



Technical Manual



Induraplate

SOLID ALUMINIUM PANELS

About this Manual.

This manual has been developed to effectively assist fabricators and contractors to work with Paneltec's 100% Solid Aluminium Panel; Induraplate.

Due to the uncontrollable conditions and methods of job scope, as well as the variable skills and judgment of users/installers and the quality of equipment, tools, etc., the suggestions and recommendations contained in this manual are provided without warranty.

The information and recommendations contained herein are believed to be correct at time of publishing 02/12/2019.

Paneltec reserves the right to revise the contents of this manual.





Induraplate

SOLID ALUMINIUM PANELS

About Induraplate.

Induraplate is a 3mm non-combustible solid aluminium cassette cladding system that forms part of Paneltec's range of fully compliant, non-combustible cladding solutions.

Induraplate is a durable, high impact resistant, solid panel which can be curved and rolled. It features the same PVDF coating system as Paneltec's Induracore G2; well proven for its superior quality, extensive colour range and integrity; unlike traditional 3mm powder-coated aluminium.

Induraplate panels are prefinished and the flexibility of the PVDF coating means that they do not require fabrication prior to coating unlike traditional powder coated cassettes, which minimises lead-times, damage and costs.

Key Features.



NON-COMBUSTIBLE

Induraplate is AS1530.1 certified non-combustible



PAINT SYSTEM

Induraplate only uses the highly recognised PVDF KYNAR 500 or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial pollutants.



INFRASTRUCTURE

Being full scale fire tested and offering simple and lightweight fabrication make Induraplate a suitable product for large infrastructure projects.



WEATHERPROOFED

Induraplate is weatherproofed to E2 standards when using Paneltec's NZS4284 tested system.



VERSATILE

Induraplate can be custom designed into a wide range of shapes and dimensions as well as able to be perforated or curved in some applications making it a versatile design choice.



CONCEALED FIX SYSTEM

Induraplate is the same to fabricate and install as traditional ACP by CNC routing panels into the concealed fix z-angle cassette system.



HIGH DURABILITY

Induraplate panels are highly durable and impact resistant. They can be used effectively in high traffic areas.



WARRANTY

Induraplate has up to a 15 year warranty when installed by a licensed installer

QUALITY.

Manufacturing Quality.

A dedication to the total fulfillment of our client's and customer's expectations is reflected by a complete quality control system, beginning at the point of specification and continuing through to delivery of the guaranteed products.

All activities are carried out in a manner which:

- Uses the framework of ISO9001 Quality Standards to verify the quality of our systems
- Ensures that our products and services are of the highest standards
- Create continuous improvements to our product through the application of the best quality practices.

