

Core Content D&T GCSE Key Learning **Timber**

Paul Boyd
Julie Boyd

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About this resource

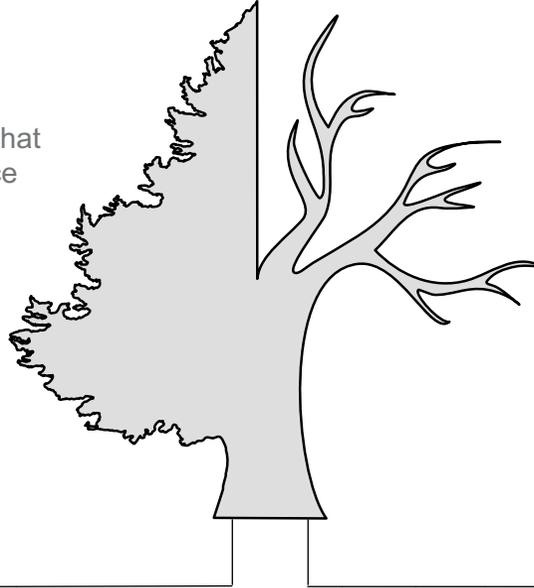
- This resource summarises key learning for timber for the D&T GCSE core content. Learning is relevant to all exam boards but users should check their specification to identify materials relevant to them and to identify any additional materials that should be considered.
- The focus of this resource is the key learning for the D&T GCSE core content:
 - All specifications: categorization, names, properties, uses
 - Some specs also include: sources/raw material, finishes, stock forms

(Note that for the core content students don't need to know how to 'make' using all materials, although practical activities are a good way for students to engage in the learning)
- This resource is part of a series covering each D&T material area and there's a common format across the resources. Resources include:
 - Knowledge-based slides: one summarising basic information in a visual format, one with more detailed background information (not all detail is relevant to D&T GCSE but gives context to the learning), and one summarising material properties.
 - Retrieval activities: revision cards for summarising key learning, an activity where students identify products and their materials, and a 'knowledge drop' activity where students retrieve as much knowledge as they can within a short timescale. This activity can be structured e.g. timed slot with keywords hidden, additional time with keywords visible as a prompt (with new additions in a different colour) and a third time slot where students pair up to share ideas. The logos on this activity prompt analytical thinking and the 'top tips' and 'writing questions' sections encourages deeper and application of knowledge in a broader context.

Softwood

Coniferous (evergreen) trees.
One of various types of evergreen tree, one that never loses its leaves, some of which produce fruit in the form of cones.

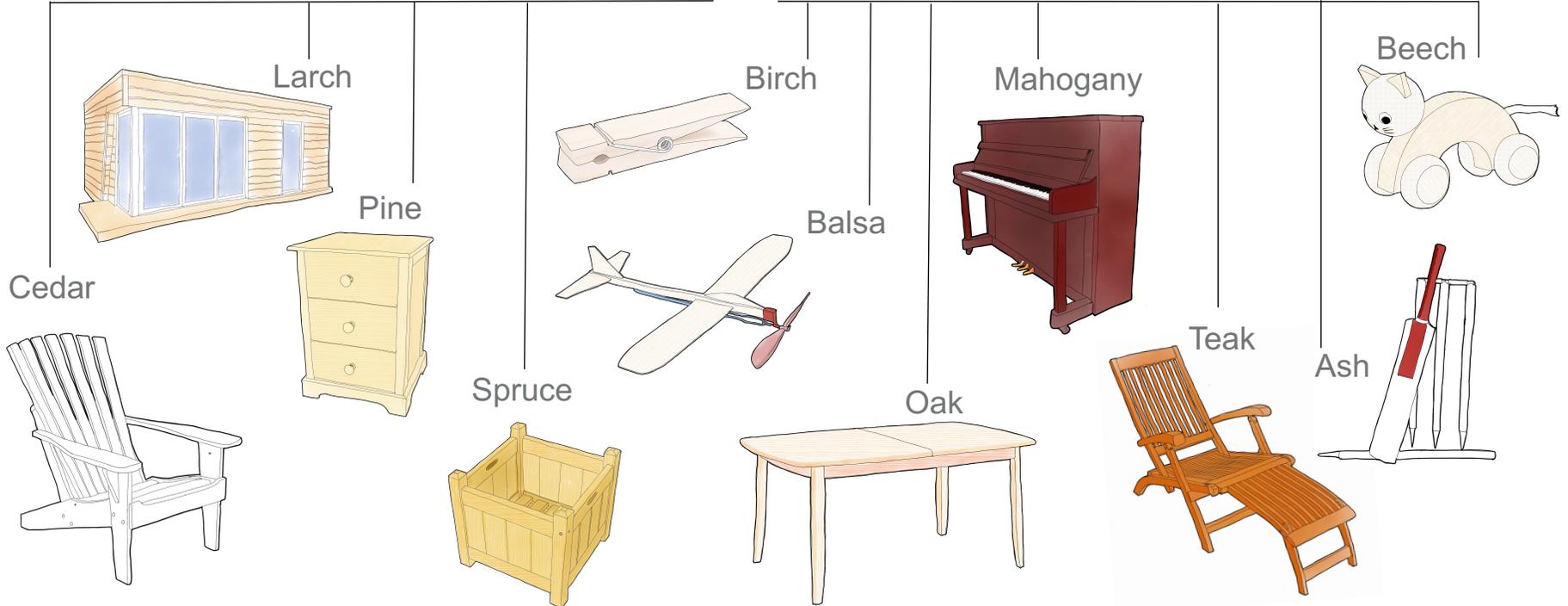
- Larch: Cladding
- Cedar: Garden furniture
- Pine/Spruce: Furniture, construction



