

## **Walkways, Stairways, Handrail Systems and Ladders**

**easy • safe • simple**

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## About Pultrac

Pultrac specialises in pultruded composite structural profiles, FRP moulded mesh, for walkways, handrail systems, ladders and stairways.

Pultrac structural composites and FRP Mesh are a superior alternative to traditional steel, aluminum and wood profiles, as they will not rust, rot or distort. This makes them ideal for all industries including chemical plants, cooling towers, agricultural and mining. They are also able to withstand harsh environments making them suitable for oil rigs and dive platforms.

All products are Easy, Safe and Simple to install and have a life expectancy of in excess of 35 years.

## Comparison with Conventional Materials

	FRP Profiles & Mesh	Steel	Aluminium	Timber
Corrosion Resistance	High	Low	Medium	Low
Strength	High	High	High	Low
Weight	Low	High	Low	Medium
Electrical Conductivity	Low	High	High	Low
Thermal Conductivity	Very Low	High	High	Low
Fabrication	Low	High	Medium	Low
EMI/RFI Transparency	Yes	No	No	Yes
Life Cycle Cost	Low	Moderate	Moderate	High
Environmental Impact	Low	High	High	High
Moisture Resistance	High	High	High	Low



## Properties of FRP Mesh and Structural Profiles

### Fire Resistant

Pultrac structural profiles and moulded gratings have a flame spread rating of less than 25 for the ASTM E-84 test standard.



### Chemical Resistant

Pultrac pultruded structural profiles and fiberglass grating are manufactured using high strength reinforcing fibers and a range of premium grade thermosetting resins which are ideal in corrosive and chemical environments.



### Lightweight, but Strong

Pultrac structural profiles and moulded gratings have a specific gravity, one-quarter that of steel and two thirds that of aluminum. Having a high strength to weight ratio which considerably simplifies installation and handling.

### Long Service Life and Maintenance Free

Pultrac products are resistant against corrosion and chemical attack. They provide a long lasting safe alternative to steel, aluminum and timber, having a life expectancy of in excess of 35 years, making it more cost effective than the alternatives.



### Non-slip

Pultrac moulded grating panels have a concave profile on the upper surface. Grit is added which consists of a tough silica finish that will ensure the maximum skid resistance in wet environments.

### Non-conductive

Pultrac structural profiles and moulded grating are non-conductive and can therefore be safely used in electrical work areas.

### Non-sparking

Pultrac structural profiles and moulded gratings will not create sparks when impacted with metal or other objects making it safe to be installed in areas containing combustible liquids and gases.

### UV Resistant

To reduce the effects of Ultra Violet radiation, UV inhibitors are distributed throughout the embodiment of the component.



## Chemical Resistance

Chemical	% Conc.	Max Temp ° C		
		Vinyl Ester	Isophthalic Polyester	Orthophthalic Polyester
Hydrochloric acid	30	82	65	--
Nitric acid	35	38	--	--
Sulphuric acid	25	82	65	--
Hydrofluoric acid	10	24	--	--
Lactic acid	100	82	65	60
Hypochlorous acid	Sa	60	--	--
Citric acid	All	49	--	--
Potassium hydroxide	10	49	--	--
Sodium hydroxide	10	82	--	--
Calcium hydroxide	25	82	65	--
Calcium hypochloride	25	82	65	--
Ferric chloride	100	82	65	60
Aluminium chloride	All	82	65	60
Mercuric chloride	100	82	65	60
Silver nitrate	100	82	65	60
Sodium salt	All	24	--	--
Zinc chloride	All	24	24	--
Acetone	100	124	--	--
Chloroform	100	--	--	--
Hydrocarbons	All	38	38	38
Phenols	10	24	--	--
Ozone	All	82	--	--
Bleach	All	24	--	--
Ammonium hydroxide	30	24	--	--
Ammonium salt	All	24	--	--
Sewage	All	82	--	--
Copper II oxide	All	52	52	--
Glycol	100	82	65	60
Sulphur dioxide	Sat	82	65	60
Sodium phosphate	50	82	--	--
Water	100	82	65	60
Chlorine water	Sat	49	--	--

## FRP Mesh



Pultrac moulded mesh is used for walkways and stairs around chemical plants, cooling towers and for platforms in oil rigs.

