

# PRODUCT SPECIFICATION SHEET

## BELZONA 5892

FN10106



### GENERAL INFORMATION

#### Product Description:

Cost effective, two component, high temperature coating system applied by Brush or Spray, suitable for continuous immersion in aqueous/hydrocarbon systems up to 203°F/95°C.

Also suitable for dry heat and steaming out up to 410°F/210°C.

Exhibits excellent corrosion resistance at elevated temperatures and is resistant to a wide range of chemicals.

Additionally, it can also be used for creation of irregular load bearing shims via Injection.

#### 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:

- Boiler Feed Water Systems
- Condensate Tanks
- Condensers
- Evaporators
- Heat Exchangers
- Hot Water Vessels
- Pipework
- Separators
- Storage Tanks

### APPLICATION INFORMATION

#### Application Methods

Brush  
Heated Airless Spray (single component, plural component, spin spray)  
Injection

#### Application Temperature

Application should ideally occur in the following ambient temperature range: 50°F/10°C to 104°F/40°C

#### Coverage Rate

The **Belzona 5892** should be applied in 2 coats to achieve a minimum thickness of 16 mil (400 micron).

The theoretical coverage rate at 16 mil (400 micron) is 27 sq.ft. (2.5m<sup>2</sup>)/litre.

Refer to the Instructions For Use for practical coverage rate guidelines.

#### Cure Time

Cure times will vary depending on the ambient conditions; consult the Belzona IFU for specific details.

#### Mixed Properties

Colour: Grey or White  
Density: 1.49 g/cm<sup>3</sup>  
Viscosity (BS 5350-B8): 50-65 P (77°F/25°C) & 10-20 P (104°F/40°C)  
Gel Time (BS 5350-B5): 150-210 minutes (68°F/20°C)  
Sag Resistance (BS 5350-B9): >500 µm / >20 mils  
60° Specular Gloss (ASTM D2457): 90 - 100 Gloss Units  
VOC content (ASTM D2369 / EPA ref. 24): 0.53% / 7.89 g/L

#### Mix Ratio (base : solidifier)

3.5 : 1 (pbv) and 5.74 : 1 (pbw)

#### Overcoat Window

Overcoat times will vary depending on the ambient conditions; consult the Belzona IFU for specific details.

At 68°F/20°C, the maximum overcoat time will typically be 24 hours.

#### Working Life

The working life will vary according to the temperature. At 68°F/20°C, the usable life of mixed material will typically be 40 minutes, consult the Belzona IFU for specific details.

*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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### ABRASION

#### Taber

Dry sliding abrasion resistance, when determined in accordance with ASTM D4060 using CS17 wheels, will typically result in:

15 mm<sup>3</sup> loss per 1000 cycles                      194°F (90°C) cure

Wet sliding abrasion resistance, when determined in accordance with ASTM D4060 using H10 wheels, will typically result in:

576.5 mm<sup>3</sup> loss per 1000 cycles                      212°F(100°C) cure

### ADHESION

#### Cleavage Adhesion

The Cleavage Strength when applied to grit blasted mild steel, as determined in accordance with ASTM D1062, will typically be:

1750 pli / 306 N/mm                      (68°F/20°C cure & 68°F/20°C test)  
1610 pli / 282 N/mm                      (212°F/100°C post-cure & 68°F/20°C test)  
1340 pli / 234 N/mm                      (212°F/100°C post-cure & 212°F/100°C test)

#### Pull Off Adhesion

The PosiTect Dolly Pull Off Strength on 10mm thick grit blasted mild steel, as determined in accordance with ASTM D4541 and ISO 4624, will typically be: >                      5500psi / >37.9 MPa

#### Tensile Shear Adhesion

The Tensile Shear Adhesion on grit blasted mild steel, as determined in accordance with ASTM D1002, will typically be:

| Cure and Test temperature | Tensile Shear Adhesion |
|---------------------------|------------------------|
| 68°F/20°C                 | 2790 psi / 19.2 MPa    |
| 140°F/60°C                | 3070 psi / 21.2 MPa    |
| 212°F/100°C               | 3380 psi / 23.3 MPa    |

### CHEMICAL ANALYSIS

The mixed **Belzona 5892** has been independently analysed for halogens, heavy metals, and other corrosion-causing impurities, in accordance with ASTM E165, ASTM D4327 and ASTM E1479. Typical results are displayed as follows:

| Analyte   | Total Concentration (ppm) |
|---|---------------------------|
| Fluoride  | 19                        |
| Chloride  | 786                       |
| Bromide   | ND (<11)                  |
| Sulphur   | 263                       |
| Nitrite   | ND (<9)                   |
| Nitrate   | ND (<9)                   |
| Zinc, Antimony, Arsenic, Bismuth, Cadmium, Lead, Tin, Silver, Mercury, Gallium and Indium | ND (<3.0)                 |

ND : Not Detected

### CHEMICAL RESISTANCE

When tested in accordance with ISO 2812 and ISO 4628, the coating demonstrates excellent resistance to a range of chemicals. For full details, see the Chemical Resistance Chart.

