



MATERIALS FACTSHEET

Carbon Fibre

Properties

- Carbon fibre composites produce a material which combines low weight with a high tensile strength (high strength to weight ratio)
- Can be formed to create parts where great stiffness is required, such as formula 1 and the aircraft industry.

Uses

- Golf club shafts
- Skis
- Bike frames, forks and wheels
- Yacht and power boat hulls
- Racket frames
- Fishing rods
- Helicopter rotor blades
- Aircraft fuselages
- High quality musical instrument bodies.

Advantages

- High strength to weight ratio
- High tensile strength
- Weave of the cloth can be chosen to maximise strength and stiffness of final component
- Can be woven in different patterns to create aesthetically pleasing surface patterns.

Disadvantages

- Very expensive
- Weak when compressed, squashed, or subjected to a high shock or impact
- Small air bubbles or imperfections will cause weak spots and reduce the overall strength

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Glass reinforced plastic (GRP)

Properties

- Good strength to weight ratio.
- Resin is strong in compression, weak in tension.
- Glass fibres strong in tension, weak in compression.
- When combined it forms a new material that resists both compression and tensile forces.
- Can be formed into virtually any 3D shape so is very versatile.

Uses

- Boat hulls
- Canoes
- Car body panels
- Chemical storage tanks
- Septic tanks
- Train canopies

Advantages

- Lightweight
- Low maintenance
- Endless colours can be achieved
- Ability to be formed into almost any 3D shape
- Good strength to weight ratio
- Surface textures can be added to moulds
- Durable
- Good resistance to UV light and sea salt.

Disadvantages

- Difficult to repair
- Time consuming to make
- Labour intensive process
- Extraction required due to toxic nature of materials involved
- Cutting it produces a fine dust that is dangerous if breathed in
- Requires a mould to be produced to form around
- Resins and catalysts have a limited shelf life