

**SHAPING WOOD - LAMINATING**

Laminating is a method used to:

- a) create a curved wooden shape.
- b) create thin, rigid and tough flat material.

A laminate is made up of layers of veneers (thin sheets of natural wood) glued one on top of another. Unlike plywood, the grain of each sheet is normally lined up in the same direction.

**Rigidity and Toughness**

A laminated strip of wood is far more rigid and tougher than the same size strip of natural wood.

**Rigidity**

When a strip of natural wood is bent, the top surface stretches and the inner surface compresses

**Natural Wood**

Both top and bottom surfaces are the same length

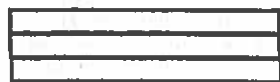
Top surface stretches

Inner surface compresses



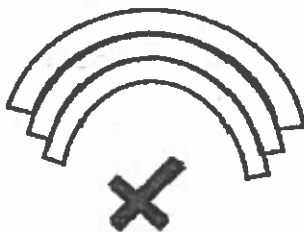
For a strip of laminated wood to bend in the same way, each layer must be able to slide over the layers above and below. Strong glue prevents the sliding from happening, so the strip is rigid.

Each strip is the same length



When bent, each strip remains the same length, the set glue must have allowed slippage to occur.

This cannot happen without the glue line breaking up and the laminate falling apart!



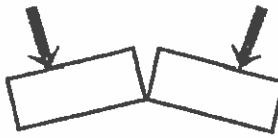
The same happens in reverse, if the strips are glued together in a bend, it is not possible to straighten the bend after the glue has set.

**Toughness**

A laminated strip is tougher than solid wood because a crack that starts on one side of the strip is stopped by the glue line and does not go all the way through. (unless of course the force is too great, every material has a limit)

A crack in solid wood will travel all the way through

A crack in laminated wood will tend to stop at the glue line



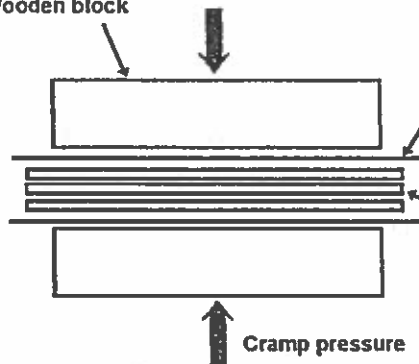
**Laminating a flat strip**

Wooden block

Polythene sheet to stop the laminate from sticking to the blocks

Laminate strips and adhesive

Cramp pressure



**Laminating a curved strip**

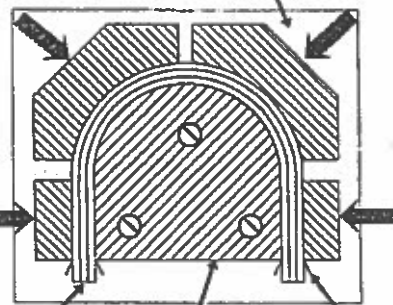
Base board

cramp pressure

Laminate strips and adhesive

Fixed block

Polythene sheet



1. What are the parts of a wood laminate?
  2. How is it that a laminate is more rigid than solid wood?
  3. Show how laminated wood is tougher than solid wood.
  4. Illustrate the set-up for laminating a flat strip.
  5. Illustrate the set-up for laminating a curved strip.
  6. What is the purpose of using polythene sheeting when laminating?
- A. Design a jig to allow the chair side shown to be laminated.



**KEY WORDS** Laminate: Rigidity: Toughness: