

FOIL BOARD[®]

INSULATION PANEL

The smarter way to insulate

Technical Brochure



Australian
Standard
AS/NZS 4859.1:2006 Lic 21646
SAI Global



THE RIGID INSULATION PANEL FOR WALLS, CEILINGS & FLOORS



Residential



Underfloor



Commercial



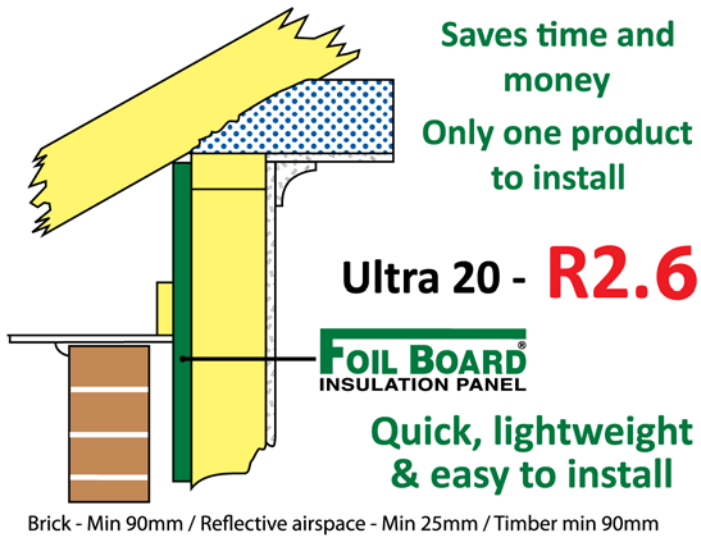
www.foilboard.com.au

- Fire Retardant
 - Easy to Install
 - No Gaps
 - Will not Sag
 - Lightweight
- No Harmful Fibres
 - Safe to Handle
 - Earlier Lock-up
 - Weatherproof
 - BCA Compliant
- Save on Energy Bills
 - Excellent Thermally
 - Excellent Acoustically
 - Impervious to Moisture
 - Will not Delaminate

FOILBOARD[®] INSULATION PANEL is more than just insulation — when used externally on framed walls it provides a weatherproof shield that enables internal trades to proceed without waiting for brickwork or cladding completion.

Since paper based products are not used in its manufacture FOILBOARD[®] INSULATION PANEL does not delaminate or breakdown in prolonged wet and windy conditions. Our exclusive fasteners ensure that FOILBOARD[®] INSULATION PANEL will withstand severe wind conditions.

1 BRICK VENEER - TIMBER / STEEL FRAME



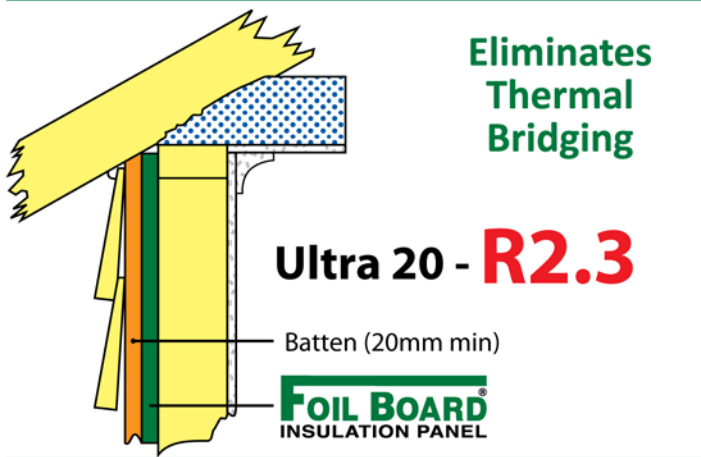
FOILBOARD[®] INSULATION PANEL will not sag and leave uninsulated pockets that can reduce the R value. - Installed correctly, the full 'R' value will last for the life of the building. Once fixed in place, it will maintain complete coverage around the building. As it covers the frame, there can be no loss of effectiveness via thermal bridging through the frame.

