

# Aquafast

## MOISTURE RESISTANT INSTANT ADHESIVE

TECHNICAL DATA SHEET

APRIL 2022



### PRODUCT DESCRIPTION

**Born2Bond™ Aquafast** is a low-medium viscosity instant adhesive which provides high adhesion performance even in high humidity environment. The product has good bonding properties to a very broad range of materials such as metals (including aluminum), plastics and rubbers.

### KEY FEATURES

- Fixture time : 15 seconds\*
- High resistance to moisture.
- Service temperature: -40 up to 120 °C
- Excellent adhesion to metals
- Exceptional resistance to most solvents and oils
- Bonds a large range of materials\*\*
- Transparent and easy to use

### DIRECTIONS FOR USE

1. Before applying Born2Bond Aquafast 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

Substrate bonding that are subject to high humidity conditions, such as the applications that require cataplasma test.

### 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           | Ethyl Cyanoacrylate                         |
| Components 1k - 2k        | 1k                                          |
| Appearance/Color          | Transparent, colorless to straw colored gel |
| Temperature Use Range     | -40°C to 120°C (-40°F to 248°F)             |
| VOC Content (ISO 11890-2) | 41 g/L                                      |

## UNCURED PHYSICAL PROPERTIES

|                                                 |             |
|-------------------------------------------------|-------------|
| Viscosity at 25°C (77°F)*                       | 90-150 cP   |
| Specific Gravity<br>(ASTM D1875: 23°C / 73.4°F) | 1.07 g/mL   |
| Refractive Index, ABBE                          | 1.45 - 1.46 |

\*based on Brookfield viscometer

## CURED PHYSICAL PROPERTIES

|                                                          |                        |
|----------------------------------------------------------|------------------------|
| Soft Point - HDT (ASTM E2092-18a)                        | 56°C (132.8°F)         |
| Glass Transition Temperature<br>(ISO 6721)               | 115 °C (239°F)         |
| Coefficient of Linear Thermal<br>Expansion (ISO 10545-8) | $79 \times 10^{-6}$    |
| Water Absorption (after 24 hrs)<br>(ASTM D542)           | 0.8%                   |
| Impact Resistance (after 24 hrs)<br>(ISO 9653)           | 12.6 kJ/m <sup>2</sup> |

### Electrical Properties of Resistivity IEC 60093

|                                    |                     |
|------------------------------------|---------------------|
| Surface resistivity DC 500 V (Ohm) | $1.7 \cdot 10^{15}$ |
| Volume resistivity DC 1kV (Ohm.m)  | $1.2 \cdot 10^{14}$ |

### Corrected Dissipation Factor, Dielectric Constant IEC 60250

|                                                  |           |
|--------------------------------------------------|-----------|
| D @ 1 kHz                                        | 0.029     |
| k' @ 1 kHz                                       | 2.63      |
| D @ 1 MHz                                        | 0.018     |
| k' @ 1 MHz                                       | 2.35      |
| DC breakdown voltage<br>according to IEC 60243-2 | 44.5kV/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/mm<sup>2</sup>)

|                        |                 |
|------------------------|-----------------|
| Stainless Steel (A316) | 10- 25 seconds  |
| Steel (Mild Steel)     | 15 - 60 seconds |
| Aluminum (A5754)       | 15 - 25 seconds |
| Paper                  | 5 - 10 seconds  |
| EPDM                   | 5 - 20 seconds  |
| Rubber, nitrile        | 20 - 60 seconds |
| ABS                    | 10 - 60 seconds |
| PVC                    | 30- 70 seconds  |
| Polycarbonate          | 20 - 70 seconds |
| Phenolic               | 20 - 60 seconds |
| PC/ABS                 | 20 - 70 seconds |
| Wood (Pine)            | 40- 90 seconds  |
| Chipboard              | 20 - 50 seconds |
| Leather                | 30- 80 seconds  |

\*if stored in proper conditions

## BONDING PERFORMANCE

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

#### After 24h Curing at RT

|                                |    |       |     |
|--------------------------------|----|-------|-----|
| Grit-Blasted Mild Steel (GBMS) | 18 | +/- 1 |     |
| Aluminum (A5754)               | 13 | +/- 1 |     |
| ABS                            | 6  | +/- 1 | SF* |
| PVC                            | 7  | +/- 1 | SF* |
| Phenolic                       | 11 | +/- 1 | SF* |
| Polycarbonate                  | 3  | +/- 1 | SF* |

