DYMAX CORPORATION

PRODUCT DATA SHEET

16 August 2005

ULTRA FLUORESCING CONFORMAL COATING
Multi-Cure® 984-LVUF

DESCRIPTION

Multi-Cure® 984-LVUF is a highly fluorescing single component, 100% solids conformal coating specifically formulated for rapid room temperature cure when exposed to longwave (320-380 nanometer) UV light. 984-LVUF retains a relatively high brilliance fluorescence after curing and will not fade. Thin layer coatings cure almost instantly to a depth of 7 mils and fluoresce upon exposure to "black" light. Multi-Cure 984-LVUF also exhibits adhesion to a variety of metal, ceramic and glass-filled epoxy surfaces. 984-LVUF is a moderately low viscosity coating which can be cured by exposure to UV light and secondarily cured with heat for shadowed areas on densely populated circuit boards.

Multi-Cure 984-LVUF are approved to Military Specification MIL-I-46058-C, Type AR, ER and UR (QPL#576-90). 984-LVUF meets "NSA" hydrolytic stability (reversion) requirements.

Multi-Cure 984-LVUF is qualified to IPC-CC-830-A.

Multi-Cure 984-LVUF is UL recognized (UL 746C), rated indoor/outdoor, to 120ºC and 94V-0 flame class.

TYPICAL UNCURED PROPERTIES (not specifications)

Solvent Content	None	
Appearance	Single Component/Clear Fluorescing Liquid	
Specific Gravity	1.05	
Shelf life	12 months	
Viscosity	150 cP (nominal)	ASTM D-1084

TYPICAL CURED PROPERTIES (not specifications)

PHYSICAL

Durometer Hardness	D80	ASTM D-2240
Humidity Resistance (85°C/95RH, 120 day)	Pass	IPC-CC-830
Tensile at Break	6,000 psi	ASTM D-638
Elongation at Break	5%	ASTM D-638
Modulus of Elasticity	60,000 psi	ASTM D-638
Water Absorption	0.4%	ASTM D-570
Cross Hatch Adhesion Test:	Copper 100%	ASTM D-3359
	G-10 100%	ASTM D-3359

THERMAL

Thermal Shock (-65/+125°C)	100 cycles, Class 3	IPC-CC-830
Thermal Limit (brittle/degrades)	-55° to 175°C (-65° to 350°F)	DSTM D-200*
Coefficient of Linear Thermal Expansion	69 x 10^{-6} in/in/°C	ASTM E-831

ELECTRICAL

Dielectric Strength	1,800 V/mil	ASTM D-1304
Volume Resistivity	35.8 x 10^{12} ohm-cm	ASTM D-1304
Surface Resistivity	384 x 10^{12} ohm	ASTM D-1304
Dissipation Factor, 1 MHz	0.03	ASTM D-1304
Dielectric Constant, 1 MHz	3.4	ASTM D-1304

*DSTM refers to DYMAX Standard Test Method

CURE SCHEDULE - UV Cure with 365 nm UV light[1]

Cure Time (seconds)	Intensity mW/cm^2	DYMAX Light-Welder® Lamps
30	250	5000-EC
1	2,500	UVC-6 with F-300, D-bulb

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Multi-Cure 984-LVUF is designed with an optimum level of fluorescent indicator to allow cure and to fluoresce under a “black light”. Though UV conformal coatings do not fluoresce as brightly as traditional solvent based coatings, the following steps should permit adequate brightness for easy inspection:

1. Avoid overcuring the conformal coating. The UV cure schedule listed above is adequate. Lengthening exposure to UV light lowers fluorescence.
2. Inspect coated boards under “black” light in a shrouded area. Indirect indoor lighting decreases the effect of the “black” light in revealing the fluorescence.

Heat Cure Following UV Exposure

Heat can be used as a secondary cure mechanism when all adhesive cannot be cured with UV light. UV cure must be done prior to heat cure. Application may involve dip, spray or curtain coat. The following cure schedule may be used:

Coating Temperature		Time
110°C	225°F	1 hour
120°C	250°F	30 minutes
150°C	300°F	15 minutes

FACTORS AFFECTING CURING

- Dark surfaces lengthen cure time. Thicker films require longer cure times.
- Full range (UV-A, B & C) lamps provide faster cures than filtered sources.
- All UV sources degrade with use. Check output periodically with a radiometer.
- Light intensity decreases as distance from UV source increases.

HANDLING AND DISPENSING ADHESIVE

Typically, DYMAX 984-LVUF is sprayed. For questions relating to dispensing, curing systems, the products or the use of products, contact DYMAX Technical Service.

Repeated or continuous skin contact may cause sensitization and should be avoided. Do not wear jewelry. The use of barrier hand cream is recommended. Do not wear absorbent gloves. Uncured adhesive may be removed from skin with hand soap and water. Avoid eye contact. See CAUTION below. Wipe excess adhesive with paper towels; remove residue with chlorinated solvents, methanol, ethanol, or isopropanol.

STORAGE AND SHELF LIFE

Product has a one-year shelf life when stored below 32°C (90°F), out of sunlight and in original, unopened container.

CAUTION

For industrial use only. Avoid breathing vapors. Avoid contact with eyes and clothing. In case of contact, immediately flush with water for at least 15 minutes; for eyes, get medical attention. Wash clothing before reuse. Keep out of reach of children. Do not take internally. If swallowed, vomiting should be induced at once and a physician called. For specific information, refer to the product’s Material Safety Data Sheet before use.

DYMAX product 984-LVUF does not support fungal or bacterial growth.

NOTES

1. For example, if the intensity of a light source is 2500 mW/cm^2 and a part is exposed for one second, then the total UV energy would be 2500 mJ or 2.5 J/cm^2.

$$E_{uv} = \frac{mW}{cm^2} S = \frac{mJ}{cm^2}$$

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DYMAX Adhesives and Light Curing Systems