

# Design & Manufacture

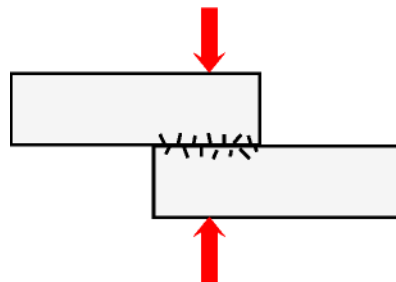
## Homework 26

### Wood Adhesives

The use of adhesives is a form of permanent joining.

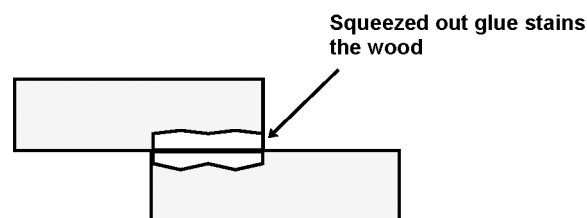
Most wood adhesives are made up of solid particles of glue being dissolved in a solvent (water or spirit). The solvent needs to evaporate (dry) before the adhesive works. The time this takes is called the setting time and the joint should not be handled until this time is up.

Strong joints rely upon the adhesive soaking into the wood before setting. It is therefore very important that the surfaces to be glued are freshly cleaned with glass paper to remove any dirt or oily residue left by touching the surface with your fingers. Any dirt or residue stops the adhesive from soaking in.



The glue soaks into the pores of the wood and then sets like lots of little fingers grabbing onto the wood on both sides. Using a clamp to hold the two halves of a joint together firmly helps to force glue into the pores of the wood. Cramping also holds the joint still while the glue is setting.

When the joint is cramped excess glue should squeeze out of the joint. If it doesn't, not enough glue has been used. The excess glue should be wiped away with a damp cloth quickly, before it sets.



The squeezed out glue stains the wood white and the stain will show under any clear varnish that might be put on later.

Tip: Varnish the wood before you glue the parts together, the glue will not stain varnished wood.

Warning: Do not varnish the joint contact surfaces because the varnish will stop the glue soaking into the wood and result in a very weak joint.

### **Gap filling**

Most wood glues do not fill gaps well because they soak into the wood. If a joint is badly cut and leaves a gap, glue the joint in the normal way and let it set. Now saw some waste wood of the same type and colour and collect the sawdust. Mix the sawdust with new glue to create a paste. The paste can now be forced into the gap so that it fills it completely and is sticking out a little. When the paste has set it can be sanded down flush with the wood surface.

Gap to be filled with sawdust and glue paste



## Contact glue

This is useful for joints where no sliding together is required e.g. lap joints. The glue is applied to both surfaces and they must be left apart for at least ten minutes (until the glue looks dry) to allow the spirit to evaporate. The joints can then be lined up and pushed together.

ADHESIVE	SETTING TIME	COMMENTS
PVA (polyvinyl acetate)	1 hour	Non-toxic, white, water-based glue for general use. Normally water resistant when set.
Synthetic Resin (Cascamite)	2 - 6 hours	Non-toxic, white, water-based glue. Used when extra strength is important. Waterproof when set.
Contact Adhesive (Evostick)	instant	Highly toxic, brown, spirit based, waterproof glue. Used on non-porous surfaces. Must be used in a well ventilated area. DO NOT sniff the glue.
Glue sticks	15 seconds	Non-toxic plastic. Not very strong. Only useful for spot gluing. Excess glue difficult to clear away.

## Questions

1. What type of jointing are adhesives used for?

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2. Explain the term 'setting time'.

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3. How is an adhesive made up?

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4. How does a water-based adhesive work on wood?

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5. What preparations should be made before using an adhesive?

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6. What is the purpose of cramping a joint together?

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7. How can you avoid a glue stain showing through a clear varnish finish?

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8. How can you use glue to fill a gap in a badly cut joint?

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