

# PRODUCT SPECIFICATION SHEET

## BELZONA 5811

FN10159



### GENERAL INFORMATION

#### Product Description:

A two-component solvent free system applied by brush or spray for protection of metallic and non-metallic surfaces operating under immersion conditions in contact with aqueous solutions. Also used as a structural adhesive for bonding or for creation of irregular load bearing shims with good electrical insulation characteristics. For use in Original Equipment Manufacture or repair situations.

#### Application Areas:

When mixed and applied as detailed in the Belzona Instructions for Use (IFU), the system is ideally suited for application to the following:

- Cooling tower pans
- Submersible pumps
- Effluent tanks and channels
- Marine buoys
- Storage tanks
- Water boxes
- Manholes
- Internal and external pipework
- Steel and concrete piling
- Water inlet screens
- Chemical containment areas
- Sludge digesters
- Buried pipework and structures

### APPLICATION INFORMATION

#### Working Life

Will vary according to temperature. At 68°F (20°C) the usable life of mixed material is 1 hour 45 minutes.

#### Coverage Rate

The **Belzona 5811** should be applied in 2 coats to achieve a minimum thickness of 16 mils (400 microns). The theoretical coverage rate at 16 mils (400 microns) is 27ft<sup>2</sup> (2.5m<sup>2</sup>)/liter. Refer to the Instructions for Use for practical coverage rate guidelines.

#### Cure Time

Allow to solidify for the times shown in the Belzona IFU before subjecting it to the conditions indicated.

#### Base Component

Appearance: Viscous liquid  
Color: Black, Beige or Grey  
Density: 1.67 - 1.71 g/cm<sup>3</sup>

#### Solidifier Component

Appearance: Clear mobile liquid  
Color: Dark brown  
Density: 1.00 - 1.04 g/cm<sup>3</sup>

#### Mixed Properties

Mixing Ratio by Weight (Base : Solidifier) 5 : 1  
Mixing Ratio by Volume (Base : Solidifier) 3 : 1  
Mixed Density 1.46 - 1.50 g/cm<sup>3</sup>  
VOC content (ASTM D2369/EPA ref. 24) 2.16%/32.0 g/L

*The above application information serves as introductory guide only. For full application details including the recommended application procedure/technique, refer to the Belzona IFU which is enclosed with each packaged product.*

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### ADHESION

#### Tensile Shear

When tested in accordance with ASTM D1002, using metal substrates, grit blasted to a 3-4 mil (75-100 micron) profile, typical values will be:

Aluminum	2,470 psi (17.0 MPa)	7 days at 72°F (22°C)
	2,530 psi (17.4 MPa)	28 days at 72°F (22°C)
	2,700 psi (18.6 MPa)	4 hours at 212°F (100°C)
Brass	2,870 psi (19.8 MPa)	7 days at 72°F (22°C)
	2,920 psi (20.1 MPa)	28 days at 72°F (22°C)
	3,020 psi (20.8 MPa)	4 hours at 212°F (100°C)
Mild steel	2,840 psi (19.9 MPa)	7 days at 72°F (22°C)
	3,590 psi (24.7 MPa)	28 days at 72°F (22°C)
	3,880 psi (26.7 MPa)	4 hours at 212°F (100°C)
Copper	2,590 psi (17.8 MPa)	7 days at 72°F (22°C)
	2,280 psi (15.7 MPa)	28 days at 72°F (22°C)
	2,570 psi (17.7 MPa)	4 hours at 212°F (100°C)
Stainless steel	2,670 psi (18.4 MPa)	7 days at 72°F (22°C)
	3,070 psi (21.2 MPa)	28 days at 72°F (22°C)
	4,080 psi (28.1 MPa)	4 hours at 212°F (100°C)

#### Pull Off Adhesion

When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will be typically:

4,430 psi (30.5 MPa)	7 days at 72°F (22°C)
4,800 psi (33.1 MPa)	28 days at 72°F (22°C)

### CHEMICAL RESISTANCE

The material will demonstrate excellent resistance to a broad range of chemicals. For a more detailed description of chemical resistance properties, refer to relevant Chemical Resistance chart.

### ELECTRICAL PROPERTIES

#### Dielectric Strength

When tested in accordance with ASTM D149, method A, with voltage rise of 2kV/s, typical values will be: 48.7 kV/mm

#### Dielectric Constant

When tested in accordance with ASTM D150 typical values obtained will be: 2.82

#### Surface Resistivity

When tested in accordance with ASTM D257 typical values obtained will be: 4402 Mohm

### COMPRESSIVE STRENGTH

#### Compressive yield strength

When tested in accordance with ASTM D695, typical values obtained will be:

6,200 psi (42.7 MPa)	7 days at 72°F (22°C)
6,600 psi (45.5 MPa)	28 days at 72°F (22°C)
6,900 psi (47.6 MPa)	4 hours at 212°F (100°C)

### FLEXURAL PROPERTIES

#### Flexural Strength

When tested to ASTM D790 typical values obtained will be:

4,860 psi (33.5 MPa)	7 days at 72°F (22°C)
7,190 psi (49.6 MPa)	28 days at 72°F (22°C)
7,630 psi (52.6 MPa)	4 hours at 212°F (100°C)

#### Flexural Modulus

When tested to ASTM D790 typical values obtained will be:

2.8 x 10 <sup>5</sup> psi (1930 MPa)	7 days at 72°F (22°C)
3.4 x 10 <sup>5</sup> psi (2344 MPa)	28 days at 72°F (22°C)
3.9 x 10 <sup>5</sup> psi (2689 MPa)	4 hours at 212°F (100°C)

### HARDNESS

#### Shore D

When tested to ASTM D2240 the Shore D hardness is typically:

81	7 days at 72°F (22°C)
84	28 days at 72°F (22°C)
87	4 hours at 212°F (100°C)

#### Koenig Pendulum

When tested to ISO 1522 the Koenig damping time of the coating is typically:

107 seconds	7 days at 72°F (22°C)
118 seconds	28 days at 72°F (22°C)
142 seconds	4 hours at 212°F (100°C)

#### Barcol

When tested to ASTM D2583 the hardness using a Barcol impressor, Model No. 935 will typically be:

71	7 days at 72°F (22°C)
77	28 days at 72°F (22°C)
81	4 hours at 212°F (100°C)

### HEAT RESISTANCE

#### Heat Resistance

For many typical applications the material is suitable for continuous immersion in aqueous solutions up to 122°F (50°C). Please consult Belzona TKL for additional advice where immersed applications will operate close to 122°F (50°C).

#### Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 320 °F (160°C).

For many applications, the product is suitable down to -40°F (-40°C).

### CORROSION PROTECTION

#### Cathodic Disbondment

When tested in accordance with ASTM G8 the disbondment diameter is typically: 0.18 in (4.5 mm) at 73°F (23°C)

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### IMPACT STRENGTH

The Izod impact strength (notched) of the material when tested in accordance with ASTM D256 is typically:

3.71 ft.lb./in <sup>2</sup> (7.8 KJ/m <sup>2</sup> )	7 days at 72°F (22°C)
2.66 ft.lb./in <sup>2</sup> (5.6 KJ/m <sup>2</sup> )	28 days at 72°F (22°C)
2.28 ft.lb./in <sup>2</sup> (4.8 KJ/m <sup>2</sup> )	4 hours at 212°F (100°C)

### IMMERSION RESISTANCE

#### Atlas Cell

When tested in accordance with NACE TM 0174 the coating will exhibit no rusting (ASTM D610 rating 10) or blistering (ASTM D714 rating 10) after 6 months immersion in de-ionized water at 104°F (40°C) or 4 months at 122°F (50°C).

#### Seawater Immersion

When tested in accordance with ISO 2812-2, no blistering, rusting, cracking or delamination was observed after 6 months immersion in seawater at 122°F (50°C).

### TENSILE PROPERTIES

When determined in accordance with ASTM D638, typical values will be:

<b>Tensile Strength (Maximum)</b>	3250 psi (22.41 MPa) 4187 psi (28.87 MPa)	7 days at 72°F (22°C) 28 days at 72°F (22°C)
<b>Tensile Strength (Yield)</b>	1703 psi (11.71 MPa) 3261 psi (22.48 MPa)	7 days at 72°F (22°C) 28 days at 72°F (22°C)
<b>Elongation</b>	1.1% 1.7%	7 days at 72°F (22°C) 28 days at 72°F (22°C)
<b>Young's Modulus</b>	2.5 x 10 <sup>5</sup> psi (1724 MPa) 3.4 x 10 <sup>5</sup> psi (2344 MPa)	7 days at 72°F (22°C) 28 days at 72°F (22°C)

### SHELF LIFE

Separate base and solidifier components shall have a shelf life of 5 years from date of manufacture when stored in their original unopened containers between 32°F (0°C) and 86°F (30°C).

### WARRANTY

Belzona guarantees this product will meet the performance claims stated herein when material is stored and used as instructed in the Belzona Information For Use leaflet. Belzona further guarantees that all its products are carefully manufactured to ensure the highest quality possible and tested strictly in accordance with universally recognized standards (ASTM, ANSI, BS, DIN, ISO etc.). Since Belzona has no control over the use of the product described herein, no warranty for any application can be given.

### AVAILABILITY AND COST

**Belzona 5811** is available from a network of Belzona Distributors throughout the world for prompt delivery to the application site. For information, consult the Belzona Distributor in your area.

### MANUFACTURER

Belzona Polymeric Limited  
Claro Road  
Harrogate HG1 4DS  
United Kingdom

Belzona Inc.  
14300 NW 60th Ave,  
Miami Lakes, FL, 33014  
USA

### HEALTH AND SAFETY

Prior to using this material, please consult the relevant Safety Data Sheets.

### TECHNICAL SERVICE

Complete technical assistance is available and includes fully trained Technical Consultants, technical service personnel and fully staffed research, development and quality control laboratories.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

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