Hardwood

Deciduous trees lose their leaves in autumn and grow new ones in the spring.

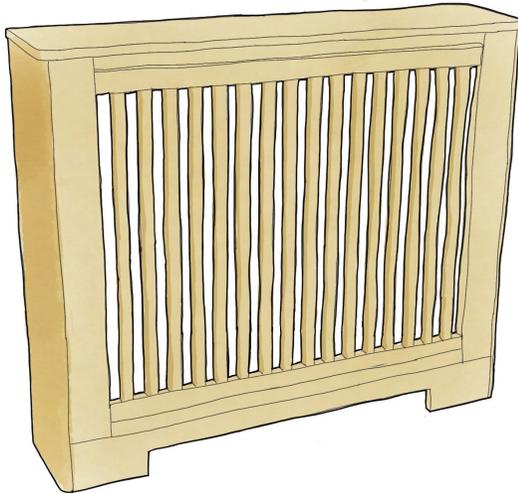
- Ash: Sports equipment, tool handles
- Birch: Pegs
- Beech: Wooden toys, worktops
- Balsa: Modelling
- Teak/Mahogany/Oak: Quality furniture



Medium Density Fibreboard

Medium Density Fibreboard is also known as MDF. It is made from wood that has been broken down into a pulp of small fibres which are compressed and mixed with glue to create a material with a smooth finish that is easy to paint.

MDF is used in flat pack furniture, radiator covers & wall panels.



Plywood

Plywood is made of at least 3 thin sheets of wood (called veneers) that are glued together at 90 degree angles to each other. This makes the wood very strong. Plywood always has odd number of layers and the outer layers always have the grain running in the same direction.

Used for furniture, roofing, cladding & waterproof versions are also available.



Chipboard

Small chips or blocks of wood are compressed and glued together to make a new material with a rough surface with visible wood chips. It is often covered with a veneer to improve its appearance.

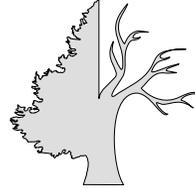
Used for worktops, low cost furniture & shelving.



- o Wood/timber is sourced from trees with wood from different trees having different properties & uses.
- o It takes a long time to grow trees, at least 25 years for some softwoods to reach maturity & as much as hundreds of years for hardwoods.
- o Woods can be categorised into hard & soft woods. This refers to the cell structure of the tree and not to the properties of the material, something demonstrated by balsa wood which is a very light weight wood with a slightly spongy feel which is a hardwood.



Softwoods come from **evergreen** trees that retain their leaves all year. These trees tend to have needle or scale like leaves and grow cones.



In contrast **hardwood** trees are mostly **deciduous** like this oak tree and they lose their flat shaped leaves in autumn.



Softwood



Cedar

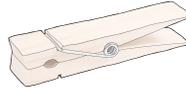


Larch



Pine/spruce

Hardwood



Birch



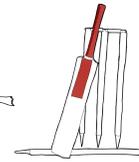
Balsa



Teak
Oak
Mahogany



Beech



Ash



As trees take a long time to grow, hundreds of years in the case of some hardwoods, the issue of **sustainability** is an important one. The **FSC symbol** indicates that the wood has been grown in sustainably managed forests where replanting & management of forests takes place, along with consideration of the social & economic well being of the workers.



