

C6.1.14 Composite Materials

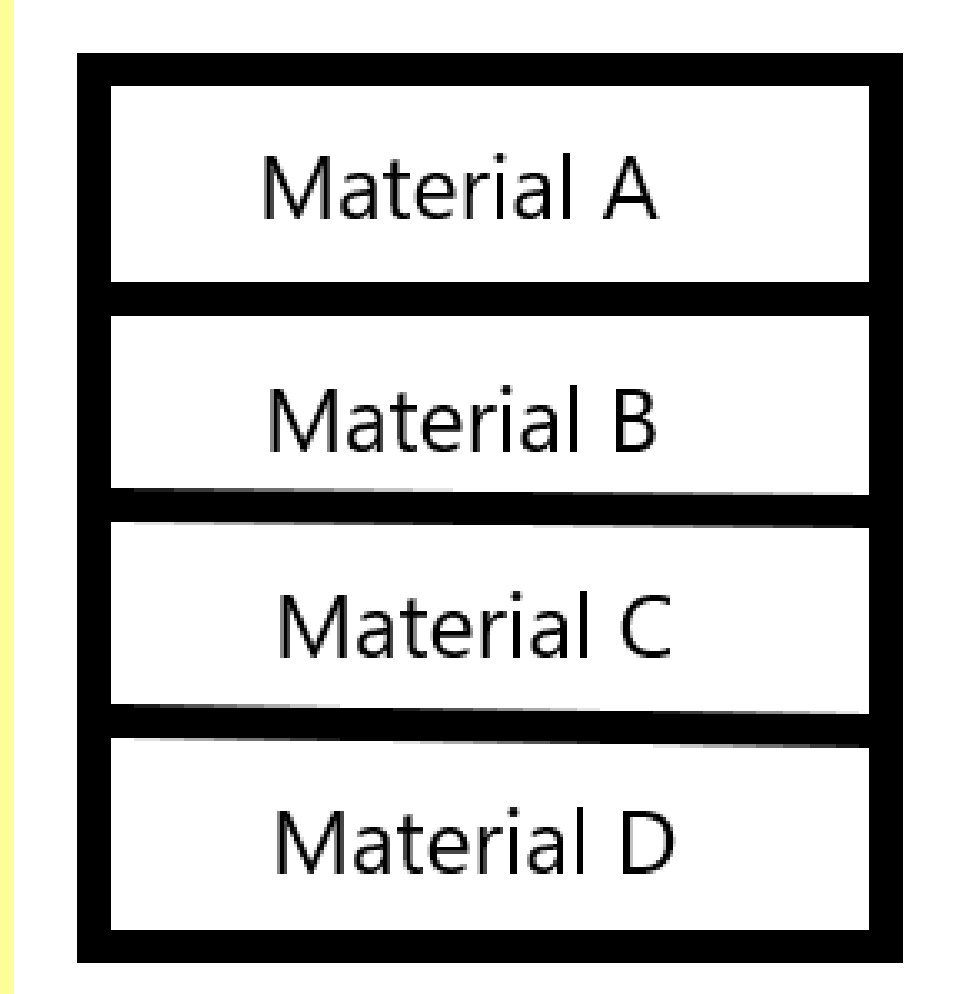
Answer the quiz questions

Learning Objectives

- State what a composite material is
- List examples of composite materials
- Explain the properties of composite materials

A composite is any material made of at least two other materials.