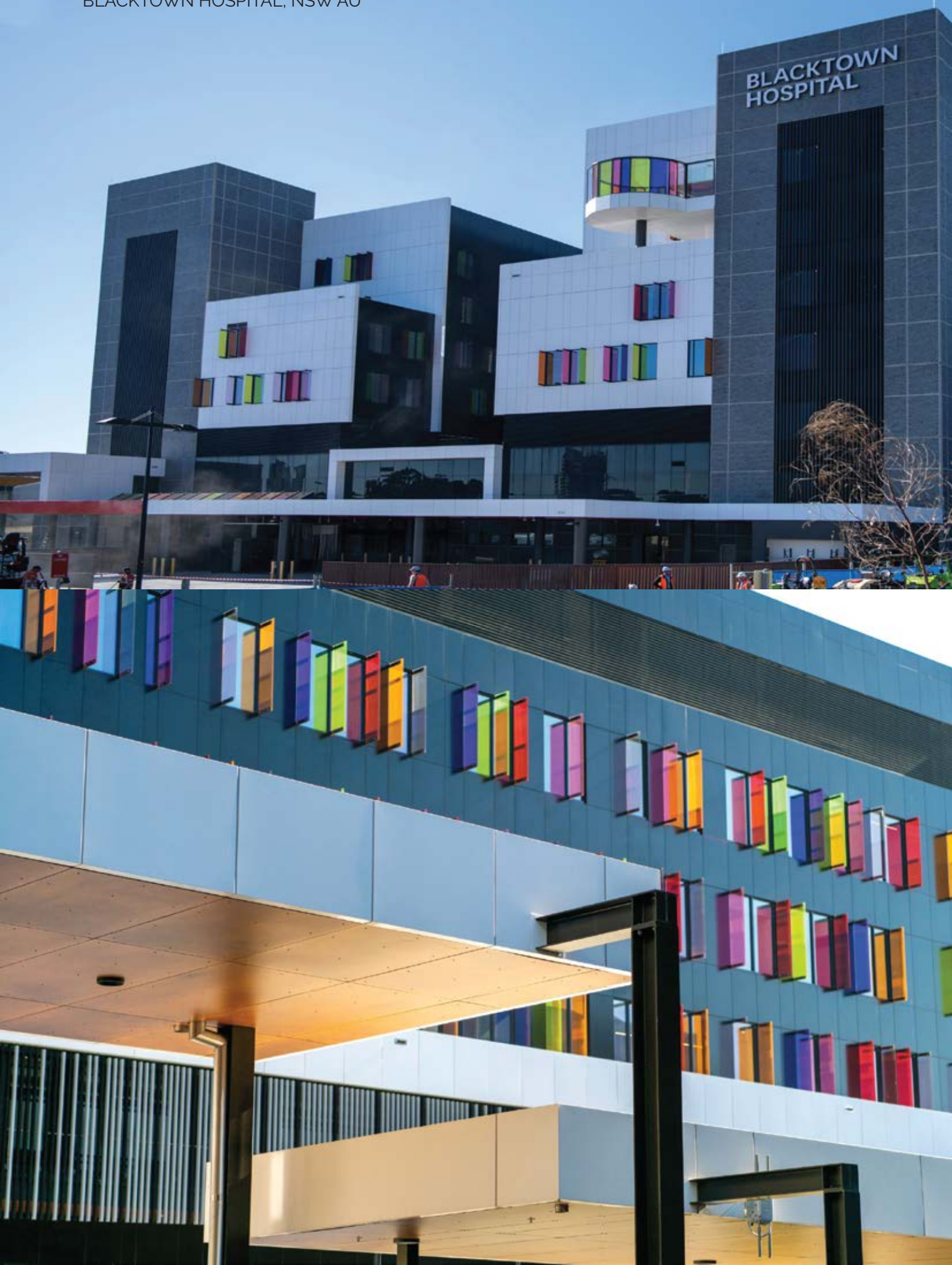
Acceptance Variation.

WIDTH	±2.0 mm
LENGTH	±4.0 mm
THICKNESS	±2% for 3 mm
BOW MAXIMUM	0.5% of the length and/or width
SQUARENESS MAXIMUM	5.0 mm
SURFACE DEFECTS	The surface shall not have any irregularities such as dents, scratches and other imperfections in accordance with our quality assurance.

Warranty.

The standard warranty is 15 years, terms and conditions apply.

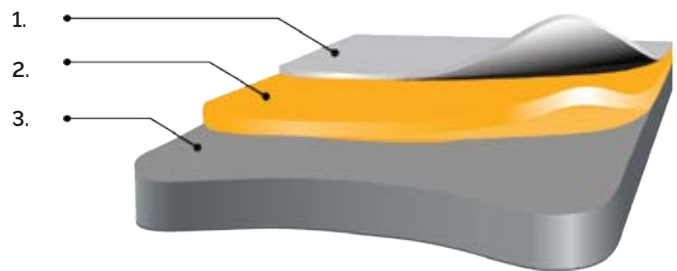
BLACKTOWN HOSPITAL, NSW AU



MATERIAL PROPERTIES.

Typical Composition.

1. Protective film
2. PVDF-Kynar 500 coating system
3. 3mm Aluminium



Aluminium.

Induraplate is manufactured from 3003 series grade aluminium and is also available in marine grade 5052 series aluminium for best machinability and exterior performance

Dimensions.

Width	Length	Thickness
1250/1500	2500	3mm
	3200	
	4000	
Custom sizes are available, please speak to the Paneltec team.		

* May not be available in all finishes.

Weight.

