

Structural

LONG OPEN TIME, TWO-PART, INSTANT ADHESIVE

TECHNICAL DATA SHEET

Revised October 2019



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 (ISO 11890-2)	67 g/L
VOC Content - Part B (ISO 11890-2)	1 g/L

UNCURED PHYSICAL PROPERTIES

Viscosity at 25°C (77°F)* - Part A	100000 - 150000 cP @ 1.5 rpm 4000 - 7000 cP @ 50 rpm
Viscosity at 25°C (77°F)* - Part B	40000 - 80000 cP @ 1.5 rpm 1000 - 3000 cP @ 50 rpm
Specific Gravity (ASTM D1875: 23°C / 73.4°F)	1.06 g/mL (A) 1.10 g/mL (B)
Refractive Index, ABBE	1.49 - 1.50

*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)	60×10^{-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/m ²

Electrical Properties of Resistivity IEC 60093

Surface resistivity DC 500 V (Ohm)	$3.3 \cdot 10^{14}$
Volume resistivity DC 1kV (Ohm.m)	$4.6 \cdot 10^{11}$

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

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

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

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

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

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

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

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

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

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

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

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

FIXTURE TIME

Fixture Time* (0.1N/mm²)

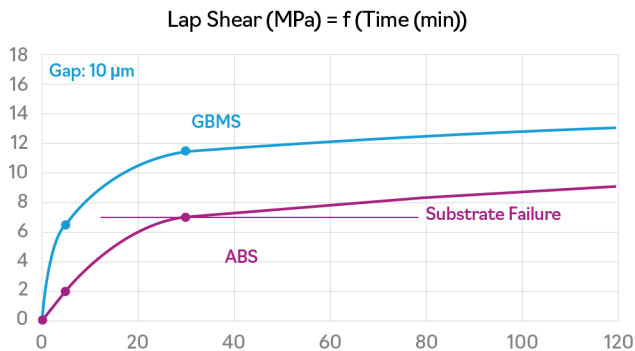
Stainless Steel (A316)	30 - 90 seconds
Steel (Mild Steel)	15 - 45 seconds
Aluminum (A5754)	15 - 100 seconds
Neoprene	60 - 100 seconds
EPDM	30 - 75 seconds
Rubber, Nitrile	30 - 60 seconds
ABS	35 - 100 seconds
PVC	15 - 80 seconds
Polycarbonate	40 - 120 seconds
Phenolic	120 - 150 seconds
Wood (Oak)	>15 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).



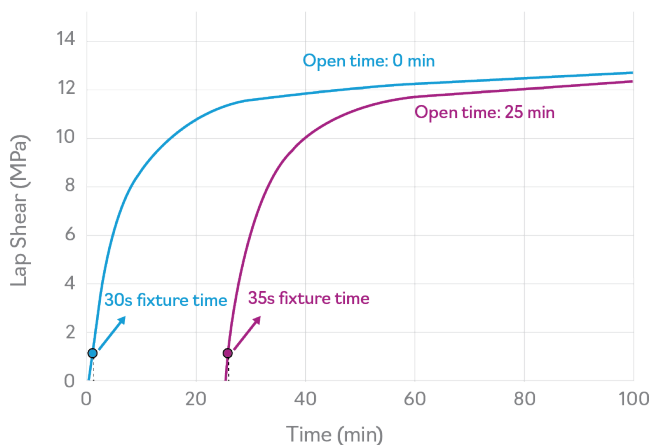
CURING SPEED VS. OPEN TIME

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).



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)

@ 2 mm/min after 24 hours curing @ RT

Grit-Blasted Mild Steel (GBMS)	14	+/- 1	
Aluminum (A5754)	12	+/- 1	
ABS	6	+/- 1	SF
PVC	5	+/- 1	
Phenolic	8	+/- 1	
Polycarbonate	7	+/- 1	SF

@ 100 mm/min after 24 hours curing @ RT

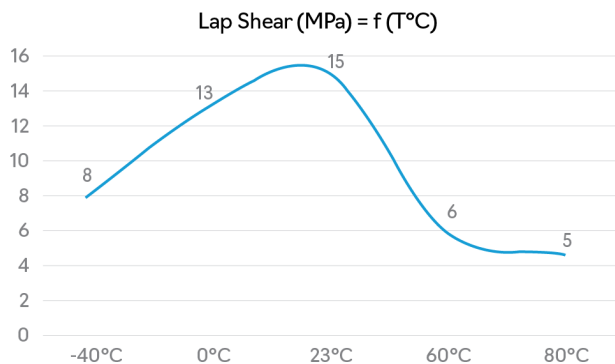
Nitrile	0.5	+/- 0.1	SF
Neoprene	0.3	+/- 0.1	SF