	Heat flow out	Heat flow in
Ultra 20 -	R2.6	R2.3
Super 15 -	R2.2	R2.2
Standard 10 -	R1.8	R1.8

INSTALLATION SUGGESTIONS — Installation of FOILBOARD[®] INSULATION PANEL is best done after frame, bracing, roof, fascia, flashing, windows and plumbing rough in are all complete and frame inspection is passed. Please note: for a proper fit, plumbing should be connected to floor joist or 400-500mm above bottom plate. Electrical wiring should be done after FOILBOARD[®] INSULATION PANEL is installed. In windy conditions it is suggested that the windward side is sheathed first, thus sheltering the rest of the job. FOILBOARD[®] INSULATION PANEL may be easily cut to size with a long snap blade knife.

The top sheets should be fitted first (push up until they hit the underside of rafters) cutting and fitting around rafters will then be avoided. Three fasteners per stud are recommended in windy situations. The FOILBOARD[®] INSULATION PANEL can be butt joined using the recommended tape with the fasteners. Joins do not need to be on studs or noggins. For a perfect job, sheets should lap onto top and bottom plates even if by only 10mm. Lintels should be covered and sheets butted at corners. Tape gaps and holes to prevent air infiltration which lowers "R" value.

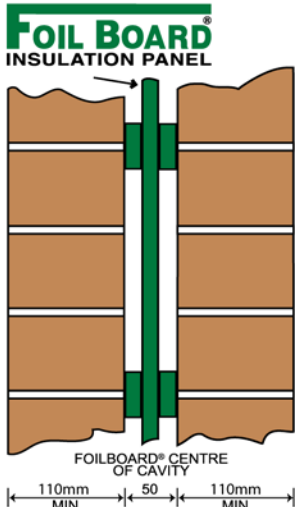
2 W.B. OR CLADDING - TIMBER / STEEL FRAME



A thermal bridge is created when materials that are poor insulators come in contact, allowing heat to flow through the path created. Attached to the face of studs, FOILBOARD[®] INSULATION PANEL eliminates thermal bridging through the frame and air infiltration.

	Heat flow out	Heat flow in
Ultra 20 -	R2.3	R2.1
Super 15 -	R2.0	R2.0

3 DOUBLE BRICK



FOILBOARD[®] INSULATION PANEL is easy to install during the construction of double brick walls. It is customary to run the inner skin of brickwork up at least 1200mm, push FOILBOARD[®] Spacer Blocks over the protruding wall ties. Following this, push the FOILBOARD[®] INSULATION PANEL over brick ties and up against the spacers, taping holes around ties secures the sheet in position. Tape all joints to restrict the transfer of hot and cold air.

	Heat flow out	Heat flow in
Ultra 20 -	* R2.4	* R2.3
Super 15 -	R2.2	R2.1
Standard 10 -	R1.8	R1.8

*Achieved through centring the board within a 65mm cavity Commercial Application

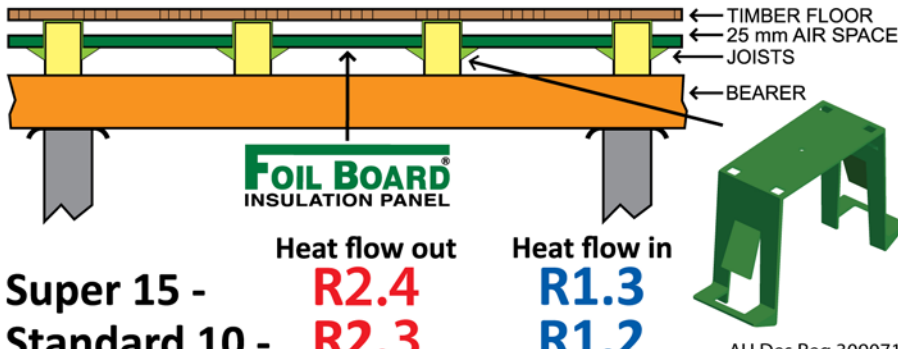


4A UNDERFLOOR - TIMBER FLOOR

FOIL BOARD[®]

