DYMAX Corporation
Adhesives and Adhesive Equipment
51 Greenwoods Road, Torrington, CT 06790

1184-M SERIES
FLUORESCING WITH SECONDARY HEAT CURING CAPABILITIES

APPLICATIONS

- **Sealing**
- **Conformal Coating of Medical Electronics**

FEATURES

- **Solvent-Free**
- **For Coating or Sealing**
- **Fluoresce For Visual or Automated Inspection**

BONDS

- **CAP**
- **Polyurethane**
- **Polystyrene**
- **Steel**
- **SAN**

BIO-APPROVALS

- **ISO 10993-Elution Systemic Injection, Intracutaneous, Implantation**
- **USP Class VI requirements are met as a result of the ISO 10993 tests conducted**

INTRODUCTION

Dymax MD adhesives are solvent-free and cure only upon exposure to UV or Visible light. Their ability to cure in seconds enables faster processing, greater output, and lower assembly costs. When cured with Dymax *MEDI-CURE*® spot, focused beam, or flood lamps, they deliver optimum speed and performance for medical device assembly while enhancing worker safety.

TYPICAL UNCURED PROPERTIES

Solvent Content		None - 100% Solids	
Composition		Urethane Oligomer/(Meth)Acrylate Monomer Blends	
Appearance		Clear/Straw Liquid	
Flash Point		>93°C (200°F)	
Solubility		Alcohol/Chlorinated Solvents	
Toxicity		Low	
Viscosity (20 rpm)	1184-M-VLV	150 cP (nominal)	ASTM D-1084
	1184-M	400 cP (nominal)	ASTM D-1084
	1184-M-T	4,000 cP (nominal)	ASTM D-2556
	1184-M-VT	12,000 cP (nominal)	ASTM D-2556

TYPICAL CURED PROPERTIES

PHYSICAL

Durometer Hardness Range	D80	ASTM D-2240
Tensile at Break	6,200 psi	ASTM D-638
Elongation at Break	5%	ASTM D-638
Modulus of Elasticity	60,000 psi	ASTM D-638
Linear Shrinkage	2.0%	ASTM D-2566
Thermal Range (brittle/degrades)	-50° to 180°C (-55° to +350°F)	DSTM D-200*
Coefficient of Thermal Expansion	70 x 10^{-6} in/in °C	ASTM D-696
Water Absorption (24 h)	0.6%	ASTM D-570

*DSTM Refers to Dymax Standard Test Method

ELECTRICAL

Dielectric Strength	1,800 Volts/Mil	ASTM D-149
Dielectric Constant, 23°C, 1MHz	3.4	ASTM D-150
Dissipation Factor, 23°C, 1MHz	0.03	ASTM D-150
Volume Resistivity	3.6 x 10^{13} Ω-cm	ASTM D-257
Surface Resistivity	3.8 x 10^{14} Ω	ASTM D-257

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MD® MEDICAL DEVICE ADHESIVE
Product Data Sheet

1184-M Series, 08/09

TYPICAL LIGHT CURE DATA

Lamp	MC-5000	MC-4000	FUSION F-300 "D"
Light Type Lamp Type	UV/Visible 5" x 5" Flood	UV/Visible 3/16" Spot	UV/Visible 1" x 6" Focused Beam
Maximum Lamp Intensity @ 365 nm Intensity @ Time Of Test @ 365 nm	300 mW/cm^2 150 mW/cm^2	4000 mW/cm^2 1800 mW/cm^2	8000+ mW/cm^2 4000 mW/cm^2
Adhesive Absorption Range (nm) Equipment Output Range (nm)	300-500 300-500	300-500 300-500	300-500 300-500
Cure Speed (Sec) Fixture Between Glass Slides Tack Free Surface Cure Nominal Cure Depth (0.125")	 1 15 >10	 1 15 8	 <1 5 18
Cure Depth In 1 Minute (Inch)	0.140	0.35	>.250

The required intensity and cure time should be determined during the initial process validation stage. Factors that should be considered during process validation which can affect the adhesive cure rate and depth of cure include but are not limited to: the part geometry, bond-gap size, percent light transmission through the substrate at 365 nm and 436 nm, distance from the light source to the adhesive bond area, UV and visible light intensity and spectral output of the light source, the desired margin of safety to be built into the process and minimum and maximum exposure times.

HEAT CURE (AFTER UV CURING)

Heat may be used as a secondary cure for shadowed areas only after product has been cured with UV. The following is a guide and is dependent on the amount of material to be cured:

Minimum Temperature	Time
120°C (250°F)	30 minutes
150°C (300°F)	15 minutes

DISPENSING & HANDLING ADHESIVE

Dymax 1184-M Series adhesives are available in various packages such as syringes, cartridges, bottles, and pails. They may be dispensed with a variety of automatic bench-top syringe applicators or other equipment as required. Any questions relating to dispensing and curing systems for specific applications should be referred to the Dymax Technical Center at (860) 482-1010.

STORAGE AND SHELF LIFE

Store in original, light blocking container. Do not expose to sunlight or any light source. These products have a one year shelf life when stored below 32°C (90°F) in original, unopened container.

BIOCOMPATIBILITY & STERILIZATION

Polymerized Dymax Medical Device adhesives are biocompatibility tested in accordance with ISO 10993 and/or USP Class VI. The completed tests are listed on each product data sheet. Copies of the test reports are available upon request. In all cases, it is the user's responsibility to determine and validate the suitability of these adhesives in the intended medical device. These adhesives have not been tested for prolonged or permanent implantation, and are only intended for use in short-term (<29 days) or single use disposable device applications. DYMAX does not authorize their use in long term implant applications. Customers using these materials for such applications do so at their own risk, and take full responsibility for ensuring product safety and biocompatibility

SME Technical Paper #AS91-397, 1991 advises that "All adhesives are toxic in their raw or uncured state. Complete cure...is required to retain Class VI certification status." It is recommended that biocompatibility testing of the completed device be done following sterilization to eliminate the effects of minor process variations and contamination during assembly. The sterilization methods of choice are gamma irradiation and ethylene oxide. Sterilization by autoclaving may be limited to certain applications. Gamma irradiation is known to polymerize unsaturated systems. However, it remains the user's obligation to ascertain the effectiveness of such a procedure.

SAFETY

Wear impervious gloves and/or barrier cream. Repeated or continuous skin contact with liquid adhesive will cause irritation and should be avoided. Do not wear absorbent gloves. Remove adhesive from skin with soap and water. Never use solvents to remove adhesive from skin or eyes.

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 Material Safety Data Sheet before use.

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