

How to use Bone glue



Bone glue, made of animal bones, as the name suggests, was in general use among cabinetmakers for centuries. Bone was ground into powder, dissolved in water, evaporated and dried into a hard jelly. Bone glue is completely safe and environmentally benign.

All nineteenth-century furniture was joined with bone glue; it was in fact predominantly used until the middle of the twentieth century. The properties of bone glue are not suitable for industrial production, because the solid form of the glue must first be dissolved in water, and then heated, a process which is simply too slow and cumbersome for that purpose. The use of pre-fabricated parts in the trades has also largely confined the use of bone glue to restoration work.

We think that this is a mistake. Those who are seriously interested in the construction of furniture and its historical bases should be aware that an adhesive in use for centuries may also have its place today. Using bone glue gives the user a heightened feel for the material and a sharpened eye for detail. Many who have switched from white glues to bone glue continue to use it, and appreciate its characteristics when used with an organic material such as wood.

There are significant arguments for the use of bone glue:

- The bond can be dissolved by applying heat, even after a hundred years.
- Repairs can be easily made, and mistakes - everyone makes them - easily corrected, in contrast to white glues. The work needs only to be warmed, the pieces separated as the bond softens, a little moisture applied as needed, the pieces rejoined - and the mistake is corrected!
- The glue beads in their solid form have a virtually unlimited shelf life. Even prepared glue solutions that have been dried out for years can be made usable, in most cases, by warming and adding water.

- The glue dries hard and does not form a skin as white glues do. As an organic product, it is more fitting for wood than a synthetic.
- It is environmentally friendly and can be used without fear of harm. I personally know of a cabinetmaker who enjoyed a sip of bone glue - which I do NOT recommend!

Directions

Pour some glue beads into a regular water glass, to about mid-level. Pour water over the glue beads to just cover them. Let the mixture sit overnight.

Heat a pot of water and place the glass with the dissolved glue into the pot; stir the mixture occasionally. The glue will be ready for use in just a few minutes; it can be thinned with water if necessary. Experiment with a few different consistencies and you will shortly find the one suitable for your project. Do not boil the glue; if it comes to a boil, it may become unusable, although in my experience, it has not done so.

You can use a brush to apply the glue (the ferrule should be made of non-ferrous material, e.g., brass or aluminum) or a small piece of veneer (not oak - the acid in oak reacts with the glue, nonetheless, workpieces of oak can be glued) - which is especially useful for gluing small surfaces. Other procedures depend on what you are gluing.

If you are veneering: Warm the platen to be used between the veneer and the base piece. The platen can be aluminum, galvanized steel plate, or wood blocks, and is placed between the base (to which the veneer is to be glued) and the clamping force, to assure that the veneer will be smoothly and evenly pressed onto the base. Bone glue sets up relatively quickly after it is applied. If it is allowed to cool, it becomes jelly-like and will no longer bond. This is the reason why old-time cabinetmakers had to work very quickly when veneering. Because of the heated platen, which keeps the glue soft and workable, we can take the time to carefully apply clamps to the work. As the clamps are tightened, a glue line forms at the edges of the work; sign of a good glue bond.

If you are gluing wood: In mortise-and-tenon work, for example, the work would have to be joined and clamped quickly to prevent the glue from jelling, as described above. The need for speed can be easily avoided by warming the workpieces. They can then be joined as carefully and as slowly as needed.

Releasing clamping pressure: As a rule, clamping pressure may be released in 10 to 20 minutes. The workpiece should sit for an additional day before further work is done. The work area should be kept at about room temperature; temperatures under 15 ° Celsius (60 deg. F.) are too low for gluing.

Removing excess glue (squeeze-out): One way is to wait until the glue has dried and then remove any excess. The drawback to this method is that the glue may then bond so tightly to the work that it can only be removed with a very sharp tool, and some care, to avoid damaging the workpiece. Despite the rule to let the workpiece sit for a day before further work, we recommend that any excess glue be removed while it is still soft. This can easily be done using either a cabinet scraper, or by using a dull chisel as a scraper. If necessary, the surface can be lightly dampened to ease removal.

Storage: To avoid having to store left-over glue, mix only enough for a day's use. If you have some glue left over, the amount of you'll need for the following day is easily made: mix some

glue beads into the left-over glue; add the proper amount of water, let the mixture sit overnight, and on the next day proceed as described earlier. An additional container isn't necessary; you can use the same one in which you mixed the original batch. When your project is complete, any remaining glue can be left to dry in the uncovered container. Covering the container is not necessary; it only allows mold to collect on the glue. If all goes well, the glue will dry before mold can form, and may be reused by just adding water. If mold appears, the batch is useless and should be discarded.

Additional comments:

Instead of mixing the glue in a water glass you can use any container made of a non-ferrous material: ceramic, enamel ware, aluminum; any material that will withstand some heat. Iron and steel containers react with the glue and turn it black, which makes it unusable. Be careful when using an ordinary water glass to mix the glue; it may shatter if heated too much. A container made of heat-resistant glass, such as Pyrex, is preferable

If you are gluing using a platen, be sure to use a parting layer of paper between the platen and the glued surface. Otherwise, the platen may bond to the work. The paper can be moistened after the glue has dried and removed using a chisel.

What equipment can be used to warm glue, platens and work? The only limit is your imagination! In former days, cabinet shops had hot plates of about 20 square feet which were heated with scrap wood. Work, glue and platens could be placed together on these and uniformly heated. Depending on your gluing needs, there are various approaches to heating, some cheaper and some more costly. The simplest is to use an old hot plate, but caution is necessary because it can become so hot at even the lowest setting that wood will char, or catch fire. Heating the waterbath on a hot plate for warming glue is not a problem. There are also warming plates from restaurants (used to keep prepared food warm) which I have not tried, but those who have used them swear by them. Best are commercial heating plates specifically designed for production veneer work. They can be obtained from manufacturers in any desired size, allow precise temperature control, and may also be used as platens. Unfortunately, they are also very expensive. If you intend to buy a commercial plate, be sure to choose one that will hold glue, workpiece and platens at the same time. **Please note: All of the tips above are not guarantees for success. The user is responsible for his/her own actions!**