

Property	Steel	Aluminium	Wood	Concrete	Glass Reinforced Concrete	Glass Reinforced Composite
Corrosion Resistance	Subject to oxidation and corrosion; requires painting or galvanising	Can cause galvanic corrosion; resistance improved by anodising or coating	Can warp, rot & decay when exposed to water & chemicals. Treatments typically hazardous	Absorbs moisture & corrodes steel reinforcement leading to spalling	Improved resistance over traditional concrete but still vulnerable particularly to acid attack.	Excellent resistance to a wide range of chemicals and reagents
Weight	Heavy, often requiring lifting equipment to move, work with and place	Lightweight, a third of the weight of steel	Varies, depending on grade & density	Heavy, often requiring lifting equipment & subject to H & S rules	Lighter than concrete, but lifts still subject to H & S rules	A quarter of the weight of steel & 80% of aluminium
Strength	High strength, predictable, homogeneous material	Moderate strength, predictable homogeneous material	Extreme fibre bending. Failure common at knots & along grain	High compressive strength, poor impact strength	Glassfibres can reduce strength. Careful formulation of mix necessary	High strength to weight ratio. Weight for weight up to 20 times the strength of steel
Impact Resistance	Easily deformed	Very easily deformed	Good resistance	Brittle, easily chipped & damaged	Reinforcement spreads the load but still brittle & easily damaged	Excellent impact resistance. Very robust and damage tolerant.
Electrical Performance	Conducts electricity; potential shock hazard	Conducts electricity; grounding potential	Conductive when wet	Moist concrete behaves as an electrolyte & porosity increases conductivity	Moist concrete behaves as an electrolyte & porosity increases conductivity	Insulator; low conductivity properties & high dielectric capability
Thermal Conductivity	High thermal conductivity and thermal expansion	Very high thermal conductivity and thermal expansion	Holds heat. Shrinks & warps if containing moisture	Steel reinforcement has significantly greater coefficient of expansion. Can develop internal stresses	Holds heat	1/250th of aluminium & 1/60th of steel
Fire Performance	Twists and deforms in a fire. Needs intumescent coatings for protection	Melts	Burns & contributes to fire	Typically fire resistant but susceptible to stress fracture if steel reinforced	Fire resistant & noncombustible	Fire performance dependant upon resin matrix. Performance levels up to non-combustible
Fabrication	Low cost fabrication by a variety of techniques but lifting equipment often required	Requires specialist skills & equipment	Requires skilled labour	Low cost fabrication with unskilled labour	Low cost fabrication with unskilled labour	Easy fabrication via a variety of process techniques
Cost	Low initial cost, high maintenance cost	High material & fabrication costs	Low to medium initial cost with ongoing maintenance	Low cost of fabrication but lifting equipment often needed for installation	Low fabrication cost but lifting equipment often still needed	Medium cost with low installation costs