

Technical Information
Electronic and Engineering Materials & Secondary Insulation

TI- 3000
Surface Preparation Guide

TI – 3000 Surface Preparation Recommendations

Iron, Steel, Aluminum

Free surfaces of scale, rust and dirt. Clean oily surfaces by one of the following, in order of preference.

1. Solvent wash with acetone, MEK, naphtha, ultrasonically clean or vapor degrease.
2. Solvent clean and plasma etch.
3. Solvent clean and etch for 10 minutes at 65°C in a solution of Chromic acid etching solution (35 parts by weight Deionized water, sodium dichromate 5 parts by weight, concentrated sulfuric acid 10 parts by weight) After rinsing with clean water, and possibly acetone to dry the water, keep from contamination until bonding.

Copper and Copper Alloys

Solvent wash and sand blast. For improved bonds, etch for two minutes at room temperature with a solution of: DI water (81.6 parts by weight), 42% Ferric Chloride in water (6 parts by weight), concentrated nitric acid (12.4 parts by weight). Rinse with clean water and dry.

Plastics

Many thermoset plastics accept epoxy adhesives readily. Clean surface well to remove any oils, greases, etc. Solvents, sanding and plasma etching may be used.

Thermoplastic materials are harder to bond to. Please consult the manufacturer of the material for suggestions. A general rule is that rigid materials do not adhere well to flexible materials. The greater the flexibility, the harder the material is bond to.

Nylons: Soften with a 20% phenol solution in water.

Delrin® type materials: Use an acetone wash.

Polyethylene and polypropylene: Use a flame to produce a matt finish, plasma etch or corona discharge.

Teflon®: Etch with sodium, plasma or a commercial etching solution designed for Teflon®. May be sanded.

Rubbers

For natural rubber, treat with concentrated sulfuric acid for 1-2 minutes; longer for synthetic rubbers,

Ceramics and Glass

Make sure surface is clean from oils and greases; soap, detergent or solvents may be used. For glazed materials, a light sanding may be used.

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Wood

Surfaces should be free from dirt, oil and old paint. Sand or wipe with a solvent, such as mineral spirits, etc. For porous surfaces, a primer or extra adhesive should be used.

Concrete

Remove surface contamination. Roughen surface if desired. Etch with a 10% solution of muriatic acid, neutralize, rinse thoroughly and allow to dry completely.

JOINT DESIGN

Epoxy adhesives are designed to give high strength structural bonds for joints stressed in shear, tension or compression. Performance under peel and cleavage loading modes may be poor. If so, more flexible adhesive should be used.

PREVENTION OF ADHESION

To prevent adhesion in areas where it is not desired, a release agent or masking material should be used. Masking tapes, release agents such as Epoxylite® MR 101 or masking materials such as Ripley™ PL Series should be used. None of these should contact the bonding area.

REMOVAL OF ADHESIVE

Any uncured material may be easily removed by wiping with mild solvents such as isopropyl alcohol. Cured material is more difficult, harsher solvents may work or if the material is a high temperature adhesive, such as Epoxylite® E 813-9, or E 6203, it may be impossible. Several possible techniques are:

1. Split the joint in peel or cleavage then abrade the adhesive off.
2. Immerse in commercial epoxy stripper solution.
3. Saw joint apart and abrade the adhesive off
4. Burn the material away at 260°-450°C
5. Heat the joint until material softens and pull apart.
6. Heat with a chisel point soldering iron
7. For High Temperature materials, use thermal shock to crack the material

Since Epoxylite® materials are thermoset and are designed to be tough, use care in application to avoid removal problems.

The above properties are typical values and are not intended for specification use.

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