

# Rework and Removal of UV Light-Curable Conformal Coatings

Dymax conformal coatings are solvent-free, UV/Visible light-curable resins that are applied as thin coating layers on electronic devices for protection against a variety of environmental, mechanical, electrical, and chemical stresses including:

- moisture and humidity
- dust and dirt
- mechanical and thermal shock
- PC board processing solvents
- excessive Handling
- fungus and mildew
- corrosion
- vibration
- chemicals, fuels, hydraulic fluids
- harsh application environments

Conformal coatings were originally developed for military, aerospace, and marine applications but have been increasingly used in a broader base of telecommunication, computer, automotive, consumer, industrial, and control applications to increase product quality and performance reliability. Conformal coatings also protect the manufacturer's investment in delicate, expensive, and high-density components.

## TYPES OF CONFORMAL COATINGS

The military specification for coating printed circuit assemblies, MIL-I-46058C, recognizes five types of conformal coatings: Type AR (acrylics), Type ER (epoxies), Type SR (silicones), Type UR (urethanes) and Type XY (paraxylylenes). UV-cured systems like Dymax Multi-Cure<sup>®</sup> and Dual-Cure conformal coatings are listed as fit for AR, ER, and UR applications.

## CONFORMAL COATING REWORK PROCESS

The requirements for an effective rework process must balance the end-use performance properties of the coating with its individual ease of removal. In general, solvent-based, non cross-linked coatings will be relatively easy to remove with solvents. Dymax offers a line of UV light-curable conformal coatings that allows users to choose from a wide range of product properties to meet their individual requirements. (Reference Lit204 Dymax Conformal Coating Selector Guide.)

UV light-curable and cross-linked materials, with their enhanced environmental and chemical resistance, will be more challenging to remove. The three most common techniques used to remove cured, cross-linked conformal coatings are chemical, thermal, and mechanical removal.

## HEAT REMOVAL

Depending upon the size of the area to be reworked and the temperature sensitivity of the components involved, cured conformal coating can be removed by heat in two ways:

- Heat the entire board to 150°C, which softens the conformal coating. Then strip the coating while still hot.
- Use a HADT (Hot Air Desoldering Tool) or a solder gun to spot coating in localized areas. Apply the heat source to the localized area and remove coating as it softens. Exercise care not to damage heat-sensitive components. This method is useful when the surrounding area contains heat-sensitive components since it directs the hot air to one spot.

## CHEMICAL REMOVAL

Removing cured conformal coatings by chemical treatment requires immersion of the coated board or treating localized areas with the chemical stripping solution. Several companies manufacture materials which dissolve/attack conformal coatings. On the back of this bulletin is a list of materials that have been shown to be effective in the removal of Dymax conformal coatings.

## MECHANICAL REMOVAL

**Comco, Inc.**  
2151 N. Lincoln Street  
Burbank, CA 91504-3344  
800-796-6626  
818-841-5500  
[www.comcoinc.com](http://www.comcoinc.com)

Comco manufactures a Micro-Blaster System that safely removes cured coating with a pressurized abrasive. The abrasive is easily removed from the surfaces without danger to the components.

COMPANY	PRODUCT	TELEPHONE NUMBER
<b>Savogran Corporation</b> 259 Lenox Street Norwood, MA 02062 <a href="http://www.savogran.com">www.savogran.com</a> <i>Products are sold through local, paint, hardware, and home centers.</i>	Kutzit or Strypeeze	<b>800-225-9872</b>
<b>Dynaloy, Inc</b> 1535 E. Naomi Street Indianapolis, IN 46203 <a href="http://www.dynaloy.com">www.dynaloy.com</a> <i>Products are sold through authorized distributors.</i>	Dynasolve Uresolve Plus SG	<b>800-669-5709</b> <b>317-788-5694</b>

Before using any of these products, it is important to consult with your company's health and safety department. There is no guarantee these products will work for your application and should be thoroughly evaluated. Please consult the appropriate product and material safety data sheets prior to use.

## TECHNICAL ASSISTANCE

Dymax Applications Engineers are available to assist customers in evaluating individual rework methods. Please contact us for assistance with your specific rework process.



© 2005-2012 Dymax Corporation. All rights reserved. All trademarks in this guide, except where noted, are the property of, or used under license by Dymax Corporation, U.S.A.

The data contained in this bulletin is of a general nature and is based on laboratory test conditions. Dymax does not warrant the data contained in this bulletin. Any warranty applicable to the product, its application and use is strictly limited to that contained in Dymax's standard Conditions of Sale. Dymax does not assume responsibility for test or performance results obtained by users. It is the user's responsibility to determine the suitability for the product application and purposes and the suitability for use in the user's intended manufacturing apparatus and methods. The user should adopt such precautions and use guidelines as may be reasonably advisable or necessary for the protection of property and persons. Nothing in this bulletin shall act as a representation that the product use or application will not infringe a patent owned by someone other than Dymax or act as a grant of license under any Dymax Corporation Patent. Dymax recommends that each user adequately test its proposed use and application before actual repetitive use, using the data contained in this bulletin as a general guide.

LIT078 10/25/2012

**Dymax Corporation**  
860.482.1010  
info@dymax.com  
[www.dymax.com](http://www.dymax.com)

**Dymax Oligomers & Coatings**  
860.626.7006  
oligomers&coatings@dymax.com  
[www.dymax-oc.com](http://www.dymax-oc.com)

**Dymax Europe GmbH**  
+49 (0) 611.962.7900  
info\_de@dymax.com  
[www.dymax.de](http://www.dymax.de)

**Dymax UV Adhesives & Equipment (Shenzhen) Co Ltd**  
+86.755.83485759  
dymaxasia@dymax.com  
[www.dymax.com.cn](http://www.dymax.com.cn)

**Dymax UV Adhesives & Equipment (Shanghai) Co Ltd**  
+86.21.37285759  
dymaxasia@dymax.com  
[www.dymax.com.cn](http://www.dymax.com.cn)

**Dymax Asia (H.K.) Limited**  
+852.2460.7038  
dymaxasia@dymax.com  
[www.dymax.com.cn](http://www.dymax.com.cn)

**Dymax Korea LLC**  
82.2.784.3434  
info@dymax.kr  
[www.dymax.co.kr](http://www.dymax.co.kr)