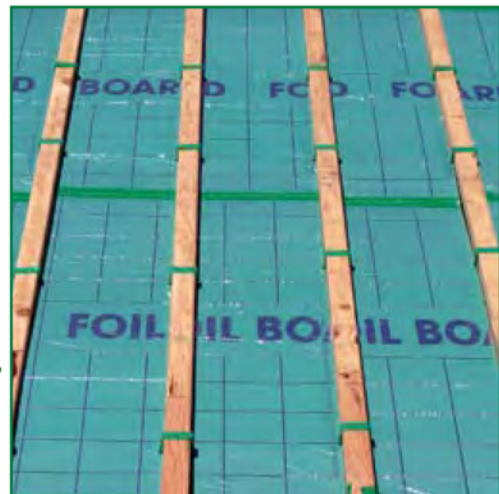
FLOOR SADDLE

THE EASIER WAY TO INSULATE UNDER TIMBER FLOORS



	Heat flow out	Heat flow in
Super 15 -	R2.4	R1.3
Standard 10 -	R2.3	R1.2

REQUIRES NO
• FASTENING • GLUEING • STAPLING
UNDER TIMBER FLOOR INSULATION SYSTEM



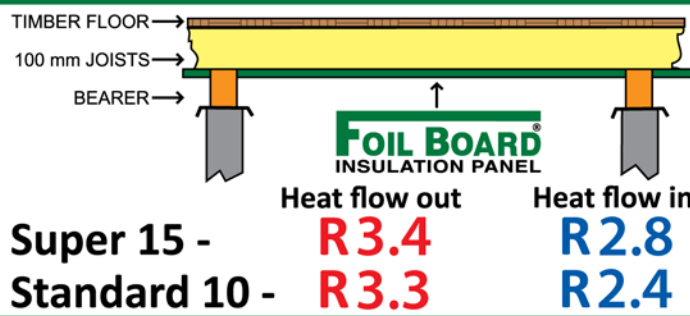
INSTALLATION SUGGESTIONS – It is recommended that for best-fit plumbing rough in and all other services under floor are complete. FOILBOARD[®] INSULATION PANEL is lightweight, easy and safe to handle. It may be easily cut to size using long snap blade knife and off-cuts can be taped and re-used. Space FOILBOARD[®] FLOOR SADDLES on top of floor joists at approximately 600mm centres. Saddles should be spaced 200mm from end of sheet. At double joists simply cut the FOILBOARD[®] FLOOR SADDLE in half and fasten with a nail. Push FLOOR SADDLES down so that the specially designed teeth can grip the joist.

Cut FOILBOARD[®] INSULATION PANEL to size to fit in-between joists. Assuming joists at 450mm centres, the 2440mm x 1200mm size sheets cut into 6 strips of 406mm x 1200mm. Place sheet between joists, resting on the lip of the FLOOR SADDLES. Gently apply pressure to the FOILBOARD[®] INSULATION PANEL until it clicks into place with our patented lock-in flap design. This will prevent wind from unsettling the sheet from underneath. For a perfect job sheets must be taped where they join. Tape or silicone gaps and holes to prevent air infiltration that lowers the 'R' value.

4B UNDERFLOOR - RETRO FIT

When fixed directly to under side of floor joists, FOILBOARD[®] INSULATION PANEL greatly improves the thermal performance of a timber floor.

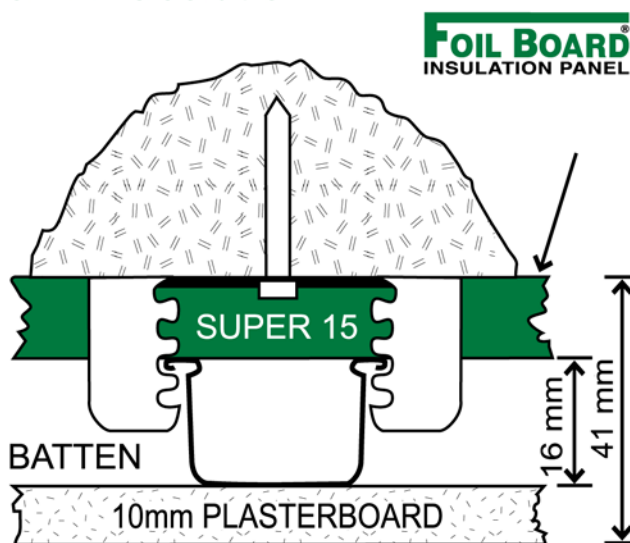
INSTALLATION SUGGESTIONS - FOILBOARD[®] INSULATION PANEL should be fixed directly to the underside of joists using FOILBOARD[®] FASTENERS. It is recommended that FOILBOARD[®] spans across joists and between bearers using 3 fasteners per joist. Joins do not need to be made on a joist and taping eliminates thermal bridging. The ends of the joists must be sealed in order to promote a sealed airspace. This is where the majority of the R-Value is created.