### COMPRESSIVE PROPERTIES

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

#### Compressive Yield Strength

10710 psi / 73.8 MPa                      (68°F/20°C cure & 68°F/20°C test)  
12670 psi / 87.4 MPa                      (212°F/100°C post-cure & 68°F/20°C test)  
6360 psi / 43.9 MPa                      (212°F/100°C post-cure & 212°F/100°C test)

#### Compressive Modulus

1.66x10<sup>5</sup> psi / 1140 MPa                      (68°F/20°C cure & 68°F/20°C test)  
1.55x10<sup>5</sup> psi / 1070 MPa                      (212°F/100°C post-cure & 68°F/20°C test)  
1.28x10<sup>5</sup> psi / 885 MPa                      (212°F/100°C post-cure & 212°F/100°C test)

### CORROSION PROTECTION

#### Cathodic Disbondment

When tested in accordance with ASTM G42 at 176°F/80°C, the average disbondment radius will typically be:                      3.0 mm/0.118 in

#### Salt Spray

When tested in accordance with ASTM B117, the coating will show no signs of failure after 1000 hours continuous exposure.

### ELECTRICAL PROPERTIES

When tested in accordance with ASTM D149, method A, with voltage rise of 2kV/s, typical value will be:  
Dielectric strength                      49.7 kV/mm

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### ELONGATION & TENSILE PROPERTIES

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

#### Tensile Strength

1970 psi / 13.6 MPa (68°F/20°C cure & //68°F/20°C test)  
 2750 psi / 19.0 MPa (212°F/100°C post-cure & 68°F/20°C test)  
 2590 psi / 17.9 MPa (212°F/100°C post-cure & 212°F/100°C test)

#### Elongation

0.35 % (68°F/20°C cure & 68°F/20°C test)  
 0.69 % (212°F/100°C post-cure & 68°F/20°C test)  
 0.68 % (212°F/100°C post-cure & 212°F/100°C test)

#### Young's Modulus

5.85x10<sup>5</sup> psi / 4030 MPa (68°F/20°C cure & 68°F/20°C test)  
 4.24x10<sup>5</sup> psi / 2920 MPa (212°F/100°C post-cure & 68°F/20°C test)  
 4.26x10<sup>5</sup> psi / 2940 MPa (212°F/100°C post-cure & 212°F/100°C test)

### EXPLOSIVE DECOMPRESSION

When tested in accordance with NACE TM0185 using a seawater/crude oil test fluid over-pressured with 1% carbon dioxide/99% methane, the coating exhibits no breakdown after a 21 day immersion period at 158°F/70°C and 70 bar followed by decompression over 15 minutes.

### FLEXURAL PROPERTIES

When determined in accordance with ASTM D790, typical values will be:

#### Flexural Strength

5690 psi / 39.2 MPa (68°F/20°C cure & 68°F/20°C test)  
 9180 psi / 63.3 MPa (212°F/100°C post-cure & 68°F/20°C test)  
 7980 psi / 55.0 MPa (212°F/100°C post-cure & 212°F/100°C test)

#### Flexural Modulus

6.86x10<sup>5</sup> psi / 4730 MPa (68°F/20°C cure & 68°F/20°C test)  
 5.47x10<sup>5</sup> psi / 3770 MPa (212°F/100°C post-cure & 68°F/20°C test)  
 4.13x10<sup>5</sup> psi / 2850 MPa (212°F/100°C post-cure & 212°F/100°C test)

### FOOD CONTACT

#### Incidental Food Contact (USDA)

USDA compliant as an Incidental food contact surface.

#### Direct Food Contact (FDA)

Meets extraction requirements as set out in 21 CFR 175.300 (paragraph c) for a broad range of food types in Conditions of Use B, C, D, E and F (paragraph d).  
 Please contact Belzona for more comprehensive data.

