

## 222 Series Low-Odor, Low-Bloom Cyanoacrylate For Opaque and Difficult-to-Bond-to Materials

FEATURES	BONDS	BIO-APPROVALS
<ul style="list-style-type: none"> <li>Solvent Free</li> <li>High Strength</li> <li>Low Bloom</li> <li>Low Odor</li> <li>Instant Curing</li> <li>Wide Surface Compatibility</li> <li>Broad Temperature Range</li> </ul>	<ul style="list-style-type: none"> <li>Acrylic</li> <li>Polycarbonate</li> <li>Polyimide</li> <li>PVC</li> <li>PEEK</li> <li>PETG</li> <li>Polysulfone</li> <li>SAN</li> <li>Ceramic</li> <li>Glass</li> <li>Latex</li> <li>Graphite</li> <li>Stainless Steel</li> </ul>	<ul style="list-style-type: none"> <li>ISO 10993 – Elution, Systemic Injection, Intracutaneous Injection, Implantation, Hemolysis</li> </ul>

**INTRODUCTION**

Dymax offers a series of low-odor, low-bloom cyanoacrylates for the medical device manufacturing industry. This technology offers exceptional product stability and faster cure speeds over other cyanoacrylates. Dymax MEDI-CURE<sup>®</sup> 222 Series can replace many different grades of both methyl and ethyl cyanoacrylates due to its ability to adhere to a wide selection of substrates. Dymax 222 Series can lower costs by reducing the number of inventoried cyanoacrylates necessary for manufacturing. This product is in full compliance with the RoHS Directives 2002/95/EC and 2003/11EC.

**TYPICAL UNCURED PROPERTIES**

Solvent Content	None-100% Reactive Solids
Chemical Class	Modified Ethyl Cyanoacrylate
Appearance	Colorless Liquid-Gel
Solubility	Nitromethane, Acetone, Dimethylformamide
Flash Point	85°C (185°F)
Specific Gravity	1.06

Dymax 222 Series cyanoacrylates are available in several viscosities enabling process improvements and lowering inventory requirements.

<u>Product Designation</u>	<u>Viscosity</u>
222/3	3 cP
222/50	50 cP
222/100	100 cP
222/450	450 cP
222/1700	1,700 cP
222/GEL	Thixotropic Gel

**TYPICAL CURED PROPERTIES**

Shear Strength* (0.5" overlap, 73°F, 25% RH):		
Steel	2,000-4,500 psi	ASTM D-1002
Stainless Steel	1,000-2,500 psi	ASTM D-1002
Aluminum	400-1,400 psi	ASTM D-1002
Polycarbonate	400-1,000 psi	ASTM D-1002
ABS	1,200-2,000 psi	ASTM D-1002
Service Temperature Range	-55° to 93°C (-65°/+200°F)	
Softening Point	329°F	
Refractive Index n <sub>D</sub> <sup>20</sup>	1.49	
Dielectric Strength	11.6 kV/mm	ASTM D-1304
Dielectric Constant @ 1 kHz	5.4	ASTM D-1304
Coefficient of Linear Thermal Expansion	80 x 10 <sup>-6</sup> (in/in/°C)	

\*Values may vary with substrate grade, surface finish, and individual test conditions.



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Technical Data Collection Prior to 2008

Rev. 04/25/2012

**CURE DATA**

	Fixture Speed, seconds*	
	222/3 through 222/1700	222/GEL
Plastic-to-Plastic	5-30	20-40
Rubber-to-Rubber	5-10	12-20
Metal-to-Metal	2-30	30-90
With 521 Accelerator**	0-5	0-10
Without 521 Accelerator	5-40	5-60

\* Cure speed and strength vary widely with 1) surface properties, 2) absorbed moisture, and 3) gap thickness. Dry acidic surfaces cure more slowly. Basic surfaces accelerate cure speed.

\*\* Can bond on contact.

Maximum cure thickness 0.004" (0.1 mm). Strength continues to build for up to 24 hours at 68°F.

**PRIMERS AND ACCELERATORS**

Dymax 512 Primer and Accelerators 520 and 521 are available for use with 222 Series cyanoacrylates to increase adhesion and increase speed for cure (respectively). Please see Lit020 "Guidelines for Curing Dymax MEDI-CURE Cyanoacrylates" and the individual Product Data Sheets for further details.

**DISPENSING ADHESIVE**

This material may be dispensed with a variety of manual and automatic applicators or other equipment as required. Questions relating to dispensing and curing systems for specific applications should be referred to Dymax Application Engineering.

**STORAGE AND SHELF LIFE**

Store the material in a cool, dark place when not in use. This material has a minimum 12-month shelf life from date of shipment, unless otherwise specified, when stored between 10°C [50°F] and 25°C [77°F] in the original, unopened container.

**HEALTH & SAFETY**

MEDI-CURE<sup>®</sup> cyanoacrylates bond skin and eyes in seconds. In case of skin bonding, wash with warm soapy water and roll. In case of eye contact, bathe immediately with water and seek immediate medical attention. Do not wear absorbent gloves. Never use solvents to remove adhesive from skin or eyes.

**BIOCOMPATIBILITY & STERILIZATION**

Dymax MD<sup>®</sup> 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 Product Data Sheet, 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. Gamma irradiation is known to polymerize unsaturated systems. However, it remains the user's obligation to ascertain the effectiveness of such a procedure.

**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; get medical attention. Wash clothing before reuse. Keep out of reach of children. Do not take internally. Repeated or continuous skin contact with liquid adhesive will cause irritation and should be avoided. For specific information, refer to the product Material Safety Data Sheet.