	Heat flow out	Heat flow in
Super 15 -	R3.4	R2.8
Standard 10 -	R3.3	R2.4

5 CONCRETE WALLS - SINGLE REFLECTIVE AIRSPACE

Slimline Solution



WALLS

	Heat flow out	Heat flow in	Airspace
Ultra 20 -	R1.8	R1.6	28mm Batten
Super 15 -	R1.7	R1.5	28mm Batten
Standard 10 -	R1.5	R1.4	28mm Batten
Ultra 20 -	R1.6	R1.5	16mm Batten
Super 15 -	R1.5	R1.4	16mm Batten

A 150mm thick concrete wall with plasterboard has a rating of only R0.3. A FOILBOARD[®] INSULATION PANEL system will transform it to the high values shown.

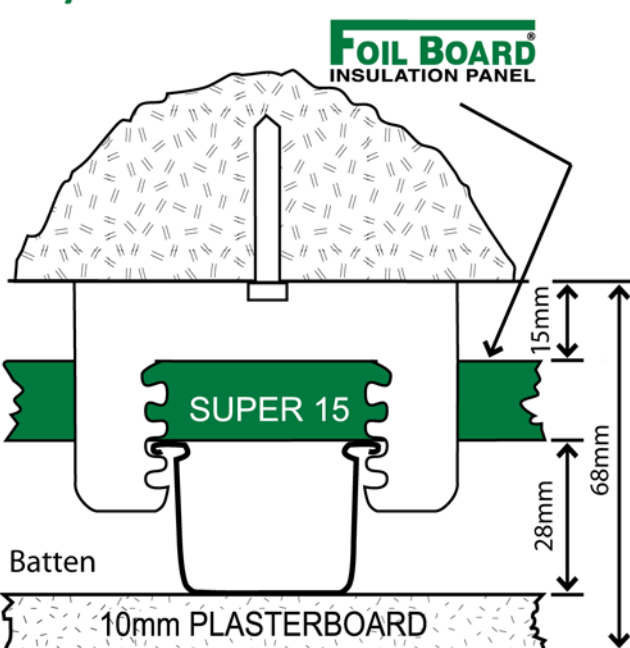
6 CEILINGS - SINGLE REFLECTIVE AIRSPACE

CEILINGS

	Heat flow out	Heat flow in	Airspace
Ultra 20 -	R1.6	R1.9	28mm Batten
Super 15 -	R1.4	R1.8	28mm Batten

7 CONCRETE WALLS - DUAL REFLECTIVE AIRSPACE

Easy to Install



WALLS

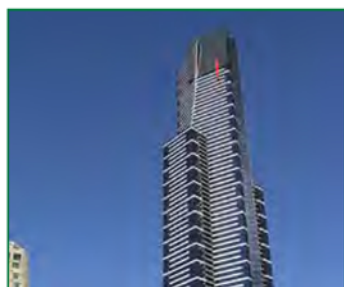
	Heat flow out	Heat flow in	Airspace
Ultra 20 -	R2.3	R2.1	28mm Batten
Super 15 -	R2.1	R1.9	28mm Batten
Standard 10 -	R2.0	R1.8	28mm Batten
Ultra 20 -	R2.0	R1.9	16mm Batten
Super 15 -	R1.9	R1.8	16mm Batten

In this configuration the double air space achieves higher R values and improved acoustic properties still with only a single sheet of FOILBOARD[®] INSULATION PANEL. To create the space behind the board use an LG Betafix Clip or similar plastering packer/batten.

8 CEILINGS - DUAL REFLECTIVE AIRSPACE

CEILINGS

	Heat flow out	Heat flow in	Airspace
Ultra 20 -	R1.9	R2.3	28mm Batten
Super 15 -	R1.8	R2.2	28mm Batten
Standard 10 -	R1.6	R2.0	28mm Batten



Melbourne's iconic Eureka Tower was developed with FOILBOARD[®] Insulation Panel.

INSTALLATION SUGGESTIONS

1. Install adjustable clips @ 600 centres.
2. Push FOILBOARD[®] INSULATION PANEL over clips completely covering wall (in very windy situations it may be necessary to glue to concrete)
3. Tape joins.
4. Push battens into adjustable clips.
5. Screw plasterboard to battens.