- Some consist of different layers with different properties



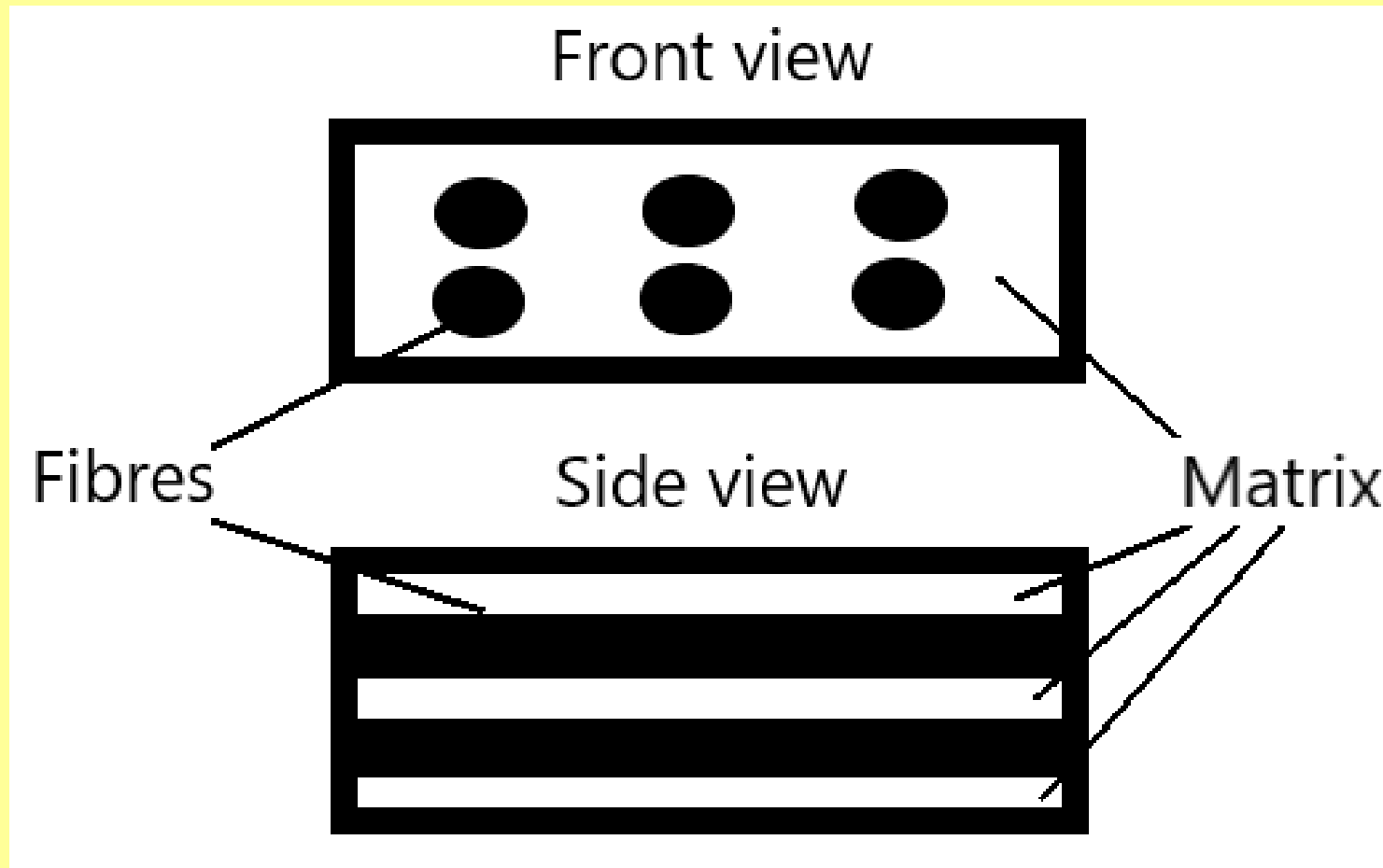
Plywood

- Wood is stronger along the grain than against it
- Plywood is a composite made of thin layers of wood glued together at right angles
- This means it is strong in both directions



A composite is any material made of at least two other materials.

- Some consist of fibres fixed in place in a matrix



TASK 1: Copy this table into your notes

Name of composite material	Matrix	Property of material	Fibre	Property of material	Properties of composite material
Polyester-cotton	Cotton	Lightweight Comfortable to wear Not hardwearing	Polyester fibre	Hardwearing	Hard wearing Easy to wash and dry Lightweight comfortable
Fibreglass	Resin (a polymer)	Hardwearing Weak	Glass fibres	Low density High tensile strength Brittle	Lightweight Strong Hard
Carbon fibre	Resin	Hardwearing Weak	Carbon fibres	Low density High tensile strength	Low density Hardwearing High tensile strength
Reinforced concrete	Concrete	High compressive strength Low tensile strength	Steel	High tensile strength	High compressive strength High tensile strength

TASK 2

Select materials **from the next slide** to design your own imaginary composite to be used for either

a] A football

b] A trampoline

- **State what properties your item must have**
- **Describe which materials you are going to mix in your composite.**
- **Explain how this mix of materials will/will not suit its use.**

e.g A bulletproof vest must be strong enough to stop bullets, but it must be comfortable to wear, easy to wash, lightweight and a dark colour for camouflage. I could mix iron with cotton to make a composite that is strong and comfortable to wear – but this might make it heavy.



Name – Rubber

Properties- Waterproof, bouncy, flexible, durable, good grip.



Name – Iron

Properties- Strong, ductile, malleable, heavy, can rust, magnetic



Name – Wood

Properties- Cheap, shapable, hard, flammable, splinters, weak.



Name – Elastic

Properties- Retains shape, washable, lightweight, bouncy.



Name – Cotton

Properties- Lots of colours, comfortable, can be worn, washable, lightweight



Name – Plastic

Properties – Brittle, lightweight, flexible, colourful, transparent, waterproof.



Name – Leather

Properties- Waterproof, expensive, tough, can be worn, comfortable, washable.

a] A football

b] A trampoline

Challenge – Can you think of any other materials you might want to use in your composite material?

Answer the quiz questions