MD® 1-CN007-F

UV/Visible Light-Curable Adhesive for Bonding Plastics and Metal

APPLICATIONS

- Tube Sets & Fittings
- Reservoirs
- Needle Bonding

FEATURES

- UV/Visible Light Cure
- Moisture Resistant

RECOMMENDED SUBSTRATES

- PC
- PVC
- PMMA
- PU
- ABS
- Stainless Steel

BIOCOMPATIBILITY

- ISO 10993-4 Hemolysis
- ISO 10993-5 Cytotocity
- ISO 10993-6 Implantation
- ISO 10993-10 Intracutaneous
- ISO 10993-11 Systemic Toxicity

Dymax MD® 1-CN007-F is designed for fast bonding of metals and plastics typically used in the manufacture of medical devices. This product fluoresces blue for in-line inspection under low-intensity black light (365 nm). 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 spot, focused-beam, or flood lamps, they deliver optimum speed and performance for medical device assembly while enhancing worker safety. This product is in full compliance with RoHS directives 2015/863/EU.

TYPICAL UNCURED PROPERTIES *

Property	Value	Test Method
Solvent Content	No Nonreactive Solvents	N/A
Composition	Acrylated Urethane	N/A
Appearance	Clear Transparent Liquid	N/A
Solubility	Organic Solvents	N/A
Density, g/ml	1.05	ASTM D1875
Viscosity, cP	300 (nominal)	ASTM D1084
Shelf Life at Recommended Conditions from Date of Manufacture	10 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D70	ASTM D2240
Tensile at Break, MPa [psi]	16 [2,300]	ASTM D638
Elongation at Break, %	68	ASTM D638
Modulus of Elasticity, MPa [psi]	280 [40,000]	ASTM D638

OTHER CURED PROPERTIES *

Property	Value	Test Method
Boiling Water Absorption, % (2 h)	3.2	ASTM D570
Water Absorption, % (25°C, 24 h)	2.0	ASTM D570
Linear Shrinkage, %	0.6	DSTM 614‡

ADHESION

Substrate	Recommendation
ABS Acrylonitrile-Butadiene-Styrene	✓
PC Polycarbonate	✓
PVC Poly(vinyl chloride)	✓
PMMA Poly(methyl methacrylate)	✓
PU Polyurethane	✓
SS Stainless Steel	✓

✓ Recommended o Limited Applications

st Requires Surface Treatment (e.g. plasma, corona treatment, etc.)

* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method

Technical Data Collected PRIOR TO 2008 Rev.02/10/2023

CURING GUIDELINES

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm^2 [10 psi] between glass slides. Actual cure time typically is 3-to-5 times fixture time.

Dymax Curing System (Intensity)	Fixture Time or Belt Speed [A]
2000-EC (50 mW/cm^2)[B]	1.0 s
5000-EC (200 mW/cm^2)[B]	<1.0 s
BlueWave® 200 (10 W/cm^2)[B]	<0.2s
UVCS Conveyor with 5000-EC (200 mW/cm^2)[C]	>8.2 m/min [>27 ft/min]
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[C]	>8.2 m/min [>27 ft/min]

A Curing through light-blocking substrates may require longer cure times if they block wavelengths used for curing (320-450 nm). These fixture times/speeds are typical for curing thin films though 100% light-transmitting substrates.

B Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.

C At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using the Dymax ACCU-CAL™ 160 Radiometer.

Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties such as tackiness, adhesion, hardness, etc. Full cure is defined as the point at which more light exposure no longer improves cured properties.

Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure. Although Dymax Application Engineering can provide technical support and assist with process development, each customer must ultimately determine and qualify the appropriate curing parameters required for their unique application.

ACCELERATED AGING DATA

Glass to Metal lap shear. Report % of initial strength.

Cured under 5000 ECE @ 100 mw/cm^2 for 15 seconds.

Per ASTM F1980, assuming Qfactor=2.0, 56 Days at 60°C = approximate 2 years.

Days	23°C RT	Accelerated Aging @ 60°C, 0% RH	Accelerated Aging @ 60°C, 55% RH
7 Days	100	100	100
14 Days	82	76	70
28 Days	84	83	70
56 Days	68	65	44

ACCELERATED AGING DATA

PC to PC lap shear. Report % of initial strength.

Cured under BlueWave® LED Prime UVA @ 10 W/cm^2 for 5 seconds.

Per ASTM F1980, assuming Qfactor=2.0, 56 Days at 60°C = approximate 2 years.

Days	23°C RT	Accelerated Aging @ 60°C, 0% RH	Accelerated Aging @ 60°C, 55% RH
7 Days	100	100	100
14 Days	92	91	83
28 Days	117	108	94
56 Days	97	96	62

DISPENSING SUPPORT

The Dymax Application Engineering team is ready to discuss your application requirements to provide the most appropriate dispensing and/or spraying solution. Visit our current dispensing equipment portfolio here or consult our global contact phone numbers and online chat feature (available in North America only) during normal business hours for instant support.

STORAGE AND SHELF LIFE

Store the material in a cool, dark place when not in use. Do not expose to light. This product may polymerize upon prolonged exposure to ambient and artificial light. Keep covered when not in use. This material shelf life noted on page 1 of this document, when stored between 10°C (50°F) and 32°C (90°F) in the original, unopened container.

STERILIZATION

Polymerized Dymax MD® 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.

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.

GENERAL INFORMATION

This product is intended for industrial use only. Keep out of the reach of children. Avoid breathing vapors. Avoid contact with skin, eyes, and clothing. Wear impervious gloves. Repeated or continuous skin contact with uncured material may cause irritation. Remove material from skin with soap and water. Never use organic solvents to remove material from skin and eyes. For more information on the safe handling of this material, please refer to the Safety Data Sheet before use.

The data provided in this document are based on historical testing that Dymax performed under laboratory conditions as they existed at that time and are for informational purposes only. The data are neither specifications nor guarantees of future performance in a particular application. Dymax does not guarantee that this product's properties are suitable for the user's intended purpose.

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