For Further information please visit

www.foilboard.com.au



FOILBOARD[®] was used by Comcraft Constructions in the new Myer Melbourne Redevelopment

CAN BE USED INTERNALLY WITH PLASTERBOARD OR EXTERNALLY WITH CLADDING

ACOUSTIC RATINGS

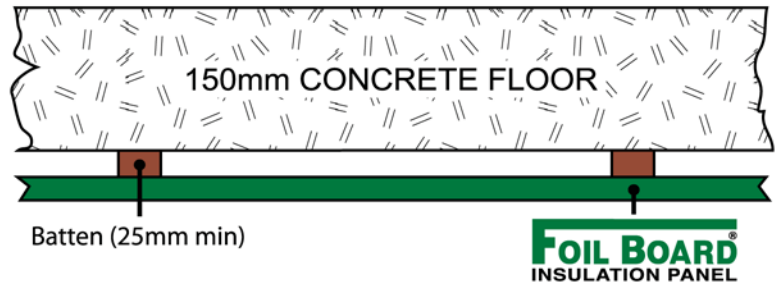
STC Values are available for various systems. Up to STC: 57, Rw: 56.

REFLECTIVE AIR SPACE

The air space in the above systems inhibits the transfer of moisture and the formation of mould

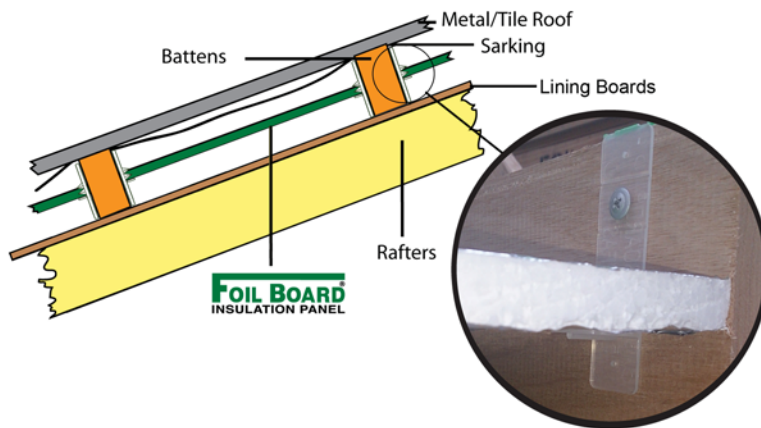
9 UNDER CONCRETE FLOOR

Where heating is used in suspended floor slabs, FOILBOARD® INSULATION PANEL achieves considerable energy savings. Direct stick applications are also available. Contact Foilboard Australia for details.



	Heat flow out	Heat flow in
Ultra 20 -	R2.7	R1.7
Super 15 -	R2.6	R1.5

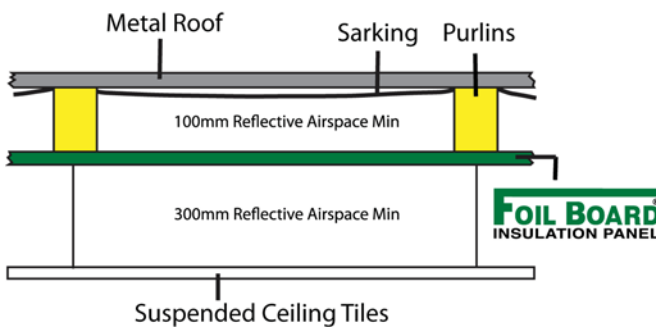
10 CATHEDRAL ROOF - TILE / IRON



Where cavities are at a minimum FOILBOARD® Insulation Panel offers a slimline solution to your cathedral ceiling with impressive R ratings. Many custom systems are available for this application, please contact Foilboard Australia on 1800 354 717 to find out more.

