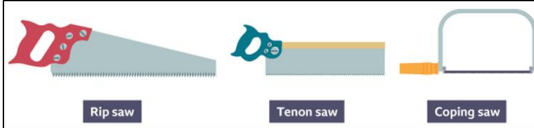


Name:

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Year 8

Knowledge organiser 1: Resistant Materials

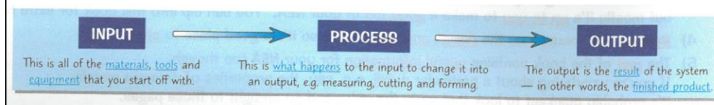
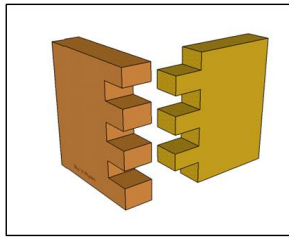
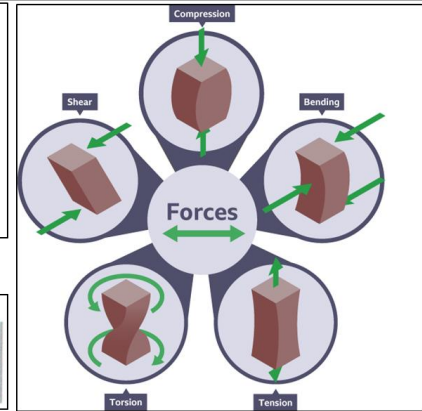


This is a good example of a 'finger' or 'comb' joint. It is ideal for box constructions and is suitable for use with natural woods such as pine and mahogany or even manmade boards such as plywood and MDF. The joint is strong especially when used with a good quality glue such as PVA (woodworkers adhesive) or cascamite.

Batch production: Where one group of identical products is made at the same time, before moving onto producing the next group.

Forces act on materials all the time - even if a material appears stationary it still has a force acting on it. There are five terms used to describe what type of force can act on a material:

- **tension** - a pulling force
- **compression** - a pushing force
- **bending** - forces at an angle to the material
- **torsion** - a twisting force
- **shear** - forces acting across the material



Assembly line: A series of workers and machines in a factory by which a succession of similar items is progressively assembled.

Compressed: Made smaller by squeezing together.

Safety is Really Important

- Power tools are **hand-held motorised tools**. You need to use them **safely**...
- 1) Before using power tools, do a **visual check** for any loose connections and run your **hand** along the **lead** to check for any **cuts** in the insulation (when it's not plugged in, of course). Check that the **blade** or **drill bit** or whatever is attached **correctly** and **tightly**.
 - 2) You can use an **RCD (Residual Current Device)** to help prevent **electric shocks**. The power tool **plugs into** the RCD, which you **plug into** the **socket**. If you accidentally **cut through** the **lead** of the power tool, the RCD **cuts off** the electricity supply straight away.
 - 3) Wear a **mask** or fit an **extraction hose** if the tool's going to produce a lot of **dust**. Always wear **safety glasses** and make sure **clothing** can't get **caught**.
 - 4) **Clamp** your work down **firmly** so it can't **slip** or **move**.
 - 5) Make sure you know where the **stop buttons** are **before** you start.
 - 6) When you've finished, make sure the tool has **stopped moving** before you put it down.

To find out more:
<https://www.bbc.co.uk/bitesize/guides/zh4g4qt/revision/1>

Working property	Usage example
Strength - how a solid material behaves when stress and strain are applied, eg compressive, tensile and shear strength	Steel is used for cables in suspension bridges as it has high tensile strength to support the weight of the bridge and vehicles
Hardness - ability to withstand indentations (dents) or abrasions (scratches)	A tunnelling drill can be encrusted with synthetic diamonds to ensure it stays sharp while drilling through rocks
Durability - ability to maintain functionality without requiring excessive repair or maintenance	Most plastics are durable - eg acrylonitrile butadiene styrene (ABS) is used to make safety helmets for builders and toy building blocks
Strength to weight ratio - strength divided by its density	Carbon fibre is used to make the bodies of racing cars as it is both lightweight and able to withstand the aerodynamic forces on it in a race
Stiffness - ability to withstand deformation (change in shape) when a force is applied	When constructing a frame of a building, steel will be used for its stiffness, preventing the building from deflecting (moving under the load)
Elasticity - ability to return to original shape after a force is applied	Silicone rubber is often used in swimming caps as it is extremely flexible
Impact resistance (toughness) - ability to withstand a sudden high force or shock	Polycarbonate is used in motorcycle visors for its impact resistance as it will not shatter if hit by a stone when at high speed
Plasticity - ability to be shaped or moulded	When heated, thermoplastics like ABS can be injection moulded into a variety of products