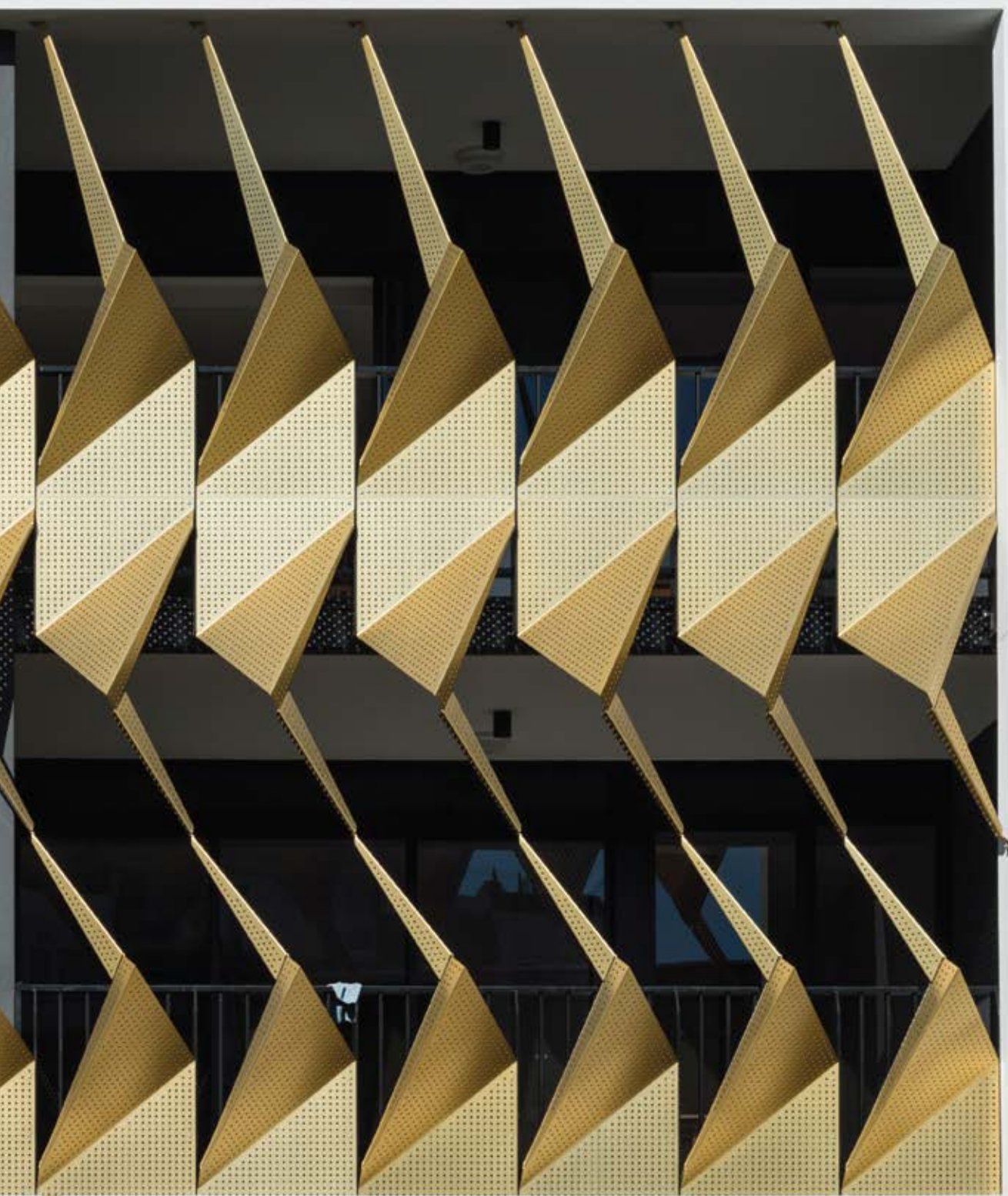
Thickness	Weight [Kg/M²]
3mm	8.1

Technical Data.

Physical Property	Value
Density	2.63 g/cm ³
Melting Range	605-650 °C
Thermal Expansion	23.8 x10 ⁻⁶ /K
Modulus of Elasticity	70 GPa
Thermal Conductivity	138 W/m.K
Electrical Resistivity	0.0495 x10 ⁻⁶ Ω.m
Tensile Strength	210 - 260 MPa
Proof Stress	130 Min MPa
Hardness Brinell	61 HB
Acoustic Insulation	Rw 27

Technical Data of KYNAR 500 PVDF Coating.