They are manufactured using a heated mould process. Continuous fibres are placed in the mould in alternating layers and are completely wetted out with resin. This continuous process produces an integral, one piece construction giving it bi-directional strength.

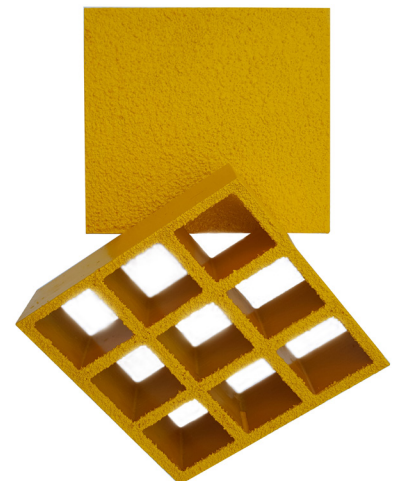
Pultrac moulded grating is resistant against corrosion and chemical attack, provide a long lasting safe alternative to metal grating. The addition of grit to the surface adds increase slip-resistance.

Pultrac gratings have been developed to meet the stringent quality standards of the Australian, American and European markets

All products are available in a range of dimensions and colours and can be supplied as either a open or covered mesh.

### Industries

Mining  
Construction  
Water, power and sewerage  
Chemical and mineral processing  
Petrochemical  
Road and transportation  
Marine  
Food and Beverage





## Pultrac Mesh is available in the following mesh and panel sizes

Moulded Grating - Mesh size	Thickness (mm)	Panel Size (mm)	Weight (kg/m <sup>2</sup> )	Open Area (%)
38 x 38	20	1220x3660, 1220x4000, 1524x4010	9.8	65
38 x 38	25	1220x3660, 1220x4010,	12.3	68
38 x 38	30	1220x3660, 1220x4000, 1200 x4026	14.6	68
38 x 38	38	1220x3660, 1220x4000, 1524x4000, 1524x3050	19.5	68
38 x 38	50	1220x4010, 1220x3660	42	56
50 x 50	50	1220x3660	23.7	78





## FRP Structural Profiles



### Profiles available

- Universal Beam
- Universal Column
- Channel
- Kick plate
- Round tube
- Square tube
- Rectangle hollow section



Pultrac pultruded profiles are used in a wide range of applications, offering a unique combination of chemical resistance, high strength, thermal and electric non-conductivity. Each rigid composite structural profile is available in a number of dimensions suitable for a variety of design and application requirements. Custom shapes are also available upon request.

The high strength to weight ratio simplifies handling and installation making them Easy, Safe and Simple to install.

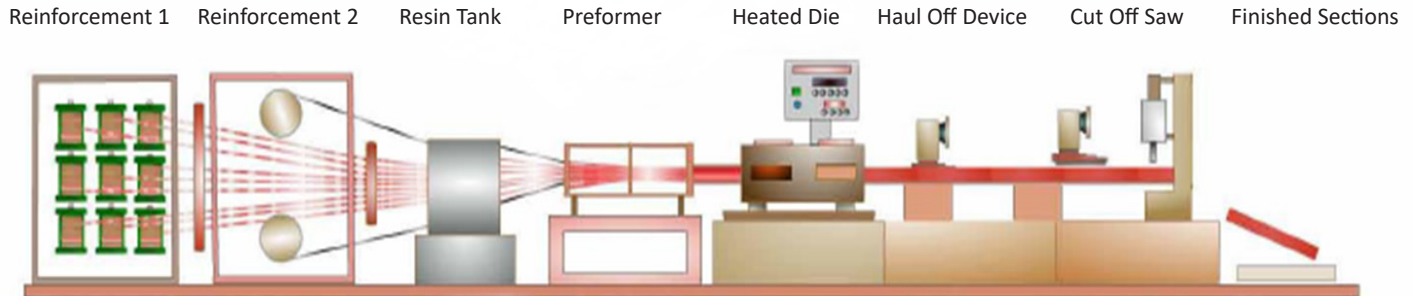
Pultrac profiles have been developed to meet the stringent quality standards of the Australian, American and European markets.

### Industries

- Mining
- Construction
- Water, power and sewerage
- Chemical and Petrochemical
- Road and transportation
- Mineral processing
- Marine
- Food and Beverage



## The Pultrusion Process



Pultrusion is a continuous process of pulling resins and reinforcing materials through a heated die, forming profiles of uniform cross section in a continuous length.

