

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® and Dual-Cure conformal coatings are listed as fit for AR, ER, and UR applications.

REMOVAL OF UNCURED CONFORMAL COATING

Uncured conformal coating can be wiped away with a lint free cloth soaked in Isopropyl Alcohol or other common alcoholic solvents. Non-alcoholic solvents are not recommended as they tend to leave residue.

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

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.)

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.

MECHANICAL REMOVAL

Comco, Inc.
2151 N. Lincoln Street
Burbank, CA 91504-3344

800-796-6626
818-841-5500
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.

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. Below is a list of materials that have been shown to be effective in the removal of Dymax conformal coatings, removal times will vary depending on coating thickness and chemical being used.

COMPANY	PRODUCT	TELEPHONE NUMBER
Savogran Corporation 259 Lenox Street Norwood, MA 02062 www.savogran.com <i>Products are sold through local, paint, hardware, and home centers.</i>	Kutzit or Strypeeze	800-225-9872
Dynaloy, Inc 1535 E. Naomi Street Indianapolis, IN 46203 www.dynaloy.com <i>Products are sold through authorized distributors.</i>	Dynasolve 699	800-669-5709 317-788-5694
Danko Industries 181 Wolf St # C Yorkville, IL 60560 www.dankoindustries.com	We Kleen	630-882-6070

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 Application Engineers are available to assist customers in evaluating individual rework methods. Please contact us at applicationengineering@dymax.com for assistance with your specific rework process.



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