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TECHNICAL DATA SHEET

T-88® Structural Epoxy Adhesive

DESCRIPTION:

System Three T-88® is a 2-component, epoxy/polyamide adhesive. Mixed in a simple 1:1 ratio, it will form structural bonds to many materials, including some kinds of plastics. Its medium viscosity and long working time makes it ideal for large or complicated glue-ups. T-88 meets the specification requirements of MIL-A-81236(OS) and CID A-A-3053.

RESIN PROPERTIES:

Viscosity @ 25°C(77°F) 9000-11000 cps
 Specific Gravity 1.10-1.12
 Color Clear

HARDENER PROPERTIES:

Viscosity @ 25°C(77° F)25,000-30,000 cps
 Specific Gravity 0.95-0.97
 Color Amber

MIXED SYSTEM PROPERTIES:

Mix ratio by weight resin/hardener 100/83
 Mix ratio by volume resin/hardener 100/100
 Working time @ 25° C 40-60 minutes
 Tack-free time @ 25° C 4-6 hours
 Coverage 80 ft²/gal
 Maximum Service Temperature 160°F

TYPICAL CURED PROPERTIES:

Lap-Shear Strength (psi) ASTM D1002
 Polyester Laminate 2800*
 Aluminum 2000
 Concrete 1100*
 Galvanized Steel 1800
 Wood(Maple) 1800*
 Copper 1650

*Indicates substrate failure

Lap-Shear Strength vs. Temperature:

(Aluminum Tensile Shear):
 67°F 2500 psi
 75°F 2000 psi
 150°F 1300 psi
 180°F 1000 psi

Tensile Strength, psi 7000
 Tensile Elongation at break 7.5%
 Flexural Strength, psi 11,500
 Flexural Modulus, psi 375,000
 Compressive Yield Strength, psi 12,500
 Heat Deflection Temperature, ° F 119

All tests were conducted in accordance with ASTM procedures.

Sizes available(kits): 8 oz. / 16 oz. / 32 oz. / 1-gallon / 2-gallon / 10-gallon /50 ml cartridge / 8.4 oz. cartridge

For health and safety information concerning this product, please refer to the MSDS sheets for T-88 Structural Adhesive. MSDS sheets are available on our website at www.systemthree.com.

Helping you put it all together

SYSTEM THREE T-88®

STRUCTURAL EPOXY ADHESIVE

INTRODUCTION

T-88 ® is a high performance, non-brittle, two-part epoxy adhesive designed to give superior results under adverse conditions. The adhesive may be used without modification in normally fitted joints, and will cure in any thickness without shrinkage. T-88 is clear amber and becomes virtually invisible when varnished. T-88 exhibits outstanding adhesion and permanence on a wide variety of materials, and is endorsed by leading designers, builders, and organizations.

T-88 has exceptional adhesion to most clean surfaces including wood, fiberglass, concrete, aluminum, steel and many plastics. T-88 does not bond well to tin, zinc or waxy thermoplastics such as polyethylene. When fully cured, it is unaffected by water, oil, gasoline, and virtually all chemicals. It will not stain wood and is immune to fungus and rot.

T-88 is unique in that it may be applied to damp wood, provided the adhesive is worked well into the surface. Glue line thickness is not critical and clamping is not necessary if the

joint is undisturbed during set-up of the adhesive. However, when bonding wood where end-grain is exposed T-88 may be thickened slightly to prevent excessive absorption. Coverage in average bond joints is 50-100 sq. ft. per gal. See special instructions below for bonding oak and teak.

At best we are experts on epoxy resin formulating and students of boat building and repair. If you have an oddball use give it a try. If you call and ask us this is probably the answer you will get. At best we can only give you our honest opinion and maybe tell you why we think it might not work. But don't take our word for it. Give it a try. Just like on a boat, you're the captain of your project.

PRODUCT APPLICATION AND USE

T-88 A and B are mixed one-to-one by volume using a graduated measuring cup. Weight ratio is 100 parts of A to 83 parts of B. Excessive Part B will degrade, rather than expedite cure and should be avoided. Care should be taken that mixing is thorough and streaks can not be seen. Pot life of the mixed adhesive is approximately 45 minutes at 70°F. However, a coated joint may still be pulled up tight for two hours. Cap containers promptly after use. Mixing in small lots or with large surface area exposure will extend pot life.

At 70°F, T-88 will harden in 6-8 hours and will reach functional strength in 24 hours. T-88 has been specifically formulated to cure as low as 35°F without reduction in strength; this cure will require approximately one week. At 150°F, T-88 will set within 30 minutes and develop maximum bond strength and impact resistance after 2 hours. If excessive flow-out occurs, allow 2-4 hours at room temperature before heat cure.

