

POLYMER COMPOSITES, INC.

Technical Bulletin

SURFACE PREPARATION

In virtually every application the quality of the bond between the resin system and the surface to which it is applied is improved if the surface is clean and dry. This is particularly true of adhesive applications where stress will be applied to the cured bond line. It is also true where protective coatings are used. The following surface preparation procedures are recommended.

METALS

1. **Degrease** – Wipe faying surfaces with Methyl Ethyl Ketone (MEK) to remove all oil, dirt, and grease.
2. **Etch** – For optimum results, metal parts should be immersed in a chromic acid bath solution consisting of:
Sodium dichromate – 4 parts by weight
Sulfuric acid – 10 parts by weight
Water – 30 parts by weight
The solution should be held at a temperature of 160°F (71°C), and the parts left immersed for 5 to 7 minutes.
3. **Rinse** – remove metal parts from etching bath and rinse in clean cold water (de-ionized water is recommended). If thoroughly clean, metal surfaces so treated will hold a thin film of water.
4. **Dry** – To accelerate drying, items to be bonded can be placed in an air-circulating oven.

ALTERNATE PROCEDURE

1. **Degrease, scour and dry** – Often etching as outlined above is not practical. The metal surfaces may be cleaned by degreasing as noted above, scouring with an alkaline cleanser followed by rinsing and drying.
2. **Degrease and dry** – Degrease the surface as noted above, sand or sandblast the surface lightly but thoroughly. Rinse with acetone or Methyl Ethyl Ketone (MEK), and dry.

GLASS

1. **Degrease** – With MEK as above, or with a strong boiling solution of a good grade household detergent.
2. **Etch** – For optimum results, degreasing can be followed with the chromic acid bath outlined above.

WOOD

1. **Sand** – Bonding surfaces should be sanded lightly, but thoroughly to remove all external contamination.
2. **Clean** – Carefully remove all dust, or particles of wood from sanded areas. A stiff and clean brush, or compressed air can be used.

PLASTIC AND FIBERGLASSED SURFACES

1. **Clean** – Remove all dirt, oil, or other surface contaminants with soap and water, followed by thorough rinsing and allow to dry. A solvent wipe down using a lint free rag will further insure that the surface is contaminant free. Use acetone if available but common rubbing alcohol will work as well
2. **Sand** – Surfaces to be bonded should be sanded lightly, but thoroughly to remove surface sheen.
3. **Clean** – Carefully remove all dust or particles of plastic from the sanded area. A clean brush, lint free cloth, or compressed air may be used. Make sure that the pressurized air is as dry as possible and free from any lubricant or oils from the compressor.

APPLICATIONS NOTES

PLEASE DOWNLOAD THE FOLLOWING VIDEO PRESENTATION, DEMONSTRATING THE GENERAL MIXING TECHNIQUE FOR ANY EPOXY RESIN. USE THIS MIX TECHNIQUE TO ELIMINATE TACKY SPOTS, UNCURED SECTIONS AND POOR MECHANICAL PERFORMANCE, WHICH IS CAUSED BY POOR MIXING OF THE EPOXY RESIN AND CURING AGENT INTO A UNIFORM CONSISTENCY. PLEASE VISIT OUR DOWNLOAD LIBRARY AND CHOOSE

“EPOXY MIXING TECHNIQUE.wmv”
(30 MB windows move file)

<http://www.polymercompositesinc.com/pci%20pdf%20files/>

Epoxy resin systems have a definite working time or pot life after mixing the components together. It is important to plan the work so that the material can be used for the purpose intended promptly after mixing.

Mix the resin and curing agent only when all needed materials and implements needed are ready and within reach and the surface is cleaned and prepared

Do not allow the mixed resin to cure in a confined mass as it will generate exothermic heat (energy released from the polymerization process) that can reach in excess of 350°F and cause an uncontrollable reaction and may auto ignite.

Excess materials which flow out around bonded, potted, encapsulated, or coated areas should be removed promptly with a cloth. To remove excess material after it has cured requires the use of sanding, filling or chipping procedures.

STORAGE

The shelf life of these systems is ninety to one year from date of shipment. Replace the cap, lid or cover securely and place in a cool dry place. If properly store epoxy resin systems can be stored and used longer than the stated shelf life. Stored the containers in a dry and cool place. Keep the storage temperature between 60°F to 80°F and relative ambient humidity of less than 30%.

SAFETY

Epoxy resins are industrial chemicals and should be handled with caution. Read the product's MSDS before using and always practice safety first. These materials should be used where adequate ventilation exists. Do not inhale the vapors or swallow the material. Gloves or a protective hand cream should be used when working with these systems.

Data and parameters cited herein were obtained by Polymer Composites, Inc. using materials under carefully controlled conditions.

Data of these types should not be used as being indicative of ultimate properties obtainable.