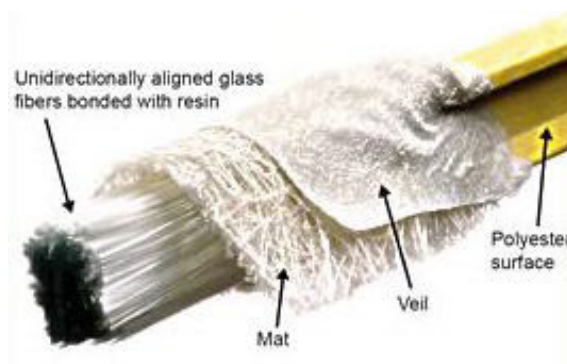
Pultrusion gets its name from the method by which the profiles are made. Raw materials are pulled by “the puller” which is located just before the final cut-off saw. The “puller” is made up of pulling pads that grip the product and drive the process.

The pultrusion process involves:

- Reinforcement 1 - Unidirectional roving, the reinforcing fibre that runs along the length of the profile.
- Reinforcement 2 - The fibre mat is added in which is a multi-directional reinforcement.
- The resin, typically vinyl ester for increased durability and strength.
- The fibre is fully wetted with the liquid resin and pulled into a preformer for aligning the reinforcements.
- Then into the heated die where curing takes place.
- Once the material enters the die, a surface veil may be added which enhances the final product’s surface appearance.

All the resins used in the pultrusion process have a catalyst or hardener added when the resin is mixed which is activated at about 93°C. Consequently, as the wet reinforcement passes through the heated die, the product changes from liquid to a solid profile with all the reinforcement laminated within.

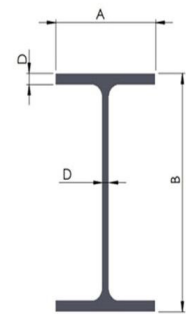
The product is pulled through the die by “the puller “. The final product is then cut to the desired length.



## Profiles

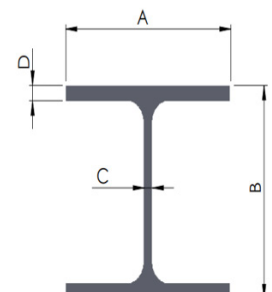
### Universal Beam

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C x D	
PUB76A	76 x 152 x 6.4 x 6.4	3.59
PUB76B	76 x 152 x 9.5 x 9.5	5.32
PUB102A	102 x 203 x 9.5 x 9.5	7.20
PUB102B	102 x 203 x 12.7 x 12.7	9.50
PUB127B	127 x 254 x 9.5 x 9.5	9.00
PUB127B	127 x 254 x 12.7 x 12.7	11.90
PU152A	152 x 302 x 9.5 x 9.5	10.74
PUB152B	152 x 305 x 12.7 x 12.7	14.30



### Universal Column

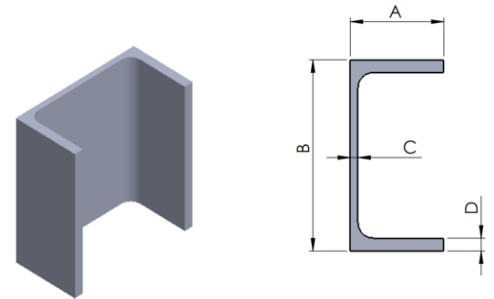
Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C x D	
PUC76	76 x 76 x 6.4 x 6.4	2.67
PUC102A	102 x 102 x 6.4 x 6.4	3.59
PUC102B	102 x 102 x 8.0 x 8.0	4.50
PUC152A	152 x 152 x 6.4 x 6.4	5.43
PUC152B	152 x 152 x 9.5 x 9.5	8.10
PUC203A	203 x 203 x 9.5 x 9.5	10.8
PUC203B	203 x 203 x 12.7 x 12.7	14.36
PUC254A	254 x 254 x 9.5 x 9.5	13.60
PUC254B	254 x 254 x 12.7 x 12.7	18.04
PUC305	305 x 305 x 12.7 x 12.7	21.50