	Heat flow out	Heat flow in
Cathedral 25 -	R 2.4	R 2.8
Ultra 20 -	R 2.2	R 2.7

11 SUSPENDED CEILING



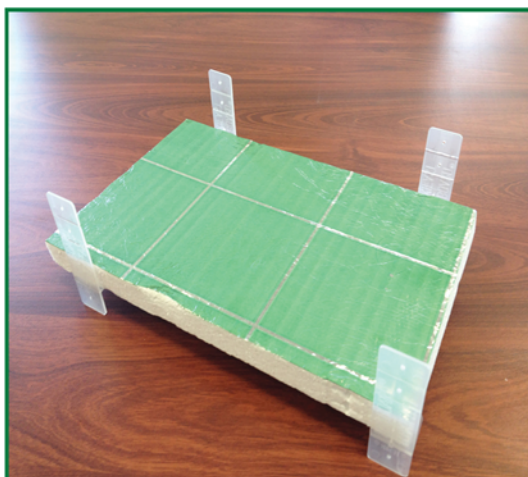
Fixing a layer of Foilboard to the underside of the roof purlins achieves high thermal efficiencies within this type of commercial application.

INSTALLATION SUGGESTIONS

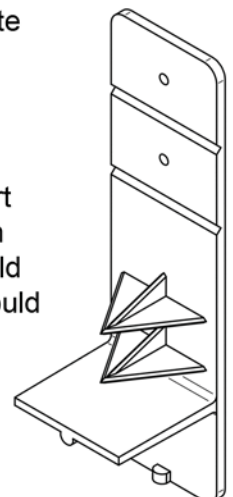
The sheet is installed to the underside of the roof purlins using fasteners. The suspended ceiling should be then hung from the purlins, though the Foilboard®

	Heat flow out	Heat flow in
Ultra 20 -	R 2.3	R6.0
Super 15 -	R 2.1	R5.9

FLEXIFAST FASTENER



Foilboard® Flexifast can be used to insulate existing structures or new projects. Foilboard® Flexifast allows all Foilboard® products to be installed **Underfloors - Walls - Ceilings**. Simply cut Foilboard to desired size, insert Flexifast into the Foilboard®. Gently push between framework and fix. Flexifast should be installed at 600mm centres. All joints should be taped for maximum performance.



For further information please visit

www.foilboard.com.au

or Technical department on

1800 354 717

DEVELOPMENT OF FOILBOARD®

During 1991, having been involved in the manufacture and installation of cellulose insulation for some fifteen years, Laurie Moylan Director of Fibre Fluf Home Insulation saw the need for a non-allergenic wall insulation to complement its ceiling insulation.

Through its sister company, Tri-Foam Australia, the invention of FOILBOARD® INSULATION PANEL followed. Primarily designed for brick veneer construction, FOILBOARD® INSULATION PANEL has been widely accepted by the construction industry because in addition to being good insulation, it fits in perfectly with the 'Critical Path Method' by giving immediate weatherproofing and allowing inside trades to proceed without waiting for completion of brickwork or cladding.

Continuous development by our Technical and Manufacturing departments has resulted in the design of many new systems including those for pre-cast concrete panels and slimline cathedral roofs. Latest development of an under timber floor fastening system led to the invention of the floor saddle, making FOILBOARD® easier to install under timber floors.

Foilboard Australia Pty Ltd is committed to developing, manufacturing and delivering the best in insulation products available on the market.

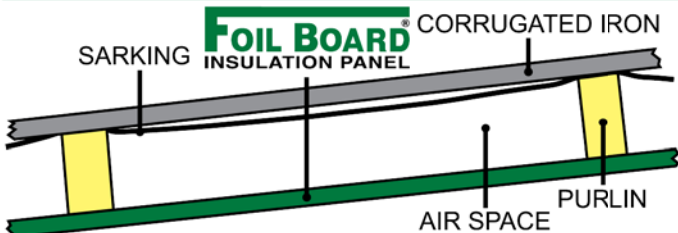
DESIGN SERVICE

For Accreditation purposes all 'R' value calculations have been conducted by an independent laboratory, however FOILBOARD® INSULATION PANEL's own technical department is able to do preliminary calculations in accordance with BCA (Building Codes of Australia) and AIRAH (Australian Institute of Refrigeration,

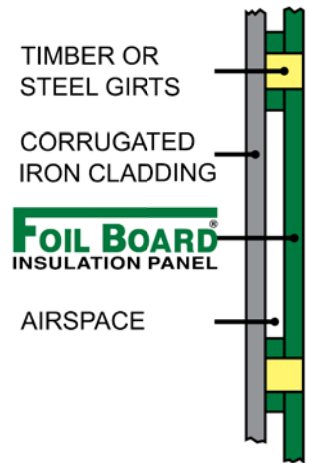
Air-Conditioning and Heating) guidelines.

