



Hxtal NYL-1 Instructions

Hxtal epoxy adhesive is the only epoxy resin known to us that does not yellow upon exposure to light. Hxtal owes its stability to its ultra purity – traces of metal ions removed during the manufacture and purification of Hxtal, are responsible for the development of color in ordinary epoxy adhesives. Because of its ultra purity, Hxtal cannot be treated like an ordinary “hardware store” epoxy adhesive.

Hxtal comes in two liquid parts, both of low viscosity. Hxtal epoxy should be weighed out accurately, one part by weight of Part B, plus three parts by weight of Part A. Transfer of the two parts from the original containers should be made by means of glass medicine droppers into small, clean, glass mixing jar, mix thoroughly with a glass rod. Do not rush, you have PLENTY of time.

At this point, the Hxtal is ready to use, at least ready for some uses. Freshly mixed Hxtal is very thin. For many, as cementing porcelain, it is too thin. Let it stand, lightly covered, and over a period of several hours it will thicken. You do not lose bond strength by the use of thick Hxtal and it tends to stay in the joint line far better than the quite thin, freshly mixed Hxtal. However, freshly mixed Hxtal does have one outstanding characteristic – it will penetrate cracks. It penetrates them quickly and makes them disappear from view. For the best results, warm the crack and its surroundings to about 120°F – a low hair dryer on low or a heat lamp at a two foot distance (you do not want to warm the piece too fast or too much) – and then apply one drop of freshly mixed Hxtal onto the crack. If all goes according to plan, the crack will simply vanish. Wipe off the excess adhesive and then put the pieces aside for a week. Freshly mixed Hxtal is also ideal as a coating for ground glass surfaces. For example, an abrasive cut pattern inglass coated with Hxtal appears to have been etched rather than abraded.

Hxtal sets slowly, at a 75°F it required about seven days to achieve 90% of the ultimate bond strength. However, ordinary Hxtal is set sufficiently after 24-30 hours to hold the two parts together if no serious stress is applied. This is an ideal time to clean up. A single edge razor blade or a razor knife is the best tool to scrape up the excess resin, as the adhesive is tough but removable. It is NOT recommend to use solvents to clean up, as the solvents may migrate into the joint line and can interfere with the bond to the artifact. Often the bond weakening is not evident until much later and then in the form of micro bubbles in the edge of the joint. If you wait much past 24 hours, you will certainly find that the Hxtal cannot be easily removed. A further word of caution – be certain that the two parts you are trying to join are in their proper positions and that they cannot shift after you have turned your attention to the next project. Hxtal is quite unforgiving and the joints are most difficult to part once you are past a few days of curing. Check position three times and you may never have to try to take a Hxtal joint apart.

Many glass artists use Hxtal epoxy adhesive to glue pieces of various glasses together to form art. Often, in the process, glued assemblies of blocks are cut or sliced with diamond or other abrasive saws and then more blocks are glued on to the assembly. In cases where these abrasive cuts are made across Hxtal glued joints, we recommend treating all surfaces to be



bonded with Hxtal epoxy with an A-1100 solution in reagent grade Isopropyl alcohol. We have learned from our glass artist customers that the pre-treatment with the A-1100 solution eliminates tiny micro bubbles that seem to form, often much later, in the glue line exactly along the sawn edge. Treatment with the A-1100 solution is simplicity itself. When the glass surfaces are totally clean and ready for gluing, simply apply the A-1100 solution over the entire surface to be glued, applying with a lintless rag or bush, and allow the solvent to evaporate leaving an extremely thin film of the A-100 coating the surface of the glass. Immediately bond the Hxtal in your usual way.

Bond strengths achieved with Hxtal appear not to be better when freshly mixed, very thin Hxtal is used as opposed to thicker Hxtal that has been allowed to stand around somewhat. More viscous Hxtal does have its advantages. If you are gluing two very large, heavy pieces of glass together, the simple weight of the two pieces is often enough to squeeze out too much Hxtal, especially if the glue is thin. Such very THIN joints are definitely weaker than standard thickness joint lines, so avoiding the excess squeezing out of the adhesive is necessary. Using thicker Hxtal is one approach, and in extreme cases consider using tiny bits of glass shims at the corners, especially if the edges are to be ground or sawn off in later operations. Fragments of microscope cover glasses are ideal for use as shims.

You can improve the survival chances of these dissimilar joints by using a thick joint line, as wide as 1mm thick. Fully cured Hxtal is not brittle, but rather quite tough. It is believed that this lack of brittleness allows the thick joint line to better accommodate slight expansion and contraction during its lifetime.

Many of our customers initially complain about Hxtal's long set time, but attempts to speed up the set time must be approached with great caution. NEVER, NEVER attempt to heat freshly mixed Hxtal with an open flame, a heat lamp, a hot plate, a hair dryer or similar heating device. Because of their high temperatures, Hxtal will begin to cure unevenly at the surface of the container, and despite your confidence in your stirring means, the Hxtal will frequently overheat and possibly catch fire. Even if you do not see evidence of overheating, you will create an uneven mixture of Hxtal where part of the mixture is more fully cured than others. Such is the route to trouble. If you feel you must heat the mixed adhesive to speed the thickening, use only a water bath at 120°F. Heat initially for 15 minutes, remove the glass container and continue stirring for an additional few minutes. Observe the new consistency at room temperature, and decide if an additional five minutes in the water bath are necessary to achieve desired consistency. Be careful in these additional increments, as once thickening has begun, it proceeds more rapidly with each subsequent heating period. Also, be more cautious as you increase batch size, large patches have a tendency to spontaneously exotherm from the internal heat of the reaction. Keep a cold water bath handy when working with batch sizes over 100 grams.

It is also possible to reduce total curing time by placing the artifact in a warm 80-100°F area for a day or two. It is not suggested that this accelerated drying temp be implemented during the first 36 hours of the cure time. Too often, immediate use of the hot environment will cause the Hxtal to thin out and run out of the joint. After approximately 36 hours, Hxtal is thick enough to not move at this temperature.

Note: All directions and suggestions noted above are for educational purposes only, and proper testing should be done prior to any application.