- o Hardwoods are generally less **porous** with a denser cell structure than softwoods which means they rot less easily & are hardwearing.
- o Softwoods have a more porous structure and if left unprotected can absorb moisture & begin to rot. Some softwoods such as cedar contain natural oils which protect them for outdoor use.
- o Softwoods aren't available in as many colours as hardwoods but they can be stained to look the same.
- o Softwoods are fairly cheap and easy to obtain, partly because they grow more quickly.
- o Softwoods are more sustainable as they can be replenished more quickly.



Technically **bamboo** is a plant but it is often categorised with woods because of its similar appearance & properties. It grows very fast, potentially making it more sustainable than traditional woods.

The mosquito fighter bomber, one of the fastest & most successful aircraft during world war 2, was made out of balsa wood.



Regenerated textiles fibres such as viscose are made out of **wood pulp**. Here a garment care label shows viscose has been blended with polyester & elastane for pyjamas.



	Type of timber	Properties	Uses
Hardwood Coniferous (evergreen) trees that never lose their leaves, some of which produce fruit in the form of cones.	Oak	Open grain, durable, strong, corrodes steel screws & fittings	High quality furniture 
	Mahogany	Strong, durable, can have interlocking grain	High quality furniture 
	Birch	Close fine grain, hard, strong, good shock resistance	To create veneers & plywood, doors, furniture, pegs, wall paneling, tongue depressors, tooth picks 
	Teak	Strong, tight grain, resistance to decay, high in natural oil	Outdoor furniture, boat decks 
	Ash	Tough, flexible, wide open grain	Tool handles, ladders, sports equipment e.g. cricket stumps 
	Beech	Close grain, hard, tough, strong, warps easily	Furniture, toys, tool handles 
	Maple	Carries sound well, fine even texture, strong	Bowling pins, butcher's block, baseball bats, musical instruments 
	Balsa	Very light & soft, good strength to weight ratio, velvety feel, straight grain	Surfboards, model boats & planes 
Softwood Deciduous trees that lose their leaves in autumn and grow new ones in the spring.	Pine	Straight grain, strong, durable, can have knots, soft & easy to work with	Furniture, doors, window frames, floorboards 
	Spruce	Straight grain, strong, hard, low resistance to decay, light	Furniture, planters, musical instruments 
	Cedar	Natural oils, resists water & fungal growth, resists warping, aromatic scent	Shingle tiles, garden furniture, sheds, musical instruments 
	Larch	Tough, durable, water resistant, straight or spiraled grain	Boats, exterior cladding on buildings 
Manufactured board Made from wood fibres, chips, blocks or sheets bonded with glue	MDF	Smooth even surface, poor moisture resistance	Furniture, wall panels, radiator covers 
	Plywood	Strong, marine plywood is water resistant	Furniture & chairs, wall panels 
	Chip board	Rough surface, easily damaged by water, less strong & durable than other manufactured timber	Worktops, low cost furniture, shelving 

Material name & sample or photo	Classification e.g. softwood, hardwood	Stock forms e.g. standard sizes
Uses	Properties e.g. physical properties, working properties	
Finishes e.g. something added to the surface to change the material properties	Sustainability e.g. impact on the environment	
Other important information		

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Other important information		

What type of wood am I made from?

Product	Type of material	Properties that make it a suitable choice for the product	Product	Type of material	Properties that make it a suitable choice for the product
 Lightweight toy plane			 Garden chair		
 Bedside cabinet			 Table		
 Radiator cover			 Peg		
 Cricket bat & stumps			 Building cladding		
 Chair			 Garden planter		

Natural & Manufactured Timber

Categorisation

Source

Uses

Properties

Hardwood

Softwood

Medium density fibreboard (MDF)

Plywood

Block board

Chip board

1. Cover up the keywords.
2. Set a time limit e.g. 5 minutes and summarise in this box what you know about natural & manufactured timbers.
3. When you've written as much as you can, use the keywords to help you add to your notes.

4. What top tips would you give yourself e.g. common mistakes & key things to remember



Larch

Spruce

Cedar

Pine

Balsa

Mahogany

Manufactured board

Stock forms

Oak

Birch

Teak

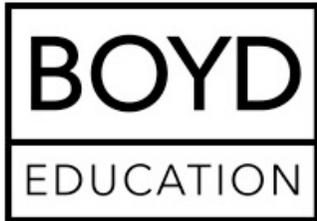
Beech

5. On the back of this sheet write examples of questions that test your knowledge.



You could write your own questions or find examples of past exam questions.

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