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HXTAL NYL-1™

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HXTAL - 2-Component Adhesive

Information and Instructions

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What is Hxtal?

Hxtal is an ultra-clear epoxy-based adhesive, which for a long time even when exposed in direct daylight remains crystal clear.
Hxtal suitable for bonding glass to glass, but also for combinations with other materials such as metal, porcelain etc.
Its unique features guarantee a high quality finish in artistic work, restorations and other sensitive applications.

Application

Hxtal consists of two liquid components A & B, both low viscosities.
These must be accurately weighed in a weight ratio:

3 Parts Component A: 1 Part Component B

1 Hxtal Part A&B

2 Amino Silane Primer

3 Digital Scale

4 Pipettes

5 Small Mixing Cup

6 Large Mixing Cup

7 Solvent

1 HXTAL NYL 900.372
2 Part Epoxy Adhesive, totals to 110g as a set.

2 Amino Silane Primer 900.373
For pretreatment of glass when using Hxtal. Improves connection of Hxtal with the silica in the glass.
Bottle 250ml

3 Digital Scale
Very accurate weighing of the two components A and B is essential because the volume of the components is different and thus inaccurate.

4 Pipettes 900.375
5 Pieces

5 Small Mixing Cup 30ml 900.376
10 Pieces

6 Large Mixing Cup 230ml 900.377
5 Pieces

7 HXTAL Solvent 900.374
Attack 230ml

Mixing and Bubble Removal:

Measure the 2 component exactly as above, pour into a mixing cup and mix with a glass rod. The
Stirring process can and should be done slowly, during this bubbles can rise. Freshly mixed Hxtal is very liquid, and the bubbles can be easily removed. This can also be done with a vacuum chamber.

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Preparation of the glass

Cleaning

Wash the glass with warm soapy water (No glass Cleaner). To get rid of grease and other strongly adhering materials, Cerium oxide can be used. After washing the glass surface, rub with damp talcum to remove all soap residues. Talcum is normally very fine so does not scratch the glass. Rinse and dry well.
Clean the glass surface with a clean, lint-free cloth and chemically pure alcohol (isopropyl alcohol). 99% pure alcohol is ideal, but a 70% pure quality solution will work too. Never use alcohol with oil additive.

Pre-treatment with Amino Silane Primer

For maximum adhesion between glass and HXTAL a pretreatment with A -1100 Amino Silane is recommended. This is especially true, if glass blocks are stuck, later to be sawed apart and then stuck together again. The glass surface should be rubbed by hand with a lint-free cloth moistened with the amino silane primer. Amino Silane is solved in 99.9% pure alcohol which leaves an oily film on the glass. This film disappears during curing of the adhesive. The bonding with HXTAL is possible immediately after application of the Amino Silane Primer but no later than 15-20 minutes after.

Curing

Curing of HXTAL begins at the moment where the two components A & B are mixed. It takes place very slowly, for about 7 days at room temperature, and about 24 hours at temperatures of 30-40 ° C.

Timing

You can accelerate the curing time of the glass by having it enclosed in a chamber slightly heated with a light bulb. After about 18-24 hours turn off the light source and let the glass cool down. After this time, the adhesive bonding is carried out to about 90%. Never heat freshly mixed HXTAL with an open flame, heat lamp, hot plate, hair dryer or similar. Too much heat leads to inhomogeneous curing and can even inflame the HXTAL.
Align the glass pieces, clean and fix if necessary, as the heat of the bulbs liquefies the Hxtal and the parts can move. The accelerated curing with heat in no way affects the adhesive strength, however, it may cause a slight yellowing of the adhesive if exposed to too much heat. Only grind or polish the adhesive areas after full hardening.

Why does it take this long to cure?

Originally HXTAL was developed for restorations and the preservation of valuable objects. The long curing time allowed the restorers to work HXTAL for long so that it could be used for molds or even for reconstruction of missing parts. Basically, optimal adhesion of HXTAL takes about 1 week to cure at 25 degrees Celsius, but it is sufficient for most uses after 24 hours (See above).

Clean

After 24 hours, the glass can be cleaned; this can be done with a razor blade or a cutter. Solvents are not recommended at this stage as they can penetrate into the crevices and affect the adhesion force. The damage would not be immediate, but recognized by small bubbles later on. After 24 hours, the peeling of adhesive residue is difficult and can only be done by grinding or polishing.

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More Information

Working with liquid HXTAL

Freshly mixed HXTAL is very fluid. It 'crawls', into fine cracks and makes the splice virtually invisible. In the best case, the glass is slowly heated to about 50 ° C with a hairdryer. Then place a drop HXTAL on the crevice. The adhesive moves into the crack, and the jump disappears as if by magic. Wipe the remains of HXTAL with a cloth or Paper towels.

Working with Viscous HXTAL

In some cases, it is advisable to work with a somewhat more viscous quality. A typical example is sticking together large and heavy pieces of glass where the weight of the glass would cause a too thin glue layer. For this type of bonding, some people let the HXTAL thicken, or small flat glass chips (e.g. thin laboratory glass) can be used as spacers.

A thicker HXTAL mixture is also recommended when bonding materials of different Coefficient expansion rates. E.g. Metal and glass. Such bonds are fundamentally problematic because HXTAL adheres very strongly to glass, and at varying temperatures, it may happen that the foreign material expands or contracts at a different rate, which could lead to incompatible bonding. Splices at different materials should be about 1mm.

The only way to thicken the HXTAL mixture is in a water bath at about 50 degrees Celsius. Warm the HXTAL mixture for approximately 15 minutes, remove and continue stirring. Check the viscosity at room temperature and if needed, put back in the water bath for another 5 minutes max. Be careful, especially with large amounts as the internal heat of the mixture also starts the curing process. Have a container of cold water ready.

Dealing with color pigments

HXTAL can be colored with pigments to mimic in color shades of glass or porcelain. Good experiences have been made with Orasol (from Ciba Geigy) or particularly in porcelain with titanium powder.

Storage of Residues

Store the remains of the HXTAL in a well-sealed box in the freezer. After thawing the mixture, use within one week. Once frozen the mixture is then slightly thicker than before, defrost with the box closed to prevent condensation. This can then be mixed with a fresh mixture.

Storage and Warranty

There is no information on the shelf life of unopened HXTAL. As long as the components are not mixed the material does not change. For simplicity, unopened packages have a one year guarantee from the time of purchase, although this has little to do with the life of the product. At room temperature, it can be kept for much longer. It is not recommended to store this in the refrigerator.

Physical Properties

Tensile Strength:	5400 psi (385 bar)	
Tensile Modulus of Elasticity:	316,000 psi (22 bar)	
Elongation:	3%	
Flexural Strenght:	10,100 psi (0.7 bar)	
Flexural Modulus of Elasticity:	365,000 psi (25 bar)	
Impact Strength:	0.14 ft.lbs/in.	
Hardness:	78 Shore	
Cure of 0.2mm film at 25°C:	Set to Touch	17 Hours
	Dry to Touch	31 Hours
	Full Cure	14 Days