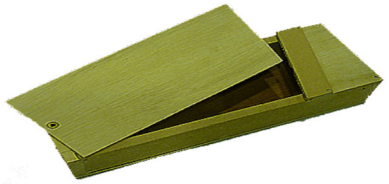
PENCIL BOX - YEAR 7



Design Problem

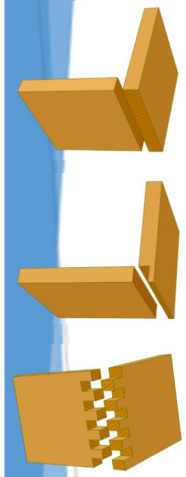
When working it is extremely important to have all of your stationary in one place. Having your equipment in school ready for every lesson and when doing homework saves you time and helps you work efficiently.

Design Brief

Make a **Pencil Box** that will hold your stationary.

Wood Joints

Engineers have to decide which wood joint to use because some wood joints are stronger than others. Some wood joints also take longer to make.



Butt Joint – This is where you glue the two pieces of material together.

Lap Joint – This is where you cut out a section of wood to make a shoulder which is extra support. It is then glued.

Comb Joint – Sections of wood are cut out opposite to each other and then glued together.

Vacuum Forming

The Vacuum Forming machine moulds sheet plastic into the shape of a mould. The sheet plastic used is called high density polystyrene.

This process can be used to make the insert for the Pencil Box.

Manufacturing Boards

Manufactured Boards are often used instead of Natural Woods because;

They are cheaper, they have no natural defects such as warping or twisting. They have no size constrictions.

MDF – Medium Density Fibre Board – This is made up of small particles of wood that is mixed together with glue. It is used for flat pack furniture.

Plywood – This is sheets of wood put in thin layers. It is extremely strong and used for building work.

Chipboard – This is made up of larger particles of wood that is mixed together with glue. It is used when the engineer wants the product to be thicker such as a kitchen worktop.

Adhesives and Components

Adhesives are often called glue.

They are used to stick parts of materials together.

There are different types of adhesives for different types of materials.

Components (such as screws) are parts that Engineers buy instead of making themselves.

Vacuum Forming Process

1. Place the mould on the bed of the machine.

2. Lower the bed.

3. Clamp the plastic (HIPs).

4. Heat the plastic.

5. Raise the mould, turn on the vacuum pump.