

# Flex

## FLEXO-ELASTIC, TWO-PART, INSTANT ADHESIVE

TECHNICAL DATA SHEET

Revised July 2020



### PRODUCT DESCRIPTION

**Born2Bond™ Flex** is a flexible, elastic and low-odor, instant adhesive with exceptional adhesion to a very broad range of materials and surfaces. It has a curing time of only six minutes and becomes a polymer with more than 200% of elongation within 10 minutes. Its working times (in-mixer) can be up to six minutes. It can be used for high-volumetric gap filling, and achieves instant adhesion to most plastics, wood and metals and to porous and irregular surfaces.

### KEY FEATURES

- Fixture time in 60 seconds\*
- Hardens in 5-10 minutes\*
- Elongation > 200 %
- Absorbs impacts and vibrations
- High peel strength
- Bonds a large range of materials\*\* including glass
- Translucent, low blooming
- Gel consistency for precise application
- Non sagging for vertical applications

### DIRECTIONS FOR USE

1. Before applying Born2Bond Flex, 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

The common applications of this product are bonding leather, making elastic and waterproof joints, flexible bonding, bonding floor coverings and particle boards, damping vibrations, reinforcing parts, bonding glass and rubber.

### 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 9 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	Methoxyethyl cyanoacrylate (A) Plasticizer (B)
Components 1k - 2k	2k
Mix Ratio	4:1
Appearance/Color	Transparent
Gap Filling Capacity	1 cm (0.39in)
Temperature Use Range	-40°C to 60°C (-40°F to 140°F)
Open Time	6 - 10 mins
Mixer Life	6 - 10 mins
VOC Content - Part A (ISO 11890-2)	61 g/L
VOC Content - Part B (ISO 11890-2)	19 g/L

## UNCURED PHYSICAL PROPERTIES

Viscosity at 25°C (77°F)* - Part A	120000 - 170000 cP @ 1.5 rpm 6000 - 9000 cP @ 50 rpm
Viscosity at 25°C (77°F)* - Part B	70000 - 130000 cP @ 1.5 rpm 3000 - 7000 cP @ 50 rpm
Specific Gravity (ASTM D1875: 23°C / 73.4°F)	1.12 g/mL (A) 1.10 g/mL (B)
Refractive Index, ABBE	1.48 - 1.50

\*based on Brookfield viscometer

## CURED PHYSICAL PROPERTIES

Shore Hardness A (ISO 868-2003)	76
Tensile Strength (ISO 527)	2 MPa
Elastic Modulus (ISO 527)	2 MPa
Elongation at Break (ISO 527)	259%
Glass Transition Temperature (ISO 6721)	35°C (95°F)
Linear Shrinkage (ISO 10563)	9.2%
Water Absorption (after 24 hrs) (ASTM D-542)	11.3%
Impact Resistance (after 24 hrs) (ISO 9653)	21.0 kJ/m <sup>2</sup>
<b>Electrical Properties of Resistivity IEC 60093</b>	
Surface resistivity DC 500 V (Ohm)	3.7·10 <sup>14</sup>
Volume resistivity DC 1kV (Ohm.m)	3.2·10 <sup>10</sup>
<b>Corrected Dissipation Factor, Dielectric Constant IEC 60250</b>	
D @ 1 kHz	0.06
k' @ 1 kHz	3.55

D @ 1 MHz	0.03
k' @ 1 MHz	2.87
DC breakdown voltage according to IEC 60243-2	45 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

<b>Fixture Time* (0.1N/mm<sup>2</sup>)</b>	
Stainless Steel (A316)	60 - 90 seconds
Steel (Mild Steel)	30 - 50 seconds
Aluminum (A5754)	60 - 120 seconds
Neoprene	60 - 90 seconds
EPDM	45 - 75 seconds
Rubber, nitrile	30 - 60 seconds
ABS	45 - 75 seconds
PVC	15 - 80 seconds
Polycarbonate	60 - 90 seconds
Phenolic	115 - 140 seconds
Wood (Oak)	150 - 210 seconds
Wood (Pine)	130 - 180 seconds
Chipboard	45 - 60 seconds
Leather	50 - 70 seconds
PC/ABS	60 - 90 seconds
Paper	60 - 90 seconds

\*if stored in proper conditions

## BONDING PERFORMANCE

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

### after 24 hours curing @ RT

Grit-Blasted Mild Steel (GBMS)	10	+/- 2	
Aluminum (A5754)	5	+/- 1	
ABS	6	+/- 1	SF
PVC	2	+/- 1	
Phenolic	4	+/- 1	
Polycarbonate	5	+/- 1	SF

### @ 100mm/min after 24h Curing at RT

Nitrile	0.02	+/- 0.05
Neoprene	0.02	+/- 0.05

### @ 2 mm/min after 1 week Curing at RT

Grit-Blasted Mild Steel (GBMS)	11	+/- 1
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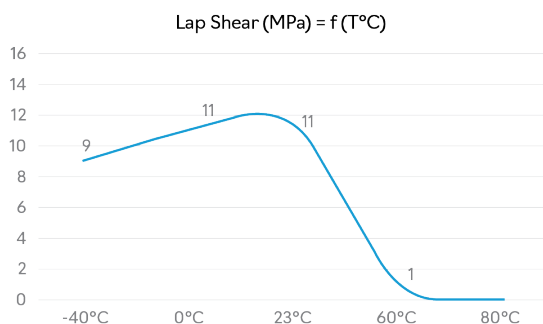
## T-Peel Strength (ISO 11339) @ 23°C (73.4°F) (N/mm)

### @ 100mm/min after 24 h curing @ RT

Mild Steel	1	+/- 0.3
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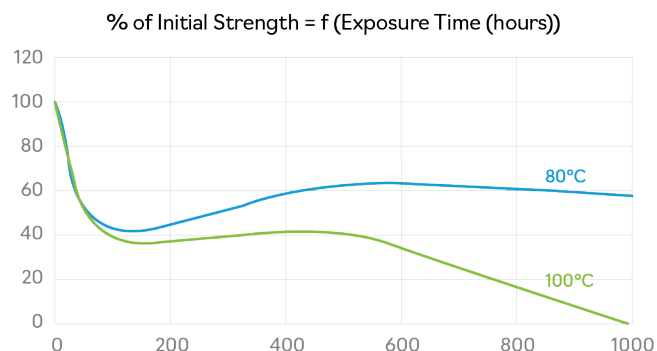
## HOT STRENGTH

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)	88	91	114
Ethanol	23°C (73.4°F)	74	52	2
Gasoline	23°C (73.4°F)	49	94	78
IPA	23°C (73.4°F)	48	68	72
Water	23°C (73.4°F)	58	17	0

## 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	10	0	0
Polycarbonate	58	59	55

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