Classification	Test Standard	Result	Remarks
Substrate	ASTM D1005	Pass	Aluminium
Flexibility	ASTM D4145 ECCA T7 NCCA 11-19	Pass	1~2T - No Cracking
DFT	ASTM D1400 ASTM D1005 NCCA 11-13, 14, 15	Pass	
Colour Difference	ASTM 2244	$\Delta E < 5$	4000hrs
Gloss Meter	ASTM D523	Pass	
Gloss Retention	ASTM 2244	85%	4000hrs
Chalking Resistance	ASTM 2244	<8 units	4000hrs
Pencil Hardness	ASTM D3363		
Dry Film Adhesion Wet Adhesion Hot Adhesion		Pass Pass Pass	38°C, 24hrs 100°C, 24hrs
Reverse Impact Resistance	ASTM D2794	No Cracking	12.7mm x 0.5kg x 500mm
Bending/Gardner Impact	ASTM D3281	Pass	Normal
Solvent Resistance	ASTM 2794	Pass	MEK double rubs
Acid Resistance	ASTM 1308	Pass	7 days soaking in 10% H ₂ SO ₄
Alkali Resistance	ASTM 1308	Pass	7 days soaking in 10% NaOH
Detergent Resistance	ASTM D2248	Pass	72 hrs soaking in 3% detergent
Salt Resistance	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	0.8% change	5000hrs
Colour Retention	ASTM 2244	$E < 0.68$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
Humidity Resistance	ASTM D714	Pass	2000hrs
	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	No visible change	5000hrs
Colour Retention	ASTM 2244	$\Delta E < 0.52$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
Weathering Resistance	ASTM G53	Includes the following:	
Gloss Retention	ASTM D523	6.2% Change	5000hrs
Colour Retention	ASTM 2244	$E < 0.27$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
Chemical Resistance	ASTM C207	Pass	Mortar, 24hrs
	ASTM D1308	Pass	10% HCl, 15 min
		Pass	70% HN03 Vapours, 30 min
		Includes the following:	
Gloss Retention	ASTM D523	6.2% Change	16hrs
Colour Retention	ASTM 2244	No Change	16hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)



Fire Resistance.

In today's Architecture, it is the technical details, as well as the appearance that count; such as sustainability, thermal insulation, and fire protection.

Induraplate is one of the few large format cladding panels that are non-combustible and when tested to AS1530.1.

Visually, Induraplate is similar to traditional composite panel, however what makes it different is the fact that it is constructed from 100% aluminium, rather than combustible material such as polyethylene and fire rated mineral. This makes Induraplate, in addition to Induracore G2, an ideal product for all applications where non-combustible panels are required; such as high-rise buildings, schools or hospitals.

As with all building products, the use of Induraplate must be authorised by the regulatory body.

The Fire Resistance standards achieved with standard Induraplate are as follows

INDURAPLATE			
TEST STANDARD	RESULT		
AS1530.1	Non-Combustible		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1

FINISHES.

Stove Lacquering.

Induraplate only uses the highly recognised PVDF KYNAR 500, or FEVE coating systems known for their high durability. These premium paints provide an optimum resistance to weather and industrial pollution. More than 40 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoro polymer coatings.

For a full list of standard Induraplate colours, refer to our Paneltec Solid and Metallics Colour Charts. We are also able to match almost any panel finish in indent order quantities.

Other coating Finishes.

The Induraplate range also offers the following finishes:

- REPEL - A self-cleaning surface coating
- VITRAART - for personalized design and imagery

CALIBRE EASTERN CREEK,
NSW AU



THERMAL PERFORMANCE

Thermal Insulating Properties.

Thermal Resistance		
From -50°C to +80°C		
Panel Thickness (mm)	Thermal Resistance 1A m ² .K/W	Heat Transmission Coefficient W/(m ² .K)
3	0.0069	5.65

Average Expansion.

Material	Expansion Coefficient (x10 ⁻⁶ /°C)	Elongation per 1000mm T=50°C
Induraplate	23.8	1.2mm
Aluminium	23.8	1.2mm
Zinc	26.7	1.3mm
Steel	12.2	0.6mm
Concrete	12	0.6mm

FABRICATION METHODS



Cutting.

