PRODUCT DESCRIPTION

Born2Bond™ Structural is a high-strength hybrid adhesive that provides a fast fixture time at room temperature while maintaining good processability and bond gaps up to 5mm. This product offers excellent bonding characteristics to a large variety of closed substrates, including aluminum, plastics and elastomers, but also porous substrates, such as woods, chipboard, leather, etc. Born2Bond Structural is formulated for applications that require mechanical and in-use environment resistance.

KEY FEATURES

→ Fixture time in 30 seconds*
→ High adhesion strength: > 6 MPa after 5 min
→ Open time 25 minutes
→ Fills gaps up to 5 mm
→ Excellent adhesion to many different substrates**
→ Translucent when cured
→ Temperature and humidity resistance
→ Gel consistency for precise application

DIRECTIONS FOR USE

1. Before applying Born2Bond Structural, make sure the surface is clean, dry and grease-free.
2. To use, Part A and Part B must be blended.
   → Product can be applied directly from the syringe using the plunger supplied and dispensed through the recommended mixing nozzle.
3. Hold the syringe upright and insert the plunger.
   → While keeping the syringe in an upright position, remove the cap, attach the mixing nozzle, and begin dispensing the adhesive upward until any bubbles present in the smaller component have been removed.
4. Dispense and discard a bead as long as the mixing nozzle, to ensure sufficient mixing.
5. Apply the mixed adhesive to one of the bond surfaces to be joined.
   → Parts should be assembled immediately after the mixed adhesive has been applied.
   → Bonds should be held by fixing or clamping until the adhesive has cured. Prevent assembled parts from moving during cure.
   → The bond should be allowed to develop to full strength before being subjected to any service load (typically 24 hours).

APPLICATIONS

Typical applications for this product are structural bonding, magnet bonding, gap filling, sensor bonding in automotive tires, and bathroom accessory bonding (plastic to metal).

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 - Part A/B  Blend of Ethyl Cyanoacrylate and Methoxyethyl Cyanoacrylate

Components 1k - 2k  2k

Mix Ratio  4:1

Appearance/Color  Transparent

Gap Filling Capacity  5mm (0.02in)

Temperature Use Range  -40°C to 120°C (-40°F to 248°F)

Open Time  25 - 35 mins

Mixer Life  25 - 35 mins

VOC Content - Part A  67 g/L (ISO 11890-2)

VOC Content - Part B  1 g/L (ISO 11890-2)

UNCURED PHYSICAL PROPERTIES

Viscosity at 25°C (77°F)*  100000 - 150000 cP @ 1.5 rpm
- Part A  4000 - 7000 cP @ 50 rpm

Viscosity at 25°C (77°F)*  40000 - 80000 cP @ 1.5 rpm
- Part B  1000 - 3000 cP @ 50 rpm

Specific Gravity  1.06 g/mL (A)
- Part B  1.10 g/mL (B)

Refractive Index, ABBE  1.49 - 1.50

*C based on Brookfield viscometer

CURED PHYSICAL PROPERTIES

Shore Hardness D (ISO 868-2003)  65

Soft Point - HDT (ASTM E2092-18a)  55°C (131°F)

Tensile Strength (ISO 527)  16 MPa

Elastic Modulus (ISO 527)  800 MPa

Elongation at Break (ISO 527)  17%

Glass Transition Temperature (ISO 6721)  91°C (195.8°F)

Coefficient of Linear Thermal Expansion (ISO 10545-8)  60 x 10^-6

Linear Shrinkage (ISO 10563)  11.5%

Water Absorption (after 24 hrs) (ASTM D-542)  1.3%

Impact Resistance (after 24 hrs) (ISO 9653)  26.6 kJ/m²

Electrical Properties of Resistivity IEC 60093
Surface resistivity DC 500 V (Ohm)  3.310^4
Volume resistivity DC 1kV (Ohm.m)  4.610^4

Corrected Dissipation Factor, Dielectric Constant IEC 60250
D @ 1 kHz  0.01
k’ @ 1 kHz  1.96
D @ 1 MHz  0.01
k’ @ 1 MHz  1.84

DC breakdown voltage according to IEC 60243-2  93 kV/mm

CONVERSIONS

(°C x 1.8) + 32 = °F

kV/mm x 25.4 = V/mil

mm / 25.4 = in

μm / 25.4 = mil

N x 0.225 = lb

N/mm x 5.71 = lb/in

N/mm² x 145 = psi

MPa x 145 = psi

N mm x 8.851 = lb-in

N mm x 0.142 = oz-in

mPa.s = cP

FIXTURE TIME

Stainless Steel (A316)  30 - 90 seconds

Steel (Mild Steel)  15 - 45 seconds

Aluminum (A5754)  15 - 100 seconds

Neoprene  60 - 100 seconds

EPDM  30 - 75 seconds

Rubber, Nitrile  30 - 60 seconds

ABS  35 - 100 seconds

PVC  15 - 80 seconds

Polycarbonate  40 - 120 seconds

Phenolic  120 - 150 seconds

Wood (Oak)  >15 minutes

Wood (Pine)  100 - 150 seconds

Chipboard  20 - 60 seconds

Leather  60 - 80 seconds

PC/ABS  35 - 100 seconds

Paper  45 - 90 seconds

*If stored in proper conditions
CURING SPEED VS. SUBSTRATE
The rate of cure depends on the substrate used.
The graph below shows the lap shear strength built over time on Grit-Blasted Mild Steel (GBMS) and ABS (tested according to ISO 4587).

