inside any building.

- **Over purlin insulation**

**ISOBOARD®** rigid roof liner supplied with tongue and groove edge profiles generally eliminate the need for "H" / "T" sections normally used for joint supports, or straining wires. A 5 mm gap is required when boards are joined on purlins.

## Other installations

- **Below slab / soffit**
- **Under batten (over truss)**
- **Under Floor**
- **Side cladding**

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## Physical Properties

PROPERTY	
<b>Thermal Conductivity</b>	<b>ISOBOARD®</b> 's homogeneous cell structure, skin faces and vapour diffusion prevents any convective motion within the board. The product's characteristics mitigates against thermal ageing, resulting in a stable long term thermal conductivity of 0.030 W/m.K at 24°C for ND Grade product.
<b>Resistance to Water and Vapour Penetration</b>	<b>ISOBOARD®</b> has a closed cell structure with no interstitial space and an outer higher density skin. This structure combined with the lack of voids and capillaries, ensures that it has a very low Water Absorption rate and low Water Vapour Permeability.
<b>Compressive Strength</b>	The cellular structure of <b>ISOBOARD®</b> ensures a relatively high compressive strength. This is dependant on the actual sheet thickness.
<b>Fire Behaviour</b>  AS/NZS 3837:1998 Test Certificate	<b>ISOBOARD®</b> contains a flame retardant additive.  <b>Foil faced ISOBOARD®</b> achieves a CLASS 3 Rating under the BCA Specifications A2.4 - tested according to AS/NZS 3837:1998 Cone Calorimeter Test Method.  Test Certificate # 7-562032-CV – dated 10/ 09/2008
<b>Dimensional Stability</b>	The regularity and homogeneity of <b>ISOBOARD®</b> 's cellular composition ensures good dimensional stability.
<b>Chemical Resistance</b>	<b>ISOBOARD®</b> is stable and has good resistance to acids, bases, cold bitumen, silicone oils but is unstable to tars, organic solvents, hydrocarbon gasoline and oil-based paints.
<b>Cutting / Fixing</b>	<b>ISOBOARD®</b> can easily cut with wood working tools (a wavy blade is preferable), mechanically fixed and bonded with suitable adhesives ( e.g. styrene acrylic compounds / 2-pack epoxy adhesives and Single Pack Moisture Cure Polyurethane Adhesives )
<b>Biological Effects</b>	<b>ISOBOARD®</b> is resistant to bacteria, micro organisms, insect and rodent attack.

## Table of Physical Properties

Property	ISOBOARD® ND	Test Method														
Density	32 - 35 kg/m <sup>3</sup>	DIN 53420														
Thermal Conductivity - as manufactured at 4.4°C test temperature	0.016 W / m.K	DIN 52612 or DIN 52616														
Thermal Conductivity - laboratory value at 10°C test temperature	0.027 W / m.K	ASTM C177 or ASTM C518														
Thermal Conductivity - 5 years aged at 24°C mean temperature	0.030 W / m.K	ASTM C177 or ASTM C518														
Compressive strength at 10% deflection [ actual result according to sheet thickness ]	220 - 360 kPa	DIN 53421														
Water vapour diffusion resistance factor [ actual result according to sheet thickness ]	100 - 225 μ 0.4 - 0.6 Perm inch	DIN 52615 ASTM C355														
Water vapour permeability [ actual result according to sheet thickness ]	0.4 - 0.6 perm inch	ASTM C 355														
Water absorption by submersion	0.2 % by vol.  1.00 % by vol.	DIN 53428 [ 28 day submersion of whole board ] ASTM D2842 [ ± 1 % by vol. precision ]														
Capillarity	Nil	na														
Linear coefficient of thermal expansion and contraction ( Heat soaking conditions)	70 x 10 <sup>-6</sup> per °C															
<p><b>Thermal Resistance - R value [m<sup>2</sup>K / W] [ based on an Aged k factor of 0.030 W / m.K]</b></p> <table border="1"> <thead> <tr> <th>Thickness</th> <th>25 mm</th> <th>30 mm</th> <th>40 mm</th> <th>50 mm</th> <th>75 mm</th> <th>100 mm</th> </tr> </thead> <tbody> <tr> <td>R value [m<sup>2</sup>K / W]</td> <td>0.83</td> <td>1.00</td> <td>1.33</td> <td>1.67</td> <td>2.50</td> <td>3.33</td> </tr> </tbody> </table>			Thickness	25 mm	30 mm	40 mm	50 mm	75 mm	100 mm	R value [m <sup>2</sup> K / W]	0.83	1.00	1.33	1.67	2.50	3.33
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## Sheet Dimensions / Profiles

<b>Sheet Dimensions</b>	<b>Length:</b> 2500 mm	<b>Width:</b> 600 mm
<b>Thicknesses:</b>	25 mm, 30 mm, 40 mm, 50 mm, 75 mm, 100 mm (100 mm straight edge only ) [ Other thicknesses available on specific application ]	
<b>Edge Profiles</b>	Tongue & Groove    Straight Edge	
<b>Colour</b>	Pale Blue	

## Storage and Handling

- Surface damage can be expected if product is not handled with care.
- Boards are marked indicating exposed face. Boards fitted with exposed faces on same side will result in smooth surfaces.
- Unused materials should be stored in covered areas away from direct sunlight and ultra-violet rays. Insulation boards once placed on the roof should not be left exposed.
- It is recommended that the insulation be immediately covered with the follow up system - e.g.: paving slabs, screed, sheeting, etc. to avoid possible degradation.
- Dust could settle on the face of the board if stored in dusty conditions. Wipe clean with damp cloth before installation.

Soot from diesel smoke could be attracted to the product. If you envisage construction plant in the vicinity after board has been installed, then wipe board down with damp cloth [soaked in a dilute water / industrial detergent solution] **before** installation.

### EXCLUSION OF WARRANTIES

**These systems are not intended for use by non-professional or inexperienced designers and applicators.**

**The information presented in this bulletin requires experience and background knowledge for correct interpretation and application.**

The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application since determination of fitness of the product for any particular use is the responsibility of the buyer. The data, information and suggestions covered in this data sheet, are given on the basis that the materials will be used correctly and professionally and at the sole risk of the user. No liability is accepted by AUSTRALIAN URETHANE & STYRENE PTY LTD, for any loss, damage arising from the use of the within information or materials described, no warranty, with expressed or implied, is given as to the exclusion from any patents or as to the fitness of the goods described for any particular purpose and each application should be fully evaluated to the satisfaction and acceptance of the user, in particular as to the combustibility or flammability or toxicity of material generated by combustion of the products herein described or materials produced from these products.