

Light Lock MV

LOW-ODOR, LIGHT-CURING CYANOACRYLATE

TECHNICAL DATA SHEET

Revised 15/01/2021

PRODUCT DESCRIPTION



Born2Bond™ Light Lock MV is a low-odor, low-blooming, dual curing (contact and lightcuring), cyanoacrylate adhesives.

They are designed for bonding applications that require fast fixturing, coating or surface cure. The UV- and visible-light cure sensitivity allows rapid bonding through transparent parts and quick curing of light-exposed bulk or surface-coated areas, while the instant bonding capability ensures cure between opaque substrates (contact cure).

KEY FEATURES

- Dual cure formulation: instant and photo-cure
- Fixture time in 60 s (without light exposure)*
- Can be cured with visible and UV-LED** light <5 sec
- Long open time without activation
- Dry to touch, tack free surface cure
- Cure-on-demand of excess material released from bondlines
- Bonds, fills, reconstructs and coats
- Low odor, low blooming
- Available in a range of viscosities: MV, HV and Gel

DIRECTIONS FOR USE

1. Before applying Born2Bond Light Lock MV, make sure the surface is clean, dry and grease-free.
2. Apply adhesive to one surface. Do not use items like tissues or a brush to spread the adhesive.
3. Assemble the parts within a few seconds. The parts should be accurately positioned, as the short fixture time leaves little opportunity for adjustment.
4. Bonds should be fixed or clamped until the adhesive has reached fixture.
 - The product should be allowed to develop to full strength before subjecting it to any service loads (typically 24 to 72 hours after assembly, depending on bond gap, materials and ambient conditions).

APPLICATIONS

Typical applications for this product are conformal coating, encapsulation, needle bonding, perfume and liquor bottle metal bonding, electronics assembly, Plastic to metal bonding for hearing aids, and glass to metal bonding for jewelry and watches.

STORAGE/SHELF LIFE

Optimal Storage: 2°C to 8°C (35.6°F to 46.4°F). Storage below 2°C (35.6°F) or greater than 8°C (46.4°F) can adversely affect the product's properties. If stored properly, this product has a shelf life of 12 months from the packaging date.

HEALTH/SAFETY

The Safety Data Sheet is available on the Bostik website and should be consulted for proper handling, cleanup and spill containment before use. Keep containers covered to minimize contamination.

LIMITATIONS

This product is not recommended for use in pure oxygen and/or oxygen-rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials. Material removed from containers may be contaminated during use. Do not return product to the original container. Bostik will not assume responsibility for product that has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or customer service representative.

PRODUCT CHARACTERISTICS

| | |
|---------------------------|--------------------------------|
| Base Technology | Methoxyethyl Cyanoacrylate |
| Components 1k - 2k | 1k |
| Appearance/Color | Transparent/greenish |
| Temperature Use Range | -40°C to 80°C (-40°F to 176°F) |
| VOC Content (ISO 11890-2) | 23 g/L |

UNCURED PHYSICAL PROPERTIES

| | |
|---|--------------|
| Viscosity at 23°C (73.4°F)* | 180 - 220 cP |
| Specific Gravity (ASTM D1875: 23°C / 73.4°F) | 1.11 g/mL |
| Refractive Index, ABBE | 1.45 - 1.46 |

*based on Brookfield viscometer

CURED PHYSICAL PROPERTIES

| | |
|--|------------------------|
| Shore Hardness D (ISO 868-2003) | 81 |
| Soft Point - HDT (ASTM E2092-18a) | 57°C (134.6°F) |
| Glass Transition Temperature (ISO 6721) | 90°C (194°F) |
| Coefficient of Linear Thermal Expansion (ISO 10545-8) | 55×10^{-6} |
| Water Absorption (after 24 hrs) (ASTM D542) | 5.1% |
| Impact Resistance (after 24 hrs) (ISO 9653) | 14.1 kJ/m ² |
| Electrical Properties of Resistivity IEC 60093 | |
| Surface resistivity DC 500 V (Ohm) | $1.9 \cdot 10^{15}$ |
| Volume resistivity DC 1kV (Ohm.m) | $4.8 \cdot 10^{13}$ |
| Corrected Dissipation Factor, Dielectric Constant IEC 60250 | |
| D @ 1 kHz | 0.027 |
| k' @ 1 kHz | 4.08 |
| D @ 1 MHz | 0.02 |
| k' @ 1 MHz | 3.73 |
| DC breakdown voltage according to IEC 60243-2 | 36.5 kV/mm |

CONVERSIONS

$$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$$

$$\text{kV/mm} \times 25.4 = \text{V/mil}$$

$$\text{mm} / 25.4 = \text{in}$$

$$\mu\text{m} / 25.4 = \text{mil}$$

$$\text{N} \times 0.225 = \text{lb}$$

$$\text{N/mm} \times 5.71 = \text{lb/in}$$

$$\text{N/mm}^2 \times 145 = \text{psi}$$

$$\text{MPa} \times 145 = \text{psi}$$

$$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$$

$$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$$

$$\text{mPa}\cdot\text{s} = \text{cP}$$

FIXTURE TIME

Contact Cure* (0.1N/mm²)

| | |
|------------------------|-----------------|
| Stainless Steel (A316) | 40 - 70 seconds |
| Steel (Mild Steel) | 10 - 30 seconds |
| Aluminum (A5754) | 10 - 40 seconds |
| Neoprene | 20 - 50 seconds |
| EPDM | 10 - 30 seconds |
| Rubber, nitrile | 10 - 30 seconds |
| ABS | 10 - 50 seconds |
| PVC | 40 - 90 seconds |
| Polycarbonate | 15 - 60 seconds |
| Phenolic | 40 - 80 seconds |
| Wood (Oak) | >15 minutes |
| Wood (Pine) | 35 - 70 seconds |
| Chipboard | 20 - 80 seconds |
| Leather | 10 - 30 seconds |
| PC/ABS | 25 - 60 seconds |
| Paper | 15 - 40 seconds |

