



## Removal of Cured UV Adhesives and Resins

It is occasionally necessary to remove cured adhesive in order to repair a component or assembly or to simply disassemble parts. However, cured UV adhesives and coatings are cross-linked, thermoset resins which do not melt and may be difficult to remove from a substrate. The following information is offered in order to maximize ease of removal and to minimize possible damage to the part.

Generally, conformal coatings on printed circuit boards are more commonly removed than adhesives. Dymax provides detailed removal instructions for its conformal coatings in TB095.

For general removal purposes, heat, cold, and chemical exposure are common means of weakening and then removing cured adhesive. Review of the material's Product Data Sheet may provide clues as to the best removal method. Properties such as glass transition ( $T_g$ ) temperature, water absorption, or chemical resistance may indicate the most appropriate removal procedure. It is possible that the removal process may damage some part of the assembly. Therefore, after removal and repair, it is recommended that the part be re-tested to ensure that it meets the lifetime use and durability requirements of the application.

### Heat Removal

Depending on the substrates, adhesive, and configuration of the bond, the application of heat may be the best way of separating bonded parts or removing a coating. Heating the adhesive to 150°C or above the glass transition temperature ( $T_g$ ) will soften it so that the application of force may be possible to separate the resin from the substrate. After the separation of parts or a coating from the substrate, it will be easier to clean up any remaining exposed material by wiping or scraping, aided by the appropriate solvents.

### Embrittlement with Cold

Hard, rigid adhesives are often easier to shatter upon exposure to very cold temperatures than are more flexible ones. Dipping the part in liquid nitrogen, wrapping it in dry ice, or otherwise bringing its temperature below -60°C may embrittle an adhesive. Tapping of the cold part may shatter the bond and allow the parts to separate. Once separated, a solvent soak may still be necessary to remove residual material.

### Chemical Removal

Removing cured material with chemicals requires immersion of the entire assembly or treating localized areas with the chemical stripping solution on a cotton swab or other applicator. Removal times will depend on the specific adhesive, the material thickness, exposure area of the bond to the chemical, and the chemical being used.

It is critical to determine the effect of the chemical on the part before attempting to destroy the adhesive bond. Water is usually not practical for chemical removal of adhesive as it is not an aggressive solvent and requires long soaks to affect any degradation. Boiling water will soften an adhesive bond and thus may allow separation of parts.

Common solvents used to degrade adhesive bonds include the following:

- Methylene chloride
- Chlorine bleach (dilute 10%)
- Strong base, NaOH or KOH solution with a pH $\geq$ 12.
- MEK (methyl ethyl ketone) or acetone

Paint and coating strippers will generally attack adhesives and aid in removal. Below are two chemicals that Dymax has successfully used during in-house testing.

Manufacturer	Product	Where to Find
Savogran	Strypeeze Paint/Varnish Remover	<a href="https://savogran.com/removers.html">https://savogran.com/removers.html</a> Online and through local paint and hardware stores
Dynaloy, Inc	Dynasolve 185	Online through several authorized distributors

## Mechanical Removal

Cleanup of cured material may require mechanical methods such as scraping with a plastic or metal razor or other tool, ultrasonic bath exposure, water jet, vacuum tweezers, or an air knife.

## Caution

Always consult your company's health and safety department to determine a safe removal process. Always follow the safety precautions of the manufacturer when using any of the chemical products referenced in this guide. As every application and all parts are different, Dymax does not guarantee the effectiveness of any of the suggested removal methods mentioned in this bulletin. Thorough and complete evaluation of all methods mentioned in this guide on the individual part and processes must be made to assess hazard level to both the part and personnel and the facility, and to establish the appropriate precautions.

## Further Technical Assistance

Dymax Application Engineers are available to assist customers in evaluating individual rework methods. Please contact us at [applicationengineering@dymax.com](mailto:applicationengineering@dymax.com) for assistance with your specific rework process.