Modern materials

Thermo-ceramics:

Advantages	*Disadvantages*
• Durable • Extreme hardness • Lightweight • Good heat insulator	• Brittle • Prone to cracking • Expensive compared to traditional materials

Uses: Pipe insulation, Chimneys, Heat shield cladding, Exhaust

Liquid crystal displays (LCD):

Advantages	*Disadvantages*
• High quality image • Slim/compact for portable devices • Range of colours in display (256)	• More expensive than traditional cathode ray screens • Picture quality can be worse than traditional TV • Expensive to replace • Fragile

Uses: Computers, TV, Phones, Screens

Glulam:

Advantages	*Disadvantages*
• Stronger than natural timber • Good strength-to-weight ratio • Easy to form and shape • Sustainable resource	• Expensive • Can be poor quality if inner layers are poor quality timber

Uses: Buildings, Construction

Kevlar:

Advantages	*Disadvantages*
• Impact resistant • Heat resistant	• Poor UV resistance and degrades with sunlight • Prone to moisture degradations • Poor in compression

Uses: Body armour, cut-proof gloves, Surfboard components

Precious metal clay:

Advantages	*Disadvantages*
• Easily mouldable/formable • Sets hard once fired with kiln/butane torch • Inexpensive compared to solid metals	• Fragile (behaves like ceramic) • Can try out whilst being moulded

Uses: Jewellery, Decorative items, Small sculptures

Nanomaterials:

Advantages	*Disadvantages*
• Used to extend battery life • Used to miniaturize components/tools/electronics	• New and unknown technology • Expensive

Uses: Delivering drugs, Additives in sunscreen, Phone batteries

High density modelling foam:

Advantages	*Disadvantages*
• Lightweight • Easy to work • Sands easily • Intricate shapes can be created	• Adhesives can dissolve to material • Material is soft/deforms easily

Uses: 3D modelling, Prototypes

Polymorph:

Advantages	*Disadvantages*
• Can be remoulded multiple times • Low meting point (62°C)	• Only mouldable for limited time • Can be burned if heat above 65°C for a long time

Uses: Modelling, Shaping ergonomic handles, Prototype mechanical parts