

Knowledge Organiser – DT – Woods

Overview of topic: Students will need to know the primary sources of materials for producing natural timber and manufactured boards, be able to identify a range of natural timbers & manufactured boards and understand their properties, the functions they provide and how they are used

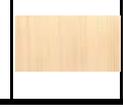
Key content/ ideas/ concepts

What you need to know:

- Know the primary sources of materials for producing papers and boards
- Be able to identify a range of natural timbers & manufactured boards.
- Understand their properties and the functions they provide and how they are used.

Types of Hardwood

	Example	Properties	Uses
Ash		Tough and flexible, wide grained, shock resistant and finishes well	Sports equipment, hand tools and ladders
Beech		Strong, dense close grain but is prone to warping and splitting	Furniture, children's toys, bench tops
Mahogany		Strong and durable, easy to work with finishes well.	High end furniture
Oak		Strong and lightweight	Flooring, furniture and timber framed buildings
Balsa		Strong and durable but very lightweight If too thin can snap & break.	Model making, floats and rafts

	Example	Properties	Uses
Larch		Tough and durable, good water resistance & finishes well	Fencing, cladding, decking, furniture
Pine		Lightweight easy to work with but can be knotty	Interior joinery and furniture and window frames.
Spruce		Easy to work with and is lightweight	Furniture, musical instruments & construction

Hardwood	Softwood	Manufactured boards
		
<p>Hardwoods are usually obtained from deciduous trees, which lose their leaves in autumn.</p> <ul style="list-style-type: none"> - usually grow in warmer more humid climates, mainly in South America and Asia - grow slowly (80+ years) are more difficult to sustain than softwoods - are more expensive than Softwoods - are strong and hardwearing 	<p>Softwoods are usually obtained from coniferous trees, which keep their leaves in winter and are also known as evergreens. These grow quickly which makes them sustainable as they are renewable. This also makes them cheaper when compared to hardwoods.</p> <ul style="list-style-type: none"> - Usually grow in colder climates and are mainly grown in Scandinavia and Northern Europe - Grow thin, needle-like leaves - Grow relatively quickly (30 years) - Are easier to sustain than hardwood trees - Are easy to cut and shape - Are usually cheaper than hardwoods 	<p>Manufactured boards are made from the waste sections of felled trees – the parts which are of little use as planks. The wood is reduced to pulp, particles or thin strips and bonded together using special adhesives or resins. Manufactured boards are made as alternative to natural timber.</p> <ul style="list-style-type: none"> - Come in sheet form (usually 1.2 x 2.4m) - Are extremely stable and of uniform thickness - Are less expensive than laminating planks of timber - Can be covered with veneers - Are available in a variety of thicknesses (3, 6, 9, 12, 15, 18, 22mm)

	Example	Properties	Uses
Medium Density Fibreboard		This compressed board is rigid and stable and is easy	Flat pack furniture kitchens and toys
Plywood		This is a laminated board it is stable due to its alternate	Furniture, shelving skateboards and exterior fencing
Chipboard		This compressed board not as strong as MDF or plywood	Flooring, low end furniture kitchen units & cupboards

Finishing Natural Timbers

Timbers can be treated with a number of surface finishes these include Paint, Stain, Wax & Varnish. Applying these finishes can:

- Seals the wood to protect the surface from heat and water
- Enhance the grain & surface
- To colour the surface

Finishing Manufactured Boards

Veneer

A sharp blade cuts very thin layers wood called veneer. A layer of veneer can be glued onto less expensive manufactured board to produce a more attractive finish and imitate natural timbers but maintain the properties of a manufactured board.

Lamination

This involves bonding by gluing strips of materials together in layers to create a strong structure. An example of this is wooden beams. If thinner materials are used for lamination the curves can be more complex

Sustainable Timber

Wood is considered to be sustainable material as trees can be grown to replace those used for timber or fuel. A big issue is in many parts of the world timber is being used faster than trees are being replanted. This causes deforestation which is seen as a key factor to global warming.



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Teacher Self-Quiz Questions	Student Self-Quiz Questions	Challenge Self-Quiz Quizzing
1. Name 3 types of natural timbers	1.	1. Give a property of spruce that makes it suitable as a material for crates.
2. Write a description of the nature of hardwoods.	2.	2. Suggest why chipboard shouldn't be used to make bathroom fittings.
3. Name a hardwood that is light, very soft and easy to cut and shape.	3.	3. Give 2 properties of beech that makes it a suitable material for use in cooking utensils.
4. Name a popular softwood that is easy to work with and has plenty of knots.	4.	4. Flat pack furniture is often made from MDF. Give 2 properties of MDF which make it a good material for flat pack furniture.
5. What is the difference between hardwoods and softwoods?	5.	5. What property of wood can be modified by seasoning it?
6. What is a manufactured board?	6.	6. Jack is making a small cupboard, what type of hinge would he use? Why?
7. Give 3 advantages of manufactured boards.	7.	7. Give one advantage and one disadvantage of knock down fitting
8. What is sustainability?	8.	8. Rob want to remove a thin layer of wood from the bottom of the door he is fitting. Which is the best hand tool to remove this wood? Why?
9. Why are forests and woodlands of the seen as a precious resource?	9.	9. Susan is making out a door. Suggest the best power tool she should use to cut it down to the correct height. Why?
10. Why are forests and woodlands slowly declining?	10.	10. Describe what a milling machine is used for.
Total score	Total score	Total score