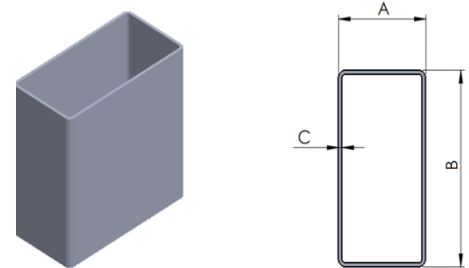
## Channel

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C x D	
PC76A	76 x 25 x 4.8 x 4.8	1.06
PC76B	76 x 38 x 6.4 x 6.4	1.70
PC102	102 x 44 x 6.4 x 6.4	2.10
PC152	152 x 42 x 9.5 x 9.5	3.95
PC203	203 x 56 x 9.5 x 9.5	5.34
PC254	254 x 70 x 12.7 x 12.7	8.90



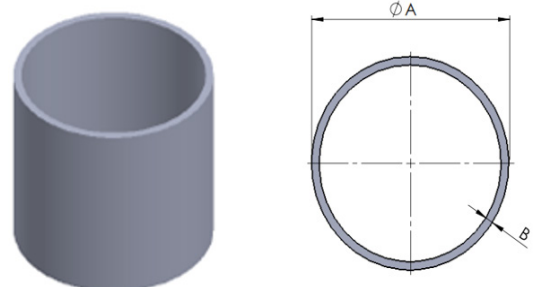
## Rectangular Hollow Section

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C	
PRHS50A	50 x 25 x 3	0.79
PRHS50B	50 x 25 x 6.4	1.54
PRHS52	52 x 32 x 5	1.41
PRHS91A	91 x 38 x 4.0	1.78
PRHS91B	91 x 112 x 6.4	4.46



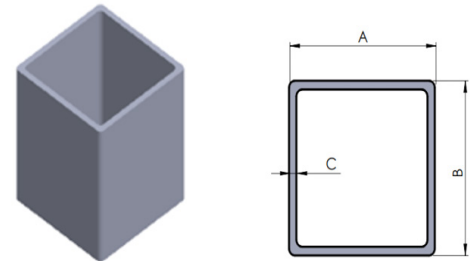
## Round Tube

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B	
PR50C	50 X 5.0	1.34
PR50D	50 x 6.4	1.67
PR64A	64 x 3.5	1.26
PR64B	64 x 7.0	2.38
PR76	76 x 6.4	2.64



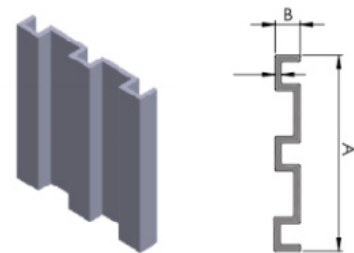
## Square Tube

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C	
PS50C	50 x 50 x 4.0	1.42
PS50D	50 x 50 x 5.0	1.74
PS50E	50 x 50 x 6.4	2.12
PS76A	76 x 76 x 3.2	1.77
PS76B	76 x 76 x 5.0	2.70
PS76C	76 x 76 x 6.4	3.39
PS101A	101 x 101 x 3.2	2.38
PS101B	101 x 101 x 5.0	3.61
PS152A	152 x 152 x 6.4	7.10
PS152B	152 x 152 x 9.5	10.40



## Kick Plate

Stock Code	Dimension (mm)	Weight (kg/m)
	A x B x C	
M-Shape		
PKM3	100 x 16 x 5.0	1.30
PKM4	148 x 12 x 3.0	1.27
W-SHAPE		
PKW1	100 x 19 x 5.3	1.36
PKW2	100 x 14 x 3.2	1.10



Profiles are cut to 6 Metre lengths as standard, however we can cut to your desired length upon request.

## Installation

### Cutting/Drilling Pultruded Composite Products

Drilling and cutting profiles is relatively easy. Diamond or carbide grit edged saw blades and carbide tip drill bits are best suited for fiberglass which is easy to work with and only requires regular hand-tools for installation.

Custom made kits can be manufactured with construction instructions for easy onsite assembly. Alternatively, Pultrac can assemble your installation at your convenience. Contact us for a quote.

As pultruded composites are extremely lightweight, heavy lifting is not required. It is recommended that components are lifted with nylon slings.

### SAFETY NOTICE

Cutting and drilling produces dust that can cause irritation to the eyes, skin and throat. It is recommended the use of suitable personal protective gear and working in well ventilated areas to reduce exposure. Use dust extraction in poorly ventilated areas.