Curing Speed with Light* - 405 nm UV Visible LED (28 mW/cm²)

| | |
|------|-------------|
| PMMA | < 5 seconds |
|------|-------------|

*if stored in proper conditions

BONDING PERFORMANCE

Lap shear strength (ISO 4587) @ 23°C (73.4°F) (MPa)

After 10s Curing under UV LED**

| | | |
|---------------------------|---|-------|
| PC / Steel (grit-blasted) | 2 | +/- 1 |
| PC / Aluminum (A5754) | 2 | +/- 1 |
| PC / Polycarbonate | 5 | +/- 1 |

After 24h Curing at RT

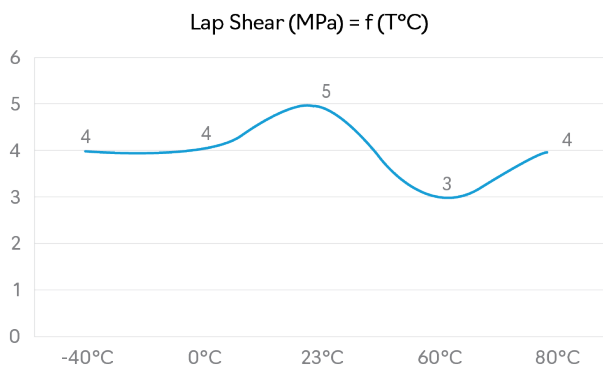
| | | | |
|----------|----|-------|-----|
| ABS | 5 | +/- 1 | SF* |
| PVC | 6 | +/- 1 | SF* |
| Phenolic | 11 | +/- 1 | |

After 1 Week Curing at RT

| | | | |
|---------------|---|-------|-----|
| Polycarbonate | 4 | +/- 1 | SF* |
| GBMS/PC | 8 | +/- 1 | SF* |

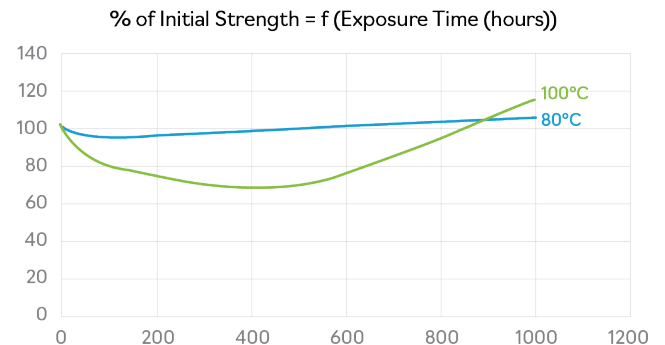
HOT STRENGTH

The graph below shows the adhesive performance on grit-blasted, mild steel (GBMS) at various temperatures. The adhesive was cured for one week at 22°C (71.6°F). The lap shear strength was tested according to ISO 4587. The strength test was performed in a climatic chamber that was set up for 30 minutes before testing at the indicated temperatures.



HEAT AGING

The graph below shows the heat aging results. The adhesive was aged at the temperature indicated, tested at 22°C (71.6°F) and cured for one week. The lap shear strength was tested according to ISO 4587 on grit-blasted, mild steel (GBMS).



CHEMICAL/SOLVENT RESISTANCE

Aged under conditions indicated and tested on GBMS.

| % of Initial Strength vs. Exposure Time (hours) and vs. Type of Contaminant | | | | |
|---|---------------|-----------------------|-------|--------|
| Testing on Polycarbonate | | % of Initial Strength | | |
| ENVIRONMENT | TEMP | 100 H | 500 H | 1000 H |
| Motor oil | 23°C (73.4°F) | 100 | 100 | 110 |
| Ethanol | 23°C (73.4°F) | 105 | 100 | 90 |
| Gasoline | 23°C (73.4°F) | 100 | 90 | 90 |
| IPA | 23°C (73.4°F) | 110 | 120 | 110 |
| Water | 23°C (73.4°F) | 40 | 20 | 20 |

HEAT/HUMIDITY RESISTANCE

Aged under conditions indicated and tested @ 23°C (73,4°F).

| % of Initial Strength vs. Exposure Time (hours) | | | |
|---|-----------------------|-------|--------|
| ENVIRONMENT - 95% RH & 40°C (104°F) | % of Initial Strength | | |
| | 100 H | 500 H | 1000 H |
| GBMS | 60 | 40 | 50 |
| Polycarbonate | 100 | 75 | 95 |

*Substrate failure **UV LED 405 nm UV Visible LED (28mW/cm2). Always use glasses and gloves when applying adhesives.

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