![Graph showing lap shear strength over time on GBMS and ABS](image)

CURING SPEED VS. OPEN TIME
The rate of cure depends somewhat on the open time.
The following graph shows the fixture time (time to achieve a shear strength of 0.1 N/mm²) developed depending on the open-time (tested on grit-blasted mild steel, according to ISO 4587).

After a few seconds, the curing profile (shear strength developed over time on grit-blasted mild steel, as evaluated by lap shear strength (ISO 4587)) remains the same, and allows for the same level of performance.
The graph below shows the shear strength developed over time on grit-blasted mild steel lap shears, compared after 0 and 25 minutes of open time (tested according to ISO 4587).

![Graph showing shear strength over time on GBMS with different open times](image)

CURING SPEED VS. TEMPERATURE AND HUMIDITY
The rate of cure depends on the ambient temperature.
The temperature can quicken the curing speed. Born2Bond Structural has been designed to be applied at room temperature (23°C +/- 2°C / 73.4°F +/- 3.6°F). Boundary conditions for performance bonding are between 10°C (50°F) and 40°C (140°F), with ideal conditions between 20°C (68°F) and 30°C (86°F).
Humidity can also quicken the curing speed. Boundary conditions for performance bonding are between 30%RH and 70%RH, with ideal conditions between 40%RH and 60%RH.

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

<table>
<thead>
<tr>
<th>Material</th>
<th>Lap Shear (MPa) @ 2 mm/min after 24 hours curing @ RT</th>
<th>Lap Shear (MPa) @ 100 mm/min after 24 hours curing @ RT</th>
<th>Lap Shear (MPa) @ 2 mm/min after 1 week curing @ RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grit-Blasted Mild Steel (GBMS)</td>
<td>14 +/- 1</td>
<td>0.5 +/- 0.1 SF</td>
<td>15 +/- 1</td>
</tr>
<tr>
<td>Aluminum (A5754)</td>
<td>12 +/- 1</td>
<td>0.3 +/- 0.1 SF</td>
<td></td>
</tr>
<tr>
<td>ABS</td>
<td>6 +/- 1 SF</td>
<td>0.3 +/- 0.1 SF</td>
<td></td>
</tr>
<tr>
<td>PVC</td>
<td>5 +/- 1</td>
<td>0.3 +/- 0.1 SF</td>
<td></td>
</tr>
<tr>
<td>Phenolic</td>
<td>8 +/- 1</td>
<td>0.3 +/- 0.1 SF</td>
<td></td>
</tr>
<tr>
<td>Polycarbonate</td>
<td>7 +/- 1 SF</td>
<td>0.5 +/- 0.1 SF</td>
<td></td>
</tr>
</tbody>
</table>

@ 2 mm/min after 24 hours curing @ RT
@ 100 mm/min after 24 hours curing @ RT
@ 2 mm/min after 1 week curing @ RT
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.

[Graph showing lap shear strength vs. temperature]

CHEMICAL/SOLVENT RESISTANCE

Aged under conditions indicated and tested on GMBS.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>ENVIRONMENT</th>
<th>TEMP</th>
<th>100 H</th>
<th>500 H</th>
<th>1000 H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Oil</td>
<td>GBMS</td>
<td>40°C (104°F)</td>
<td>119</td>
<td>118</td>
<td>109</td>
</tr>
<tr>
<td>Ethanol</td>
<td>GBMS</td>
<td>23°C (73.4°F)</td>
<td>105</td>
<td>71</td>
<td>59</td>
</tr>
<tr>
<td>Gasoline</td>
<td>GBMS</td>
<td>23°C (73.4°F)</td>
<td>104</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>IPA</td>
<td>GBMS</td>
<td>23°C (73.4°F)</td>
<td>112</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>Water</td>
<td>GBMS</td>
<td>23°C (73.4°F)</td>
<td>105</td>
<td>95</td>
<td>94</td>
</tr>
</tbody>
</table>

HEAT/HUMIDITY RESISTANCE

Aged under conditions indicated and tested @ 40°C (104°F).

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>ENVIRONMENT</th>
<th>% of Initial Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBMS</td>
<td></td>
<td>96 93 79</td>
</tr>
<tr>
<td>Polycarbonate</td>
<td></td>
<td>89 95 103</td>
</tr>
</tbody>
</table>

[Graph showing % of initial strength vs. exposure time and type of contaminant]
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