Recommended personal protection equipment:

Safety glasses or goggles.

Ear protection.

Gloves.

Long sleeved shirt with closed collar and long pants.

P2 respirator.

For further information, consult the Material Safety Data Sheet

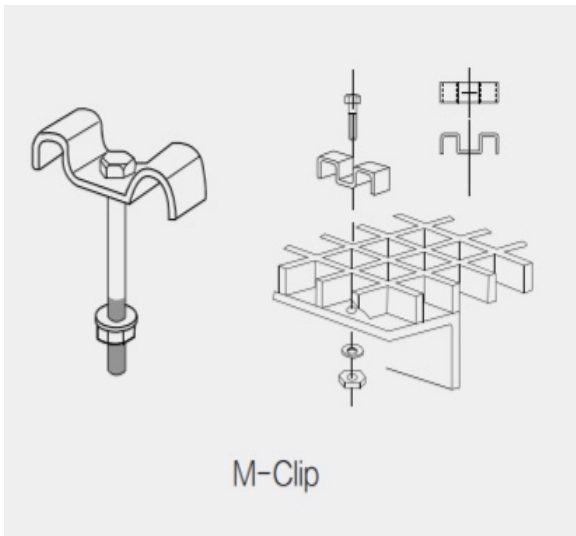


## Accessories



### Brackets

Pultrac recommends using 316 stainless steel base-plates and brackets



### Fastening Clips

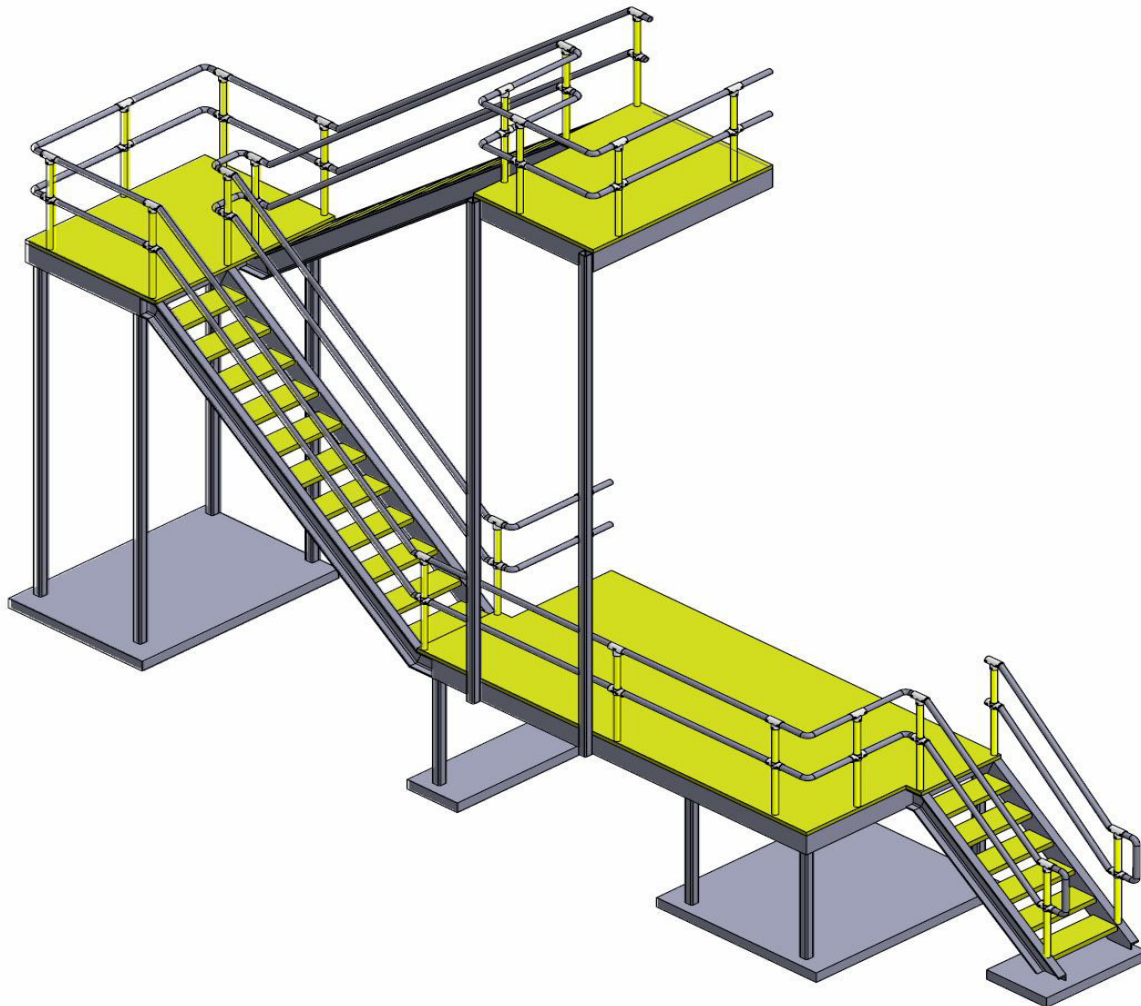
FRP mesh can be attached to Pultruded structural profiles, timber or steel using M clips as shown in the diagram. A minimum of 6 clips per panel is recommended.



