

## **ABOUT G.R.P. (GLASS REINFORCED PLASTIC)**



GRP has many benefits for usage in all industry applications as its versatility means it combines inherent strength with lightweightness and durability in even the most extreme conditions.

***High strength - Corrosion free - Extremely safe - Non conductive – Fire retardant -Cost effective - Weather proof – Durable***

Glass-reinforced plastic is a composite material or fiber-reinforced plastic made of a plastic reinforced by fine fibers made of glass. Like carbon fiber reinforced plastic, the composite material is commonly referred to by the name of its reinforcing fibers (fiberglass). The plastic is thermosetting, most often polyester or vinylester, but other plastics, like epoxy (GRE), are also used.

Fibreglass components, particularly those of complex shape, are often not only of lower cost than their counterparts in conventional materials, but also easier - and hence cheaper - to finish and handle. It is true that fibreglass may not always lend itself to economic and rapid quantity production of small items - usually plastic injection mouldings are more prevalent - but for limited runs of larger or complicated components it is a serious challenger and often markedly superior to the ferrous and non-ferrous metals or wood.

Often, many engineers do not fully appreciate this. Although fibreglass - glass reinforced plastic - has been available and in use for many years, a reluctance to deviate from well-trying materials plus a suspicion of plastics have prevented it from reaching its proper status as the best all-round constructional material.

### ***GOOD ELECTRICAL AND MECHANICAL PROPERTIES***

Glass reinforced plastic - GRP - offers the engineer many outstanding properties. They have good natural electrical characteristics, a low coefficient of expansion and are resistant to corrosion and weathering. Their mechanical strength is high and grp mouldings possess excellent tensile and bending strengths and stiffness. And all these properties can be obtained in a single moulding that often costs less than the same component fabricated from or manufactured in conventional materials.

### *EASY TO STYLE AND SHAPE*

The ease with which complex shapes, double curvatures, etc. can be produced, frees the engineering designed from the often-frustrating limitations of other materials. There is also greater flexibility in choice of colour. Pigments can be introduced to provide almost any tone - matching or contrasting.

### *HIGH STRENGTH / WEIGHT RATIO*

Glass reinforced plastic - GRP - has a higher strength / weight ratio than most other constructional materials, including wood, mild steel and aluminium. They are ideal materials for components which must be strong and rigid yet of the minimum weight.



### *RESISTANT TO DAMAGE*

Blows which would normally buckle or distort a metal unit often have little or no effect on GRP. Even when damage is caused, a complete repair can be made by simply bonding a fibreglass mat over the damaged area - an easy operation that can frequently be carried out with the component in situ. Areas that have inaccurately machined can be restored in exactly the same way.

### *CUTS COSTS*

Mouldings are often less costly than similar fabrications or castings in other materials. But a no less significant, although hidden, saving is that achieved as a result of the ease with which a moulding can be machined and handled. It is lighter than most other materials, requires little fettling and can have many of the machining requirements 'moulded in'.



### *COMPARISONS*

Compared with many metals, grp has a higher strength / weight ratio, is easier and cheaper to manufacture into complex components and is more resistant to corrosion. Compared with wood, it has greater strength, much higher strength / weight ratio, superior dimensional stability, is unaffected by water and has better weathering properties.