@ 2 mm/min after 1 week curing @ RT

Steel (grit-blasted)	15	+/- 1	
----------------------	----	-------	--

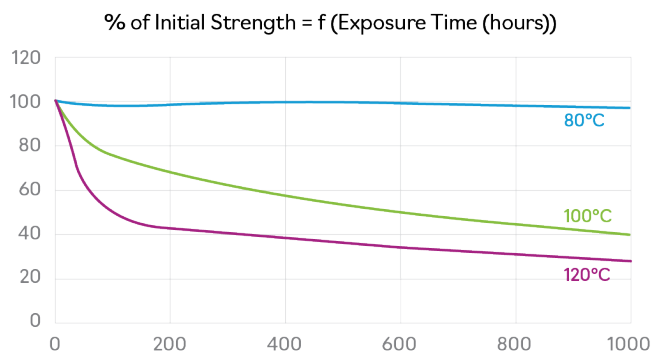
HOT STRENGTH

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 GBMS		% of Initial Strength		
ENVIRONMENT	TEMP	100 H	500 H	1000 H
Motor Oil	40°C (104°F)	119	118	109
Ethanol	23°C (73.4°F)	105	71	59
Gasoline	23°C (73.4°F)	104	94	94
IPA	23°C (73.4°F)	112	100	97
Water	23°C (73.4°F)	105	95	94

HEAT/HUMIDITY RESISTANCE

Aged under conditions indicated and tested @ 40°C (104°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	96	93	79
Polycarbonate	89	95	103

PRODUCT DISCLAIMER

Bostik offers this Technical Data Sheet ("TDS") for descriptive and informational use only. It is not a warranty, a contract or a substitute for expert or professional advice. Please also see the local product Safety Data Sheet for health and safety considerations.

The statements, technical information, data, and recommendations contained in this TDS are provided 'AS IS' and are not warranted or guaranteed in any way. They represent typical results for the products and are based on Bostik's research only. Since the conditions and methods of use of the products are beyond our control, Bostik expressly disclaims any and all liability and damages of whatever kind or nature that may arise from any use of the products, the results therefrom, or reliance on the information contain herein.

This TDS is one of several tools that may be used to help you find the product best suited for your needs. It is used at your own risk, and by using it, you are knowingly accepting and assuming any and all risks associated with its use and recommendations. BUYERS AND USERS ASSUME ALL RESPONSIBILITY AND LIABILITY FOR ANY AND ALL LOSS OR DAMAGE OF WHATEVER KIND OR NATURE ARISING FROM OR RELATED TO THE HANDLING OR USE OF BOSTIK'S PRODUCTS. The performance of the product, its shelf life, and application characteristics will depend on many variables, including but not limited to the kind of materials to which the product will be applied, the environment in which the product is stored and/or applied,

and the equipment used for application, among other things. Any change in any of these variables can affect the product's performance. You are responsible to test the suitability of any product in advance for any intended use or application. Bostik does not guarantee the reliability, completeness, use, or function of the statements, technical information, data, and recommendations contained in this TDS. Nothing contained herein constitutes a license to practice under any patent, and it should not be construed as an inducement to infringe any patent. You are advised to take appropriate steps to be sure that any proposed use of the products will not result in patent infringement.

The information provided herein relates only to the specific products designated and may not be applicable when such products are used in combination with other materials or in any process. The product is sold pursuant to a supply agreement and/or Bostik's Terms and Conditions of Sale, which set forth the sole warranty, if any, that applies to the product. **NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE OR WARRANTY OF MERCHANTABILITY, IS MADE CONCERNING THE PRODUCTS DESCRIBED OR THE INFORMATION PROVIDED HEREIN, AND TO THE MAXIMUM EXTENT ALLOWED BY LAW, SUCH WARRANTIES ARE HEREBY DISCLAIMED. BOSTIK DISCLAIMS ANY LIABILITY FOR DIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES TO THE MAXIMUM EXTENT ALLOWED BY LAW.**