

PRODUCT USAGE SHEET

**HXTAL**  
**NYL-1**

# Welcome to the World's Best Optical Epoxy

## HXTAL NYL-1

HXTAL NYL-1 is a two part, water white epoxy. This means that HXTAL is ultra pure, clear and totally transparent both in resin and hardener and when combined. Being an epoxy, HXTAL cures completely by chemical reaction between Part A (the resin) and Part B (the hardener). HXTAL does not require sunlight, UV rays or oxygen to cure. Once Part A has been mixed in proportion to Part B, the chemical reaction begins and HXTAL NYL-1 begins to cure.

Unlike many hardware store epoxies or lower grade epoxies, HXTAL NYL-1 has a very slow cure time. At room temperature (roughly 65°F, 19°C) HXTAL will reach full cure in approximately 7 days. HXTAL is generally tack free and able to support limited movement of pieces after 3 days.

### Why the long cure time?

HXTAL NYL-1 was originally created for the restoration and conservator industries. The long cure time allows the conservator the ability to let HXTAL thicken up to the point where it can be used for molds or for replacing missing parts of most glass and porcelain materials. This also allows for an extended pot life when the epoxy is mixed thus allowing time for the removal of air bubbles from the mixture before use and to allow for the patient and steady application of HXTAL without worrying about set times. It is also useful when bonding larger heavier pieces to allow HXTAL to set to a point where the epoxy is less likely to be squeezed out of the bond joint by the heavier pieces.



### How do I mix the HXTAL?

HXTAL NYL-1 is formulated in a 3:1 ratio by weight. 3 parts of the Resin (Part A) for every 1 part of Hardener (Part B). It is highly recommended that HXTAL be mixed with an accurate scale to achieve proper ratios. Volume measurements can be used if necessary, but it is not nearly as accurate a measurement as weight and the more epoxy you mix, the more the error will compound. If the ratio of Resin to Hardener is off, unusual results will tend to happen. Oftentimes the surface of the epoxy will stay tacky to the touch long after the 7 day cure cycle or in extreme cases, the epoxy may not set at all. Proper ratio measurement is the most important aspect of HXTAL usage.

### **Cure times and options**

Some users see the long cure time of HXTAL NYL-1 as a detriment to their work schedule. This can be overcome for those users who require a shorter cure time, but are willing to sacrifice a small amount of clarity.

HXTAL can be sped up by increasing the ambient temperature around the piece to around 110°F (43°C). Care must be taken when doing this as temperatures over 110°F will begin to slightly amber the epoxy by speeding up the cure rate. For thin joints in pieces or for colored joints, this should not be an issue, but larger casts will see an unfavorable color shift. If absolute clarity is the goal, it is best to leave HXTAL to its recommended cure schedule.

As with any chemical reaction, an increase in temperature will hasten the cure time and a decrease in temperature will slow down the cure time. If the area that HXTAL is being used in will decrease in temperature over time (such as an unheated space overnight), then HXTAL may take longer than the stated 7 days to achieve full bond strength.

### **Coloring agents**

HXTAL can be tinted to match several different colored glasses and porcelain materials. There are many different tinting agents available on the market, but we recommend the use of Orasol dyes by Ciba-Geigy as a trustworthy and often used tinting agent for HXTAL NYL-1. Many porcelain conservators will utilize powdered titanium as a tint matching agent.

### **Shelf Life and Warranty**

Currently, there is no known shelf life for unopened HXTAL containers. The material will not degrade over time and stays viable for years after initial batch creation. For the purpose of simplicity of support, HXTAL Adhesive, LLC will only warranty batches for one year from the date of shipment. This does not indicate a shelf life for the materials. HXTAL NYL-1 can be stored at room temperature with no adverse affects to its usage. We do not recommend storage in a refrigerated environment as this can cause Part A of the epoxy to crystalize and can cause adverse affects to the bond joint.

### **Glass Preparation**

For proper bonding of glass to glass, it is imperative that the surfaces to be bonded be cleaned off all debris, both seen and unseen. Many oils and surfactants may exist on the surface of glass pieces and will inhibit HXTAL's ability to bond to the silica in the glass. It will instead bond to the surface debris and eventually fail. Virtually all failures we have encountered from HXTAL users has been from improperly cleaned and prepared surfaces. We generally recommend cleaning of glass surfaces with Whiting (calcium carbonate) to remove all existing dirt, oils and surfactants from the surfaces of the glass. A treatment with an adhesion promotor such as A-1100 amino silane is also an excellent idea as the amino-silane will help the HXTAL bond to the silica in the glass or ceramic object. A-1100 is usually pre-mixed with a reagent grade Isopropyl alcohol for application to the glass surfaces. Only a thin layer of A-1100 is required for best results.

### **Conclusion**

This Usage sheet is not exhaustive of HXTAL NYL-1's capabilities. There are many resources online for HXTAL's use and we are always open to experiences and opinions regarding the usage that you may feel should be included in this information sheet.