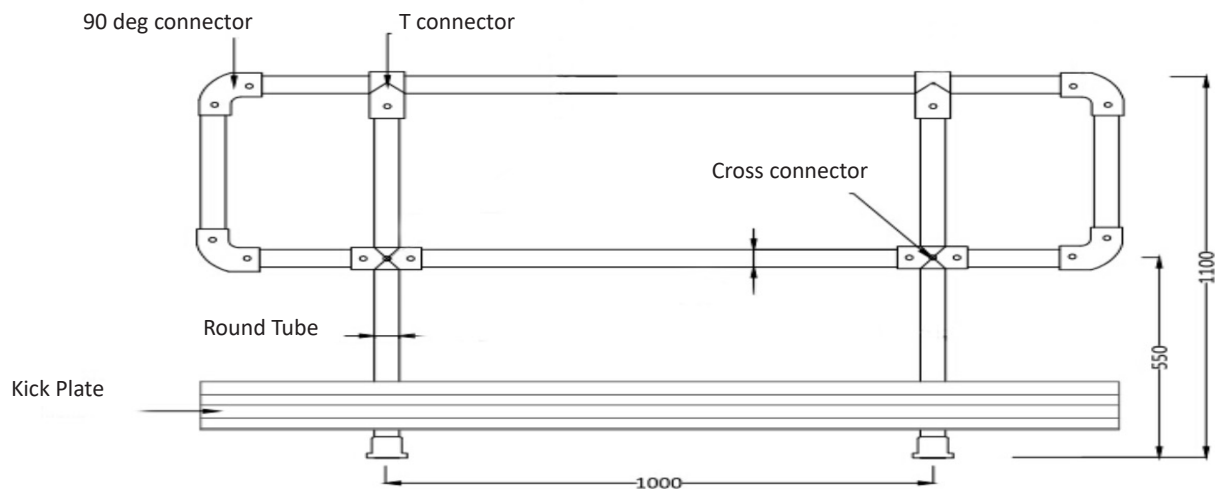
### Handrail fittings

Aluminium or galvanised fittings are recommended for connecting handrail systems.

## Design and Construction



Pultrac constructs complete staircases incorporating stairways, landing areas, ladders and handrails. All structures are built to order therefore any size and configuration is possible. These can be pre-fabricated in a wide range of styles, from basic industrial arrangements to complex architectural designs. All structures are designed to adhere to strict Australian and International Standards.