BONDING WOOD

WHITE OAK AND TEAK

White oak is a highly porous wood with a strong tendency to absorb resin and yield starved joints of substandard strength. Preferred practice is to apply a liberal coat of T-88 to both surfaces, and without mating allow the separate parts to stand open for 30-45 minutes. Dull spots indicate complete absorption and should be touched up with more T-88, after which the structure should be assembled and clamped with minimal pressure -- just enough to ensure contact. Alternatively, oak can be

presealed with a thin coat of T-88 on both mating surfaces and cured separately; then sand each surface lightly to level, apply fresh T-88 and join lightly.

Teak, being an oily wood, must be freed of surface oil to achieve optimum adhesion. With a clean cotton rag liberally moistened with lacquer thinner, vigorously wipe area to be bonded. While surface is still moist with solvent, wipe with a dry rag and allow to dry. If necessary, repeat wiping until surface dries to a whitish color indicating extraction of surface oil. Bond within eight hours of cleaning.

DOUGLAS FIR

Because of its resinous nature, Douglas fir tends to exude minute amounts of material which may act as a weak interlayer when adhesive is applied. To prevent difficulties of this type, sand the wood with 60 to 120 grit abrasive and thoroughly remove sanding debris. Apply adhesive within 48 hours.

BONDING METAL

DEGREASING — ALL METALS

Method 1

1. Vapor degrease — suspend the part in an approved vapor degreaser until solvent droplets no longer condense and drain from the surface. Remove from vapor and allow to dry.

Method 2

- Solvent wipe — wipe the surface with clean white cotton rags moistened in clean lacquer thinner.
- While the surface is still wet with solvent, wipe dry with a second clean dry cotton rag. This will help pick up oil residues rather than allowing them to re-deposit on the surface as solvent evaporates.

ALUMINUM/STAINLESS STEEL

Method One(Recommended)

- Degrease.
- Apply an aluminum pretreatment primer or solution.
- Rinse the metal thoroughly in cold running tap water followed by distilled or deionized water rinse.
- Bond within 3 hours.

Method Two

- Degrease.
- Sandblast to white metal. (Grinding, filing, or sanding can be substituted although sandblasting is preferred).
- Scour with clean cotton rag and abrasive cleanser.
- Rinse thoroughly in running cold tap water followed distilled or deionized water rinse.
- Air dry or oven dry at 500 F. maximum.
- Bond within 3 hours.

STEEL (OTHER THAN STAINLESS)

Method 1(Recommended)

- Degrease.
- Apply a commercial phosphoric acid solution/primer per manufacturer's instructions.
- Remove black deposit by scrubbing with a clean bristle brush (not plastic) under cold running tap water; follow with distilled or deionized water rinse.
- Dry metal promptly for 1 hour at 500°F maximum.
- Bond within 1 hour.

Method 2

- Degrease.
- Sandblast to white metal. (Grinding, filing, or sanding can be substituted although sandblasting is preferred).
- Degrease again.
- Bond within 1 hour.

COPPER AND COPPER ALLOYS (BRASS, BRONZE)

Method 1(Recommended)

Prepare the following solution:

- Ammonium Persulfate 25 pbw
- Distilled or Deionized Water 75 pbw
- Stir at room temperature until powder dissolves.

Treat the metal as follows:

- Degrease.
- Immerse In the above solution for 30 seconds at room temperature.
- Wash thoroughly in cold, running distilled or deionized water.
- Dry immediately with a room temperature air stream; hot air may cause staining and tarnishing of the surface.
- Bond within 1 hour.

Method 2

(Follow Method 2 under Steel other than stainless).

CONCRETE OR FERROCEMENT

Fresh Concrete — if well cured, scrub with a stiff bristle brush with abrasive cleanser (Ajax, Comet, etc.), rinse well, dry thoroughly before bonding.

Old Concrete

- Degrease if necessary, scrub as above.
- Wearing rubber gloves, apron and eye protection, apply 15 per cent hydrochloric acid solution (CAUTION!) at the rate of 1 gallon to every 5 sq. yds. Allow to stand until bubbling subsides.
- Rinse thoroughly with high pressure hose and scrub with stiff bristle brush. Rinse again to flush away loose particles.
- Dry thoroughly before bonding.

CLEAN-UP

Wear disposable gloves or barrier skin creams when working with epoxy resins. Never use solvents to remove epoxies from your skin. Some solvents present hazards worse than epoxies and can actually be absorbed into the body. Use a good waterless handsoap and plenty of paper towels to remove epoxy from your skin. Then apply a good medicated skin cream to replace the natural oils removed by the handsoap. If you get gummy, half-cured material on your skin, let it cure and peel it off the next day. Cured epoxy doesn't stick well to skin or hair.

STORAGE

Separate resin and hardener components will have a storage life in excess of one year if containers are kept well closed and stored below 90°F. Allow cold containers to reach room temperature before opening.