Adhesives

PVA (Polyvinyl Acetate)
A white, water based adhesive which has a cream like consistency and is bought ready to use.

Preparation and application
- No preparation of any kind is required.
- Adhesive applied with spatula, brushes not being used because they are difficult to clean
- Assembly time of 10-20 minutes.
- Clamping time of one hour.
- Maximum strength in about 12 hours.

Advantages and disadvantages
- Its shelf life (the length of time it can be stored) is limited to about one year
- The adhesive requires no preparation
- It is easily applied and spreads easily
- It sets within a few hours at normal room temperature
- Dries clear
- Need to wash off surplus glue with a damp cloth to prevent staining and sealing of timber
- Not water proof so it is not suitable for outdoors applications.

Main uses
Generally used for indoor woodwork of all kinds.

Contact cement
These are mainly rubber-based viscous liquids in a solvent.

Preparation and application
- No preparation is needed.
- The adhesive is spread thinly onto both surfaces with a notched spreader (trowel)
- The joint is left ‘open’ for 10-15 minutes until the adhesive is tack free when touched.
- The components must be positioned carefully before they make contact, once they touch adhesion takes place.
- To make full contact the parts are pressed together by hammer or roller.
- It takes several weeks to attain full strength.
Advantages and disadvantages

- An immediate bond.
- No clamping necessary.
- As immediate bond occurs aligning of materials must be perfect.
- Shelf life over 1 year.

Main uses
Used mainly for bonding plastic laminated sheets to particleboard.

Epoxy resin (Araldite)
This adhesive has a separate resin and hardener and being particularly suitable for gluing wood to metal and therefore has a valuable place in the workshop

Preparation and application
- The resin and hardener are mixed together – usually 50/50
- The adhesive is spread onto the members to be joined
- Cramping time up to 1 hour – 5 minute varieties are available.

Advantages and disadvantages
- Can not allow resin and hardener to come in accidental contact as the resin will go off.
- Very high strength.
- High water resistance
- Good gap filling

Uses
Bonds wood to wood, wood to metal, china, plastics and any non-porous materials.

Polyurethane glue
Polyurethane glue is one of the best waterproof glues available, but until recently was not available outside professional circles. It is a one-part adhesive that will adhere to wood, metals, stone, ceramics and many plastics

Preparation and application
- No preparation of any kind is required.
- Adhesive applied with spatula, brushes not being used because they are difficult to clean
- Chemically reacts with moisture in the objects being glued
• Assembly time of 30 minutes
• Clamping time of 3 – 4 hours
• Maximum strength in about 24 hours.

**Advantages and Disadvantages**
• Limited shelf life – 6 months – 1 year
• Goes off quickly once container opened.
• Water proof
• Suitable for indoor or outdoor use and is highly durable
• Has a longer setting time than PVA glues, so you have more time to adjust misaligned clamps and other errors

**Formaldehyde Adhesives**

These adhesives are thermo-setting resins which are hardened by the addition of a catalyst. The setting action is one of chemical change and may be accelerated by heat.

**Types of formaldehyde adhesives.**

• **Urea Formaldehyde**: used in the manufacture of plywood, particleboard and MDF.

• **Phenol Formaldehyde**: used in the manufacture of marine plywood and other building materials where moisture resistance is very important.

• **Melamine Formaldehyde**: waterproof, heat resistant and non-staining. Used for caravan making and boat building.

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<th>Adhesive</th>
<th>Durability</th>
<th>Applications</th>
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<tr>
<td></td>
<td>Worst Conditions of Exposure</td>
<td>Under Conditions of Stress</td>
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<tr>
<td>Urea Formaldehyde</td>
<td>Interior Low Hazard</td>
<td>Bond sensitive to moisture. Non-structural bond</td>
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<tr>
<td>Phenol Formaldehyde  (PF)</td>
<td>Exterior low hazard - Exposed to weather but protected from UV and rain e.g. roof structure or open sheds</td>
<td>Some strength drop off and minor creep in damp environments with time but considered permanent</td>
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<tr>
<td>Melamine Formaldehyde</td>
<td>Interior Low Hazard</td>
<td>Provide fully protected from dampness and MC is not greater than 18% for full life, then can be considered permanent</td>
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