If you wish to adapt any of the systems as described within this brochure to your special needs or just simply require advice please do not hesitate to contact our experienced and friendly Technical Department on 1800 354 717.

12 FACTORY - SHED ROOF & WALLS



The Foilboard® Fasteners are suitable for fixing to the face of timber and Foilboard® Steel Frame Fasteners to steel frame construction. Use water based adhesive to hold in place where fitting Foilboard® between framing members. Aluminium tape is recommended to tape all joints. It is most important to have an airspace between cladding and FOILBOARD® INSULATION PANEL. A spacer block can be used to ensure the board is in position.



Battening & lining walls & roof will add an extra R0.5 to total system values

	Heat flow out	Heat flow in
ROOF		
Cathedral 25 -	R 1.7	R 4.0
Ultra 20 -	R 1.6	R 3.5
Super 15 -	R 1.4	R 3.0
WALLS		
Ultra 20 -	R 1.5	R 1.5
Super 15 -	R 1.2	R 1.2



KOOKABURRA MANUFACTURING PLANT- REFURBISHMENT
 Here FOILBOARD® INSULATION PANEL was used to drastically improve the thermal efficiency of this factory. The pure aluminium foil laminated to FOILBOARD® also helped increase the ambient light whilst adding to the aesthetics.



B.P.S. Technical Bookshop
 FOILBOARD® INSULATION PANEL was used here to retro fit an old storehouse to a retail outlet. The developers were keen to maintain the industrial look of the building whilst drastically improving thermal efficiency.



All Greenhouse Gas emissions associated with producing this product have been offset.

This product is 100% Carbon Neutral

PRODUCT SPECIFICATIONS

SPECIFICATION

FOILBOARD® INSULATION PANEL is manufactured from fire retardant expanded polystyrene with pure aluminium foil laminated to both sides, an anti-glare ink is applied to one side that is designed to not impede with the reflectiveness of the foil. Where volume is sufficient FOILBOARD can be manufactured in thicknesses of up to 100mm. FOILBOARD® INSULATION PANEL is manufactured in Australia from all Australian materials.

	Standard 10	Super 15	Ultra 20	Cathedral 25
Reflectance				
Reflective Face	97%	97%	97%	97%
Emittance				
Reflective Face	E0.03	E0.03	E0.03	E0.03
Sheet Thickness	10mm	15mm	20mm	25mm
Sheet Size (mm)	2440 x 1200 2700 x 1200	2440 x 1200 2700 x 1200	2440 x 1200	2440 x 1200
Weight (grams)	767 848	995 1100	1233	1467
Density (kg/m³)	13.5 kg/m ³	13.5 kg/m ³	13.5 kg/m ³	13.5 kg/m ³
Core	Fire Retardant SL Grade EPS	Fire Retardant SL Grade EPS	Fire Retardant SL Grade EPS	Fire Retardant SL Grade EPS
Surface	100% Pure Reflective Aluminium	100% Pure Reflective Aluminium	100% Pure Reflective Aluminium	100% Pure Reflective Aluminium
Anti Glare	Metal Etching UV Stabilized Green Ink	Metal Etching UV Stabilized Green Ink	Metal Etching UV Stabilized Green Ink	Metal Etching UV Stabilized Green Ink
Adhesive	Contact Adhesive Proprietary Formula	Contact Adhesive Proprietary Formula	Contact Adhesive Proprietary Formula	Contact Adhesive Proprietary Formula
Ozone Depleting Substances				
Content	0	0	0	0
Manufacture	0	0	0	0
VOC (volatile organic compound)				
Content	0	0	0	0
Manufacture	< 0.8 g/l	< 0.8 g/l	< 0.8 g/l	< 0.8 g/l
Rate of Vapour Transmission (max) ug/m²s	Nil	Nil	Nil	Nil

PRODUCT TESTING

Thermal Performance	AS/NZS 4859.1	Rigid Cellular Polystyrene - Moulded	AS 1366.3
Surface Corrosion Resistance	AS/NZS 4859.1 Appendix I	Nominal Density	AS 1366.3
Thermal Resistance	ASTM-C 518	Cone Calorimeter	AS/NZS 3837
Emittance	ASTM-E 408-71	Vapour Transmission	AS 2498.5
Ignitability	AS 1530.3	Dry Delamination	AS/NZS 4201.1 Method 1
Flame Spread	AS 1530.3	Wet Delamination	AS/NZS 4201.1 Method 2
Heat Evolved	AS 1530.3	Shrinkage	AS/NZS 4201.3 Method 3
Smoke Developed	AS 1530.3	Water Barrier	AS/NZS 4201.4

Comparative testing of some materials to AS 1530.3 – Early Fire Hazard Test

Material	Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat evolved Index (0-10)	Smoke developed Index (0-10)
FOILBOARD®	0	0	0	0-1
EPS	12	0	3	5
Australian Softboard	16	9	7	3
Oregon	13	6	5	3

Source: EBS Notes on the Science of Building NSB66

Foilboard® Australia Pty Ltd is the owner of: Registered Trademark: No 674507. Registered Design: No 142133

SUMMARY OF 'R' VALUES

SYSTEM	REF NO#	APPLICATION	PRODUCT	HEAT FLOW OUT (Winter)	HEAT FLOW IN (Summer)
RESIDENTIAL WALLS					
	1	Brick Veneer Wall	Ultra 20	R2.6	R2.3
			Super 15	R2.2	R2.2
			Standard 10	R1.8	R1.8
	2	Cladded Wall	Ultra 20	R2.3	R2.1
			Super 15	R2.0	R2.0
			Ultra 20	R2.4	R2.3
	3	Double Brick	Super 15	R2.2	R2.1
			Standard 10	R1.8	R1.8
UNDERFLOOR					
	4A	Floor Saddle	Super 15	R2.4	R1.3
			Standard 10	R2.3	R1.2
	4B	Retro Fit	Super 15	R3.4	R2.8
			Standard 10	R3.3	R2.4
CONCRETE SYSTEMS					
	5	Wall Single Airspace - 28mm Batten	Ultra 20	R1.8	R1.6
			Super 15	R1.7	R1.5
			Standard 10	R1.5	R1.4
	6	Ceiling Single Airspace - 28mm Batten	Ultra 20	R1.6	R1.9
			Super 15	R1.4	R1.8
			Standard 10	R2.0	R1.8
	7	Wall Dual Airspace - 28mm Batten	Ultra 20	R2.3	R2.1
			Super 15	R2.1	R1.9
			Standard 10	R2.0	R1.8
			Ultra 20	R2.0	R1.9
	8	Ceiling Dual Airspace - 28mm Batten	Super 15	R1.9	R1.8
			Ultra 20	R1.9	R2.3
			Super 15	R1.8	R2.2
			Standard 10	R1.6	R2.0
	9	Concrete Floor	Ultra 20	R2.7	R1.7
			Super 15	R2.6	R1.5
CEILING SYSTEMS					
	10	Cathedral Roof	Cathedral 25	R2.4	R2.8
			Ultra 20	R2.2	R2.7
	11	Suspended Ceiling	Ultra 20	R2.3	R6.0
			Super 15	R2.1	R5.9
	12	Factory / Shed Roof	Cathedral 25	R1.7	R4.0
			Ultra 20	R1.6	R3.5
			Super 15	R1.4	R3.0
			Ultra 20	R1.5	R1.5
		Factory / Shed Wall	Super 15	R1.2	R1.2

Whether for a small house or a multi-million dollar project, ACCURATE insulation "R" values are essential in making decisions that affect energy costs and comfort. FOILBOARD® INSULATION PANEL values have been calculated by an independent laboratory, checked by another Thermal Engineer and then submitted to the Building Regulations Advisory Committee for evaluation. The R-Values shown are Total R-Values for the building system and are based on independent computations using proven data. Values are based on product in in-service condition in accordance with AS/NZS 4859.1:2006.

Careful consideration of your insulation system can drastically reduce your heating and cooling costs. Accreditation enables your private or Council Building Surveyor to quickly ascertain that your project complies with current regulations thus avoiding costly delays.

All the "R" values shown in:

red are **HEAT FLOW OUT** (Heat escaping from inside to outside, applicable in winter) and are calculated to a DELTA T of 6: Indoors 18°C, outdoors 12°C (6K difference), mean 15°C

blue are **HEAT FLOW IN** (Heat entering from outside to inside, applicable in summer) and are calculated to a DELTA T of 12: Indoors 24°C, outdoors 36°C (12K difference), mean 30°C

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