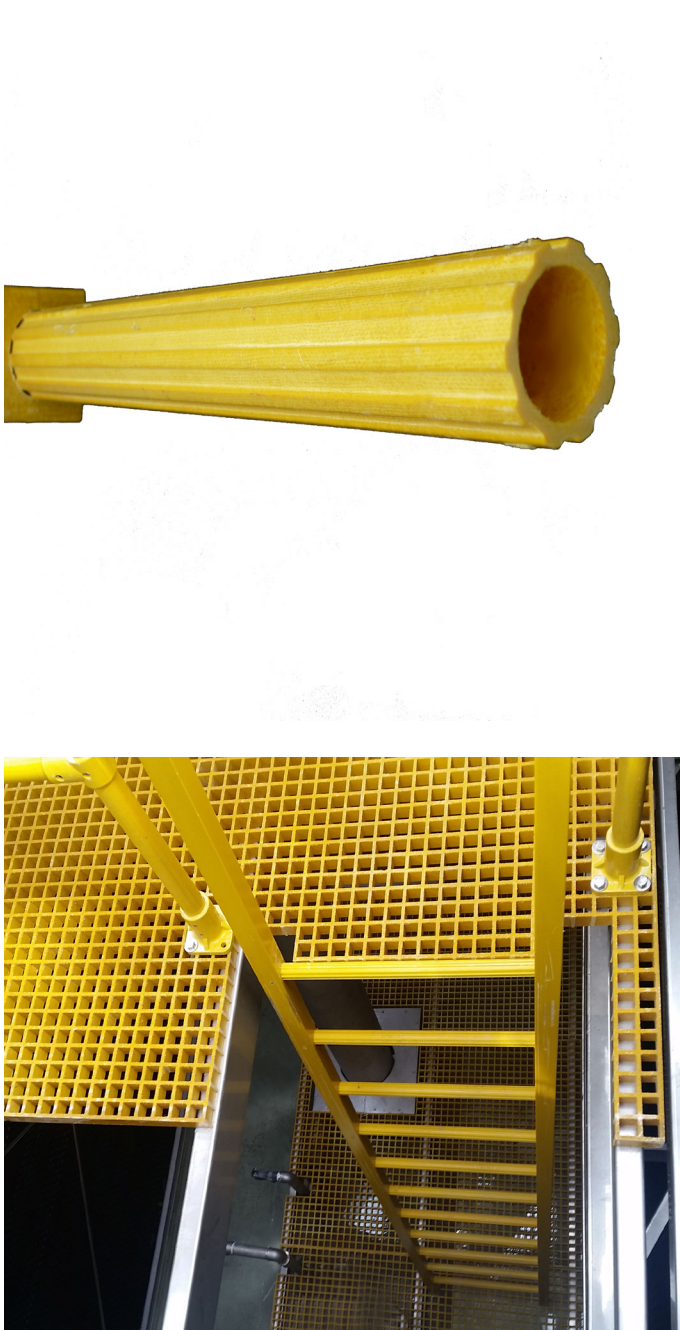


## Ladders

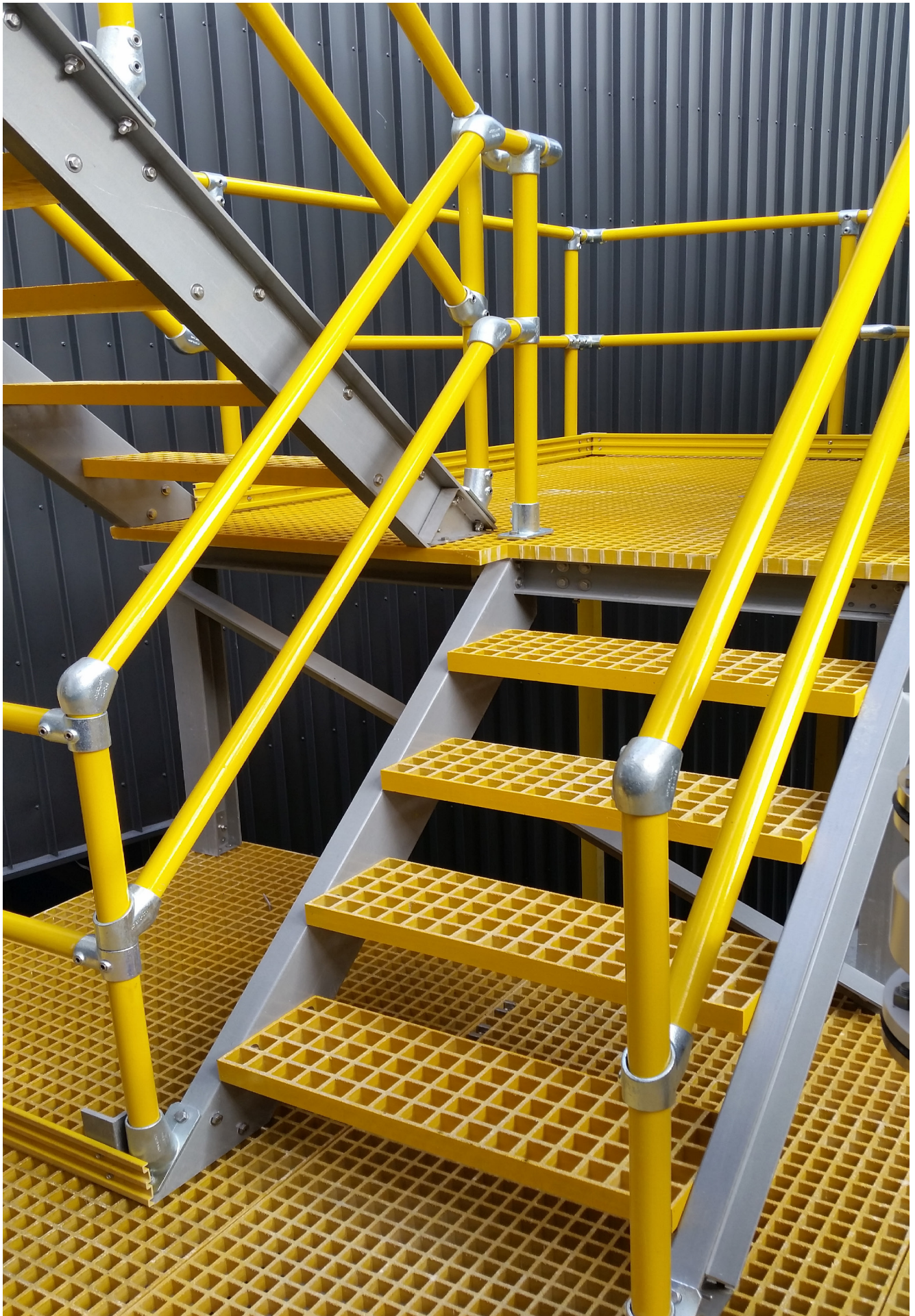
Pultrac ladders are strong but lightweight making them Easy, Safe and Simple to install. They are non-conductive and therefore safe to use in electrical work areas.

