

MB-2020 Structural Adhesive Structural Strength Bonds for Maximum Tensile/Shear Strength

Dymax MB-2020 is a 100% solvent-free, activator-curable adhesive that combines strength of assembly with environmental compliance. MB-2020 is ideal for applications where dissimilar substrates are to be joined, maximum tensile shear strength is required, and elimination of solvents is sought for compliance with the U.S. Clean Air Act of 1990. High-speed assembly, in-line quality testing, and easy, consistent, automated or manual dispensing are all possible when MB-2020 is designed into an assembly process.

Dymax MB-2020 is ideal for metal frame bonding, metal-to-stone assembly, loudspeaker hardware, D.C. motor assembly, and a variety of other applications joining dissimilar substrates. Tough, durable bonds form in seconds between metal, ferrite, stone, ceramic, glass, filled nylon, thermoset plastics, and epoxy board.

UNCURED PROPERTIES

Composition	Urethane Oligomer/(Meth)Acrylate Monomer Blend	
Viscosity (20 rpm)	30,000 cP	ASTM D-2556
Color	Translucent/Straw	
Flash Point (1)	>200°F (93°C)	
Solubility	Isopropyl Alcohol, Chlorinated Solvents	
Toxicity	Low	

CURED PROPERTIES (Using 540-ER Activator)

Maximum Cure Through Gap Thickness	0.020"	
Thermal Range (1/2" overlap) (2)	-65 to 300°F	
Thermal Shock (3)	100% Strength Retention	
Side Impact (4)	>30in lb	
Tensile Shear	3,500 psi	ASTM D-1002
Moisture Resistance (8 hours exp. to steam)	70% Strength Retention	

Footnotes:

1. Pensky/Martins open cup method.
2. Stated range is for structural/load carrying applications. Strength loss will be experienced at the extremes of this range.
3. 5 cycles from ice water to 300°F stabilizing and tested at room temperature per ASTM D-1002.
4. Fisher Body side impact test (steel deforms at 30 in lbs.)

CURING SPECIFICATIONS – TYPICAL LIQUID PROPERTIES

	501-E	535-A
Color	Yellow to Amber	Yellow to Amber
Solvent Present	None	Isopropyl Alcohol
ODC Present	None	None
Solvent Flash Time	None	10-40 seconds
Viscosity (cP)	30-40	7.5
Toxicity	Moderate	Moderate
	TLV = None	TLV = 400 ppm
Flash Point (Closed Cup)	245°F	72°F
Specific Gravity	1.0	0.9
On-Part Activator Life	24 Hours	8 Hours

TYPICAL CURING PROPERTIES (Using 540-ER Activator)

<u>Fixture Time (2 Mil Gap)</u>	<u>MB-2020</u> <u>15 Seconds</u>
5 Minutes	1,100 psi
10 Minutes	1,300 psi
30 Minutes	1,800 psi
24 Hours	3,000 psi
72 Hours	3,500 psi
1 Hour at 200°F	3,500 psi
10 Mil Gap*	2,000 psi
20 Mil Gap*	1,500 psi
20 Mil Gap - 1 Hour at 200°F	2,500 psi
Per ASTM D-1002 (modified)	

* Certain procedures or porous surfaces may produce optimum results when activating both surfaces.

HOW TO USE

1. Apply a thin film of activator over one of the surfaces to be bonded. Allow a few seconds for the solvent to evaporate, if needed. Surface will have an oily appearance. (See "Guidelines for Activator Curing" for complete instructions for all activators.)
2. Apply only a single drop or bead of adhesive to the center of the mating surface. **DO NOT SPREAD OVER THE BOND SURFACE.**
3. Assemble parts and clamp or hold immobilized until fixture occurs (30-60 seconds). Do not stress bonds until sufficient strength has been achieved. (This may be up to several minutes depending on requirements.)
4. All adhesive should be contained within the joint. Wet/tacky adhesive present outside of the joint can be cured with heat or cleaned up with recommended solvents.

FACTORS AFFECTING CURING

Bondline Gap: The larger the gap between surfaces, the longer the fixture time.

Temperature During Cure: Bonds in the process of curing, exposed to temperatures between 200° and 300°F for 15 to 20 minutes, exhibit tensile and impact strength 10-30% above rated levels for complete cure.

Surface Cleanliness: Dymax adhesives exhibit a tolerance for dirty or oily surfaces. Clean surfaces, however, always result in optimum bond strengths. Waxes, greases, and various release agents can inhibit or prevent bond formation.

Clamping: Suggested for assembly parts which need to be kept immobilized until fixture or sufficient bond strength has developed. Bonds moved or disturbed during fixture may be impaired.

DISPENSING AND HANDLING ADHESIVE

MB-2020 may be dispensed with a variety of automatic bench-top syringe applicators or other equipment as required. Questions relating to dispensing and curing systems for specific applications should be directed to Applications Engineering.

Repeated or continuous skin contact should be avoided. Do wear impervious gloves and/or use barrier hand cream. Do not wear absorbent gloves. Adhesive may be removed with soap and water. Avoid towels and remove residue with chlorinated solvents, Freon, methanol or ethanol.

STORAGE AND SHELF LIFE

ADHESIVE: 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 has an 18-month shelf life from date of manufacture, unless otherwise specified, when stored between 10°C (50°F) and 32°C (90°F) in the original, unopened container.

ACTIVATOR: Dymax Activators are oxygen sensitive. The container should remain closed at all times other than when activator is being removed for use. For maximum effectiveness, activator should not be exposed to the air for more than four hours.

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.

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INDUSTRIAL ADHESIVES

MB-2020 Product Data Sheet

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