Induraplate can be cut with a wall-saw, circular saw, bandsaw or jigsaw. The requirements for a circular saw are identical to that for cutting solid aluminium.

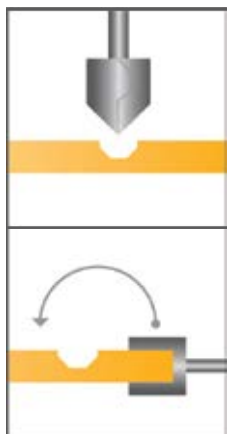
Specific details below.

The Cutting tool material to be carbide tipped 2-4mm	
Tooth geometry:	Trapeze/flat
Tooth pitch:	10-12mm
Rake Angle:	-5° (negative)
Clearance Angle:	15°
Max cutting speed:	20m/mm



Contour Cutting.

Induraplate panel can be contour cut with water jets, CNC routers, copy routers and jigsaws. Coolant is recommended for router processing



Routing / Folding

Induraplate panel can be cold shaped, enabling it to form various shapes and sizes. A rectangular or V-shaped groove can be routed on the back of the panel, following potential fold lines. The panel can then be hand folded along this groove, creating a precise and even fold. The outer radius of the fold can be determined by the shape and width of the routed groove.

There must be between 0.7mm and 1mm of aluminium left at the base of the routed groove. Too much material can cause stress and result in a larger radius fold than desired. It will also make folding the panel more difficult and prevent the required fold angle from being obtained.

FABRICATION METHODS



Shearing

Shearing can be done with a guillotine. Ensure the blanking tools are padded. Shearing causes a slight roll down along the cut edge of the panel.



Punching.

The punching of flat formed parts from Induraplate is performed in the same way as a solid aluminium sheeting, using sharp tools and dies with minimal cutting clearance. Varying shapes may easily be punched with normal aluminium punching machinery. As with shearing, a slight roll down may occur.



Roll Bending.

Induraplate panel can be bent with a roll-bending machine. Use polished rollers free of imperfections only. Minimum radius of 200mm.



Screwing.

Induraplate can be screwed with conventional stainless steel or galvanised screws for metal. For outdoor use allow for thermal expansion.



Riveting.

Riveting is possible with the usual equipment and solid rivets or blind rivets. For outdoor use allow for thermal expansion.



Drilling.

Induraplate panel can be drilled with centre point twist drills normally used for aluminium or machines common for metals. Drill material: High-Speed Steel (HSS).



Bending

Bending is possible with a folding table or brake press. The inside bending radius is roughly 5 times the Induraplate panel thickness. Use protective foils. For serial production, tests should be made on sample panels.

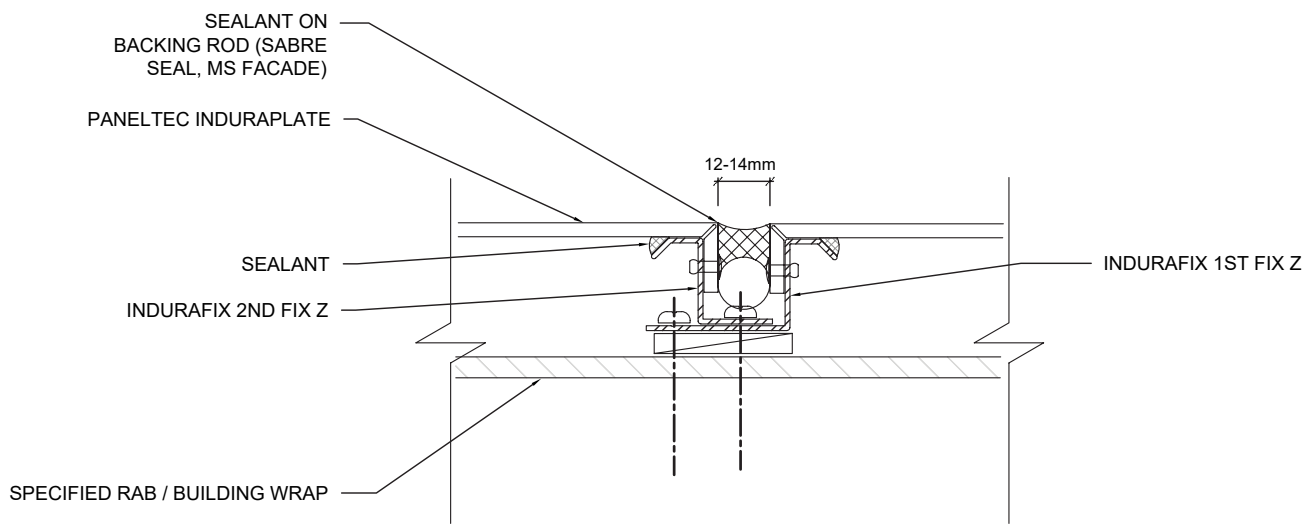


Gluing.