The rungs for the ladders are constructed with 7.2 mm wall thickness corrugated tube providing a non-slip surface.

Ladders are custom made to suit individual project requirements.





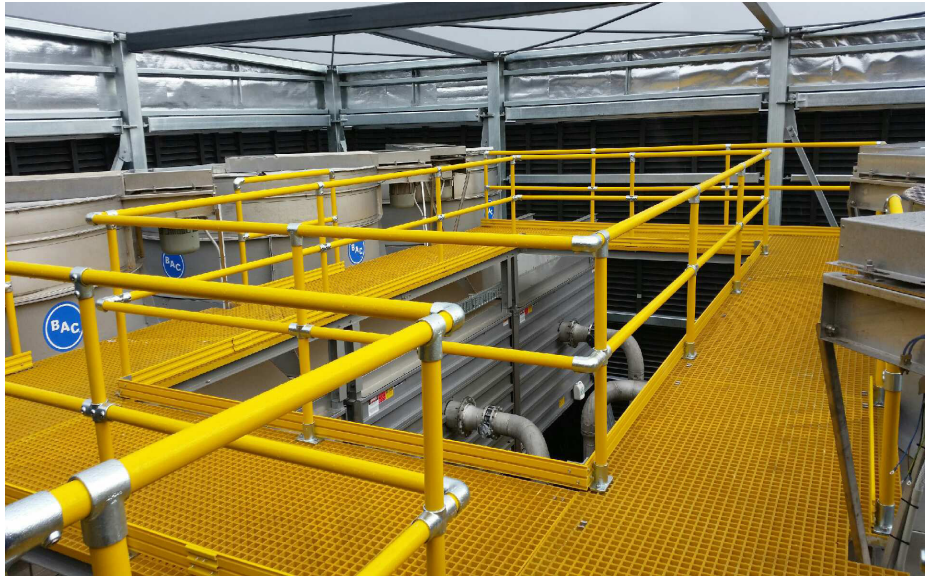




## Projects



Brisbane Airport



Southpoint B



Star Casino, Gold Coast



## **Other Products in the Pultrac Range**

### Acoustic Solutions

3D Foamed Cement Panels  
Foamed Aluminium Panels  
SoundAbsorb Panels  
Acoustic Louvres

### Architectural Treatments

Foamed Aluminium Panels  
Aluminium Composite Panels  
Architectural Louvres

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