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

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

\*Substrate failure

#### After 1 Week Curing at RT

|                                |    |       |  |
|--------------------------------|----|-------|--|
| Grit-Blasted Mild Steel (GBMS) | 20 | +/- 2 |  |
|--------------------------------|----|-------|--|

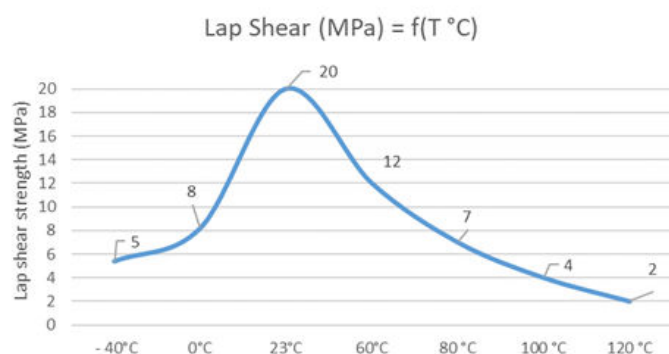
### T-Peel Strength (ISO 11339) @ 23°C (73.4°F) (N/mm) @100mm/min

#### After 24 h curing @ RT

|            |     |         |  |
|------------|-----|---------|--|
| Mild steel | 1.1 | +/- 0.1 |  |
|------------|-----|---------|--|

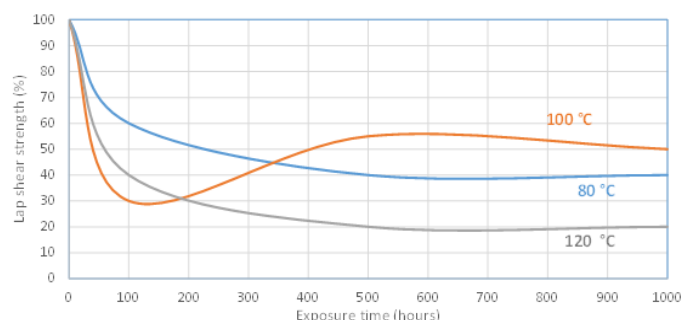
## HOT STRENGTH

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 @ 23°C (73.4°F).

### % of Initial Strength vs. Exposure Time (hours) and vs. Type of Contaminant

| Testing on Grit-Blasted Mild Steel |               | % of Initial Strength |       |        |
|------------------------------------|---------------|-----------------------|-------|--------|
| ENVIRONMENT                        | TEMP          | 100 H                 | 500 H | 1000 H |
| Motor Oil                          | 40°C (104°F)  | 70                    | 70    | 55     |
| Ethanol                            | 23°C (73.4°F) | 85                    | 90    | 80     |
| Gasoline                           | 23°C (73.4°F) | 80                    | 95    | 75     |
| IPA                                | 23°C (73.4°F) | 90                    | 100   | 90     |
| Water                              | 60°C (140°F)  | 90                    | 90    | 75     |

| Testing on Aluminum - ABS |              | % of Initial Strength |       |        |
|---------------------------|--------------|-----------------------|-------|--------|
| ENVIRONMENT               | TEMP         | 100 H                 | 500 H | 1000 H |
| Water                     | 60°C (140°F) | 85                    | 85    | 85     |

## HEAT/HUMIDITY RESISTANCE

Aged under conditions indicated and tested @ 23°C (73.4°F).

### % of Initial Strength vs. Exposure Time (hours)

| ENVIRONMENT - 85% RH & 85°C (185°F) |      | % of Initial Strength |       |        |
|-------------------------------------|------|-----------------------|-------|--------|
| ENVIRONMENT                         | TEMP | 100 H                 | 500 H | 1000 H |
| GBMS                                |      | 70                    | 70    | 20     |
| Aluminum A5754                      |      | 35                    | 40    | 35     |

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                                            | 130                   | 125   | 125    |
| Polycarbonate                                   | 110                   | 120   | 150    |

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