# 201-CTH SERIES
# FLEXIBLE CATHETER ADHESIVE

**APPLICATIONS**

- **Lumen Sealing**
- **Balloon Bonding**
- **Splicing**
- **Tube Joining**
- **Scheive Sealing**
- **Sensor Potting**
- **Strain Relief**
- **Flexible Lamination Adhesives**

**FEATURES**

- **Solvent-Free**
- **Very Flexible, Low Stress**
- **Low Water Absorption**
- **Fluorescing Version Available**

**BONDS**

- **PET**
- **PETG**
- **Polycarbonate**
- **PVC**
- **PU**
- **Polystyrene**
- **PEBA**
- **Metal**
- **Glass**

**BIO-APPROVALS**

- **USP Class VI**

## INTRODUCTION

Dymax 201-CTH Series 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% Reactive Solids | |
| Composition | | Urethane Oligomer/(Meth) Acrylate Monomer Blends | |
| Appearance | | Clear/Straw Liquid | |
| Flash Point | | >90ºC (200ºF) | |
| Solubility | | Alcohols/Chlorinated Solvents/Ketones | |
| Toxicity | | Low | |
| Viscosity (20 rpm) | 201-CTH | 425 cP (nominal) | ASTM D-1084 |
| | 201-CTH-T | 6,500 cP (nominal) | ASTM D-2556 |
| | 201-CTH-GEL | 25,000 cP (nominal) | ASTM D-2556 |

## TYPICAL CURED PROPERTIES

*PHYSICAL*

| | | |
|---|---|---|
| Durometer Hardness | D30 | ASTM D-2240 |
| Tensile at Break | 1,400 psi | ASTM D-638 |
| Elongation at Break | 280% | ASTM D-638 |
| Modulus of Elasticity | 2,000 psi | ASTM D-638 |
| Thermal Range (brittle/degrades) | -50º to 150ºC (-60º to 300ºF) | DSTM D-200* |
| Water Absorption (24 h) | 0.5% | ASTM D-570 |
| Coefficient of Linear Thermal Expansion | 130 x $10^{-6}$ in/in/ºC | ASTM D-696 |
| Glass Transition Temperature | -11ºC (-24ºF) | ASTM D-3418 |
| Linear Shrinkage | 1.6% | ASTM D-2566 |

*DSTM Refers to Dymax Standard Test Method

*ELECTRICAL*

| | | |
|---|---|---|
| Volume Resistivity | 550 x $10^{12}$ ohm*/$cm^2$/cm | ASTM D-257 |


**Dymax, Light Weld, Light-Welder, Ultra Light-Weld, Multi-Cure and MD are registered trademarks of Dymax Corporation**

| | | |
|---|---|---|
| Surface Resistivity | $8.9 \times 10^{15}$ ohm | ASTM D-257 |

**BIOCOMPATIBILITY & STERILIZATION**

Dymax Medical Device adhesives are subjected to various biocompatibility tests in accordance with USP Class VI and/or ISO 10993 recommendations for disposable medical devices. The completed tests are identified on each Product Data Sheet, certificate copies of which are available upon request. Unless otherwise noted on the PDS, these adhesives have not been tested for prolonged or permanent implantation. In all cases, it is the user's responsibility to determine and validate the suitability of these adhesives in the intended medical device.

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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**201-CTH Series, 2/01**

## TYPICAL LIGHT CURE DATA

| Lamp | MC-5000 | MC-4000 | UVC-6 Conveyor* |
|---|---|---|---|
| Light Type | UV/Visible | UV/Visible | UV/Visible |
| Lamp Type | 5" x 5" Flood | 3/16" Spot | 1" x 10" Focused Beam |
| Maximum Lamp Intensity @ 365 nm | 300 mW/cm$^2$ | 4000 mW/cm$^2$ | 8000+ mW/cm$^2$ |
| Intensity @ Time Of Test @ 365 nm | 150 mW/cm$^2$ | 1800 mW/cm$^2$ | 4000 mW/cm$^2$ |
| Adhesive Absorption Range (nm) | 300-500 | 300-500 | 300-500 |
| Equipment Output Range (nm) | 300-500 | 300-500 | 300-500 |
| Cure Speed (Sec) | | | |
| Fixture Between Glass Slides | <1 | <1 | <1 |
| Tack Free Surface Cure** | 20 | 10 | 5 |
| Nominal Cure Depth (0.125") | 5 | <5 | 2 |
| Cure Depth In 1 Minute (Inch) | >0.25 | >0.25 | >0.25 |

*Equipped with Fusion "D" Bulb

**Curing in an inert atmosphere such as argon, or nitrogen, will ensure a tack free surface cure.

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. Due to the potential for oxygen inhibition during cure, an inert atmosphere such as nitrogen, or argon, is recommended for surface curing.

## DISPENSING & HANDLING ADHESIVE

Dymax 201-CTH Series adhesives are available in various packages such as 3, 5 and 10mL syringes, which are ideal for precision adhesive placement. 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.

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## STORAGE AND SHELF LIFE

Store in original, light blocking container. Do not expose to any light source. This product has a one year shelf life when stored between 50ºF and 90°F in original, unopened container.

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