### HARDNESS

#### Shore D & Barcol Hardness

The Shore D and Barcol hardness, when determined in accordance with ASTM D2240 and ASTM D2583, will typically be:

|                     | 68°F/20°C<br>cure | 212°F/100°C<br>post-cure |
|---------------------|-------------------|--------------------------|
| <b>Shore D</b>      | 84                | 86                       |
| <b>Barcol 934-1</b> | 26                | 40                       |
| <b>Barcol 935</b>   | 80                | 86                       |

#### Koenig Pendulum

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

|             |              |
|-------------|--------------|
| 190 seconds | ambient cure |
| 186 seconds | post cure    |

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### HEAT RESISTANCE

#### Heat Distortion & Glass Transition Temperature (HDT & T<sub>g</sub>)

The HDT and T<sub>g</sub> when determined in accordance with ASTM D648 and ISO 11357-2 respectively, will typically be:

| Cure temperature | HDT         | T <sub>g</sub> |
|------------------|-------------|----------------|
| 68°F/20°C        | 122°F/50°C  | 129°F/54°C     |
| 140°F/60°C       | 203°F/95°C  | 205°F/96°C     |
| 176°F/80°C       | 232°F/111°C | 243°F/117°C    |
| 212°F/100°C      | 262°F/128°C | 262°F/128°C    |
| 248°F/120°C      | -           | 291°F/144°C    |
| 302°F/150°C      | -           | 315°F/157°C    |

#### Atlas Cell Cold Wall Immersion Test

When tested in accordance with NACE TM 0174 procedure A, the coating will exhibit no blistering or rusting (ASTM D714 rating 10; ASTM D610 rating 10) after 6 months immersion in water at 203°F (95°C).

#### Electrochemical Impedance Spectroscopy (EIS)

The EIS results ( $\log_{10}|Z|_{0.1\text{Hz}}$ ) determined in accordance with ISO 16773 following Atlas cell testing at 203°F/95°C will be typically:

|                  |                                 |
|------------------|---------------------------------|
| a) Unexposed:    | 11.1 $\Omega \cdot \text{cm}^2$ |
| b) Liquid Phase: | 10.8 $\Omega \cdot \text{cm}^2$ |
| c) Vapor Phase:  | 10.8 $\Omega \cdot \text{cm}^2$ |

#### Immersion Resistance

Suitable for service at temperatures up to 203°F (95°C) but refer to chemical resistance data for chemical contact limitations.

#### Steam-out Resistance

The coating will exhibit no failure after 96 hours exposure to pressurized steam at 410°F/210°C

#### Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 446°F (230°C).

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

#### Resistance to Water Immersion

When tested in accordance with ISO 2812-2, the coating will show no signs of failure after 6 months continuous immersion in artificial seawater at 104°F/40°C.

### IMPACT RESISTANCE

#### Izod Pendulum

Izod impact strength, when determined in accordance with ASTM D256, will typically be:

|             |                       |  |
|-------------|-----------------------|--|
| Notched:    | 2.1 KJ/m <sup>2</sup> | (68°F/20°C cure & 68°F/20°C test)        |
|             | 5.8 KJ/m <sup>2</sup> | (212°F/100°C post-cure & 68°F/20°C test) |
| Un-notched: | 2.3 KJ/m <sup>2</sup> | (68°F/20°C cure & 68°F/20°C test)        |
|             | 5.6 KJ/m <sup>2</sup> | (212°F/100°C post-cure & 68°F/20°C test) |

#### Falling Weight

The direct falling weight impact resistance when determined in accordance with ASTM D2794 will typically be:

|                         |  |
|-------------------------|--|
| 0.19 kg.m / 16.5 in.lbs | (68°F/20°C cure & 68°F/20°C test)        |
| 0.35 kg.m / 30.7 in.lbs | (212°F/100°C post-cure & 68°F/20°C test) |

### POTABLE WATER APPROVAL

#### NSF/ANSI 61

Tested and certified by WQA against NSF/ANSI 61. For product use restrictions visit [www.wqa.org](http://www.wqa.org)



#### WRAS

Listed in the UK Water Fittings Directory under "Materials which have passed full tests of effect on water quality".



### THERMAL PROPERTIES

#### Thermal Conductivity

When tested in accordance with ASTM E1461-13 at a temperature of 100°C (212°F), the thermal conductivity will typically be 0.379 W/m·K.

#### Thermal cycling

When tested in accordance with NACE TM0304 the coating exhibited no cracking after 252 cycles between +140°F and -22°F (+60°C and -30°C).

#### Low Temperature Thermal Shock

Coated steel panels will exhibit no blistering, cracking or delamination after multiple cycles of rapid cooling from 212°F (100°C) to -76°F (-60°C).

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### THICK FILM CRACKING RESISTANCE

When tested in accordance with NACE TM0104 no cracking was experienced when applied at three times recommended thickness and exposed for 12 weeks in sea water at 104°F (40°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 41°F (5°C) and 86°F (30°C).

### WARRANTY

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 ensures that all its products are carefully manufactured to ensure the highest quality possible and are 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 5892** 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 / SUPPLIER

Belzona Polymerics Ltd.  
Claro Road, Harrogate,  
HG1 4DS, UK

### 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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