

# How to Work Properly with Epoxies

## Step By Step Instructions



### Receiving

- Upon receipt of the material, review the Technical Data Sheet for specific product information (attached to the packing slip).
- Read and follow the MSDS to insure proper chemical hygiene (safety precautions) of the EPO-TEK material (also attached to packing slip).
- Material shipped in dry ice should **Immediately** be moved to a  $-40^{\circ}\text{C}$  freezer upon receipt.

### Storing

- Most two component adhesives should be stored in a humidity-controlled room (40-60% RH) at room temperature ( $23^{\circ}\text{C}$ - $27^{\circ}\text{C}$ ), in a closed container.
- One component materials are typically stored in a freezer at  $-40^{\circ}\text{C}$ . The material should always be brought back to room temperature prior to use. **DO NOT** open container until ambient temperature is reached or moisture could condense on the surface and potentially interfere with curing, as well as cause other problems. (see EPO-TEK Tech Tip 2)



### Handling

- Epoxies should be handled carefully, in the same manner as other chemical products.
- Work in a well ventilated area or under an exhaust hood. Latex or Nitrile gloves are also required in order to reduce any dermal exposure (dermatitis can usually be avoided by use of proper equipment, safety handling techniques and proper chemical hygiene).
- Gloves should be replaced often and work spaces should be kept clean of contaminants.
- Often, goggles and protective clothing may also be required.
- Wash hands thoroughly with soap and water when finished.

### Mixing

- Calculate the amount of A and B needed based on the mix ratio by weight (see Technical Data Sheet for mix ratio and follow exactly). Minimum batch size is 2-3 grams.
- Some products have a maximum batch size limit as well. It is important to read the entire Technical Data Sheet before using the epoxy.
- Using a metal or glass stirrer, mix separately part A, then part B, ensuring each part is homogeneous before weighing the material to be used in the final mixture.
- To measure the correct amount of Part A and Part B, use a gram scale (preferred method). An alternate method is measuring by volume and taking into account the specific gravity of each component (see EPO-TEK Tech Tip 11).
- After taring an empty container, weigh the appropriate amount of part A (pre-determined by your desired end quantity of adhesive).
- Add the pre-determined quantity of part B to the part A. Be sure to use a clean stirrer to avoid contamination.
- Mix slowly 1-2 minute(s) clockwise in a swirling manner, followed by 1-2 minute(s) counter-clockwise, to ensure a homogenous mixture.
- Be careful **NOT** to vigorously mix the materials as this can introduce entrapped air/bubbles into the adhesive; potentially causing voids in the adhesive bond line.

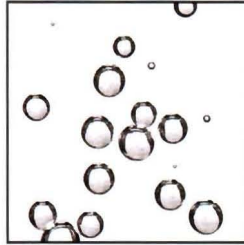
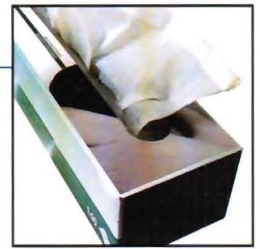


### Special Considerations

- Containers made out of paper or cardboard are **NOT** recommended as they are often coated and can contaminate the product being mixed.
- Do **NOT** use wood stir sticks as wood may also contaminate the adhesive.
- Be sure to **USE** a stainless steel, glass, or a plastic device to mix.

## Surface Preparation

- Prepare the bonding surface by applying acetone or isopropyl alcohol to a clean Kim-Wipe® (single use cloth) and wipe the surface until clean.
- Be sure the surface is dry before applying the adhesive.
- For more detailed information on substrate specific surface preparation techniques, see EPO-TEK Tech Tip 13: Surface Preparation.



## Bubble Removal (if necessary)

- If an adhesive contains entrapped air, it should be removed in order to apply the epoxy uniformly.
- Three common methods to remove bubbles are: vacuum degassing, centrifugation and heat — depending on your packaging type (syringe or jar container) and application method.
- See EPO-TEK Tech Tip 4: Bubble Removal for specific information on degas methods.

## Applying the Epoxy

Depending on your application, some common methods of applying adhesives include:

- syringe dispensing
- screen printing
- spraying
- stamping
- roll coating
- jetting



## Proper Curing

- The material should be cured according to the cure condition found above the “Typical Properties” box on the Technical Data Sheet. Often there are alternate cure schedules available. For the minimum cure, see “Minimum Bond Line Cure Schedule” listed at the top right side of the datasheet.
- As a general rule, curing time is typically **extended** in order to ensure the bond line reaches the proper cure temperature.
- See EPO-TEK Tech Tip 6: Minimum Bond Line for additional information.

### Additional Tips

- ★ Curing time can **never** be too long however, when it is too short, poor cross-linking can result. Shortened cure time often leads to low adhesive strength as well as less than optimal properties.
- ★ General rule of thumb for curing — **DOUBLE** the recommended cure time listed on the datasheet under minimum bond line cure.

Please consult our Technical Services Experts at Epoxy Technology for any questions or assistance you may need in working with our EPO-TEK® adhesives.

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