



My Tool Box



**Piercing Saw** – Used to cut thin sheet metal.



**Buffer/polishing machine**- Used to buff/polish metal and plastics



**Engineer Square** – Used to mark out right angles.



**Metalwork Vice** – Used to secure material while working on it (cutting, filing sanding etc.)



**Centre punch**- Used to mark out centre of hole before drilling.



**Scribe**- Used to mark out on metal.



**Tin snips** – Used to cut thin sheet metal.

Focused topics



**Ferrous metals** consist of iron, carbon and other elements. Most ferrous metals are prone to **rusting** and can be picked up with a **magnet**. The exception to this is Stainless Steel.



**Non-ferrous metals** do not contain iron, so they are not attracted to a magnet and **do not rust** when exposed to moisture.

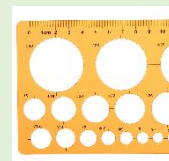


Name	Description	Uses	Name	Description	Uses
Cast Iron	<ul style="list-style-type: none"> <li>Very strong in compression but brittle</li> <li>Re-melted pig iron with other metals</li> </ul>	<ul style="list-style-type: none"> <li>Man hole covers</li> <li>Metal work vices</li> <li>Iron frying pans</li> </ul>	Aluminium	<ul style="list-style-type: none"> <li>Can be polished for a good finish</li> <li>lightweight and can be anodised for colour</li> </ul>	<ul style="list-style-type: none"> <li>Cooking foil</li> <li>Saucepans</li> <li>Toy cars</li> <li>Ladders</li> </ul>
Mild Steel	<ul style="list-style-type: none"> <li>Ductile and Malleable</li> <li>Rusts quickly if exposed moisture</li> </ul>	<ul style="list-style-type: none"> <li>Nuts</li> <li>Bolts</li> <li>Car bodies</li> <li>Furniture Frames</li> <li>Gates</li> </ul>	Copper	<ul style="list-style-type: none"> <li>Reddish brown</li> <li>Ductile and malleable</li> <li>A conductor of heat and electricity</li> </ul>	<ul style="list-style-type: none"> <li>Plumbing</li> <li>Electrical</li> <li>Domed roofs</li> </ul>
Stainless Steel	<ul style="list-style-type: none"> <li>An alloy of iron with 18% chromium and 8% Nickel.</li> <li>Does not rust and resistant to wear</li> </ul>	<ul style="list-style-type: none"> <li>Kitchen sinks</li> <li>Cutlery</li> <li>Dishes</li> <li>Surgical Instruments</li> </ul>	Tin	<ul style="list-style-type: none"> <li>Bright silver</li> <li>Ductile and malleable</li> <li>Resistant to corrosion</li> </ul>	<ul style="list-style-type: none"> <li>Most commonly used as a coating on food cans and similar packaging</li> </ul>

Production aids

Template

A template is a tool used to mark out shapes repeatedly. A template could be made to draw around for speed and consistency.



Jigs

A jig is device used to hold a piece of material and guide tools. They are used to ensure the process can be repeated accurately and to a high quality.



Key Terms

- Brittle** - Will snap easily and will not bend.
- Malleable** - The ability of a material to permanently deform in all directions without cracking.
- Ductile** - The ability of a material to deform by stretching along its length.
- Corrosion** – Corrosion is the deterioration and loss of a material and its properties due to chemical and other reactions of the exposed material surface with the surrounding environment.
- Casting**– The process of pouring molten metal into a mould to create a shape.
- Ferrous metals** – Are metals that contain iron.
- Non-Ferrous metals** – Are metals that do not contain iron.
- Alloys** – A metal that contains more than one different type of metal.

Tasks

- Task 1:** Learn the ferrous and non-ferrous metal definitions and the types of metals that are in each group.
- Task 2:** Write about production aids then research and find the other types of production aides used in industry.
- Task 3:** Create 6 questions that can be answered from the information on here.
- Task 4:** Draw two tools and write what they are for.
- Task 5:** Create a quiz based on task 1, 2 or 3. Get someone to test you.
- Task 6:** Create a mind map for the information you remember and red pen anything you've forgotten.
- Task 7:** Teach it. Create a task that can be used to teach some of the information from here.

To go further:

How It's Made: Aluminium



Onshape: 3D modelling tutorial

