



## ROBUST LADDERS, DESIGNED TO LAST



### A NEW ERA FOR FIBREGLASS

Not many people will tell you that 15 to 20 years ago fibreglass, used for ladders, was considerably better than it is today. This is due to several reasons including health, safety and environmental considerations.

The transition from wood, almost obsolete now, and the growth in demand for non-conductive ladders has seen an influx in cheap fibreglass.

What does cheap mean? The main issue, users have with fibreglass ladders, is durability against the elements particularly here in Australia and New Zealand. This manifests itself primarily in the form of 'blooming'.

**'Blooming'** is when the individual glass strands within the fibreglass are exposed and can irritate a person's skin, something that becomes intolerable especially when using the ladder regularly. A typical 'cheap' fibreglass ladder's colour will fade after 3-6 months and 'bloom' after 6-12 months.



## ROBUST LADDERS, DESIGNED TO LAST

### Fibreglass

- Composite of glass fibres in mats of chopped or woven, glass rovings, other mats and resins.
- Typically, this composite is produced by passing a combination of the raw materials through a die together with a resin. Under pressure and heat the composite will bond into a rail based on the shape and size of the die.
- Ladder side rails need to be stronger in tension in order to support a load when deflected. One flange of the side rail being in tension whilst the other is in compression. This can only be achieved by the use of higher density of longitudinal glass rovings and not using chopped glass mat, only woven glass mat.
- With most ladders being used and stored outside/roof racks, fibreglass will be damaged by UV light.
  - There are two methods to slow this down.
    - 1) Using a UV inhibitor in the resin
    - 2) Use a sacrificial nexus of polyester as the outer layer of the composite
- As demand has increased for fibreglass, so has the pressure to reduce cost. The UV inhibitor used in the resin is the most expensive component and therefore is compromised by many.
- The polyester nexus has no strength benefit to the composite hence it can be eliminated without any adverse effects on performance testing. Alongside this chopped glass mat is considerably cheaper than woven glass mat.
- During Manufacture it is important to 'wet' each and every strand of glass roving. Reducing the number of glass rovings and increasing the volume of the resin, makes 'wetting' process easier.
- Therefore, it is possible to make a low cost composite that's passes the performance tests however, it will suffer UV deterioration within a few months of exposure, it will weigh more, be more susceptible to cracking and small internal cracks will propagate easier.





## **ROBUST LADDERS, DESIGNED TO LAST**

### **Our Solution**

At Ladder Solutions, after years of research and testing, have recently partnered with a high-quality fibreglass pultrusion company.

Our jointly developed composite consists of

- 3 layers of woven glass
- 2 layers of polyester nexus
- High density of glass rovings
- Considerably higher levels of UV inhibitor in the resin
- Modifications to pultrusion machine and die has made 'wetting' more efficient

We have concentrated on keeping costs down by developing a better and faster manufacturing process rather than using lower cost materials.

Resulting in, higher side rail strength at a lighter weight. This coupled with our superior riveting allows us to fulfill our vision of producing Australia & New Zealand's most 'robust ladders, designed to last'.





## ROBUST LADDERS, DESIGNED TO LAST



Here you can see clearly the upgrade. Both in the aesthetics but also, upon close inspection, the clear woven fibres of the newer models.

**Our new product speaks for itself.**