Flexible metal adhesives or double sided VHB tape should be used.

INSTALLATION

Fixing System.



Concept Drawing Only.

For more details, please refer to the
Paneltec Induraplate Installation Manual

The Induraplate installation details are provided for conceptual purposes only. These are not the only methods that can be used to attach Induraplate, nor can they be used generically without consideration for each individual application. Good design engineering may preclude the choice of details used.

System Components.

- Aluminium zed angle
- Aluminium Tophat
- Aluminium RHS Stiffener
- 3M VHB Tape
- Stainless steel Screw/Rivets
- Sealant / Caulking
- Foam cell backingrod

Installation Guidelines.

- All sheets should be installed in the same direction as marked on the protective film to prevent possible finish variation
- As minor colour variation can occur between production lots, it is recommended to place total requirement for a project in one order to ensure colour consistency
- Where aluminium materials come in contact with dissimilar metals, a proper insulator or isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action
- For Cassette Fix, the bend-in portions between panel joints should not be caulked before strippable film is removed.
- Please ensure Induraplate is used as part of a compliant wall system, with all components complying with the non-combustible or limited combustibility wall build up

CALIBRE EASTERN CREEK,
NSW AU





Colours.

Induraplate is available in the following colours in a MOQ of 600m².

Please refer to our Induracore G2 colour chart for other finishes, as well as custom matched colours that can be applied to Induraplate with a 1200m² MOQ.



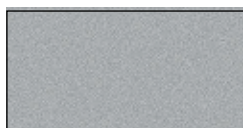
IP9902 Pure White



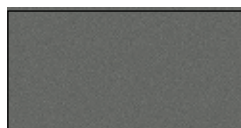
IP1266 Thriller Grey



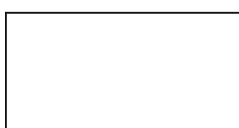
IP9130 Enigma Black



IP9701 Silver Ice Metallic



IP9137 Dark Grey Metallic



IP1005 Snow White



MISCELLANEOUS

Protective Film.

- Make sure no damage will occur to the panel following removal of protective film
- Remove protective film within 45 days of installation to avoid glue residuals on panel surface due to weathering
- Do not apply PVC tapes, polyurethane sealant or Silicone sealant onto Induraplate protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating.
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the panel.

Handling and Storage.

- Considerable care should be taken in the handling of Induraplate
- Induraplate panels are sensitive to impact, particularly shocks from small, hard objects, which can dent the aluminium cover sheet
- A minimum of two people should be used when sliding large sheets to avoid scratching
- To prevent surface damage when stacking Induraplate, there should be nothing between the panels
- Induraplate should be stored in a cool and dry area where temperature is relatively stable
- Pallets of Induraplate should be stored horizontally with adequate support to prevent sagging
- Stacked pallets should be identically sized and not more than four (4) pallets high

Sustainability.

Induraplate has been designed with an expected performance life of over 50 years.

All Paneltec products have been developed with the health of the environment and community in mind. As part of our commitment to using recyclable or reusable materials wherever possible; all of Induraplate is 100% recyclable.

Cleaning and Caring.

RECOMMENDED CLEANING AGENTS

- Mineral Spirits
- Organic Cleaners
- PH-Neutral Solvents

KEEP YOUR WARRANTY FRESH

Maintaining your Induraplate finish is an important component to maintaining your warranty. Document each time you clean your Induraplate panels. Cleaning frequencies are based on project location and are provided in the warranty.



Inspiring design. Manufacturing possibilities

p. 0508 PANELTEC
0508 726 3582
(09) 439 4357

e. info@paneltec.co.nz

www.paneltec.co.nz

