

# PRODUCT SPECIFICATION SHEET

## BELZONA 1331

FN10027



### GENERAL INFORMATION

#### Product Description:

A two component system designed to operate under continuous immersion at operating temperatures up to 122°F/50°C. The coating offers excellent erosion resistance combined with negligible wear to spray equipment. Suitable for one or two coat application and can be used to achieve high build films (50mils/1250µm) in one coat without sagging.

#### Application Areas:

When mixed and applied as detailed in the Belzona Information For Use (IFU), the system is suitable for applications such as:

- Chutes and Hoppers
- Girth Welds
- Pipelining
- Process Vessels
- Scrubber Units
- Separators

### APPLICATION INFORMATION

#### Application Methods

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

#### Application Temperature

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

#### Coverage Rate

To achieve a minimum system thickness of 20 mils (500 microns), the theoretical coverage rate is  
21.5 sq.ft. (2 m<sup>2</sup>)/litre  
18.8 sq.ft. (1.75m<sup>2</sup>)/kg

#### 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	1.14 g/cm <sup>3</sup>
Viscosity (BS5350-B8)	11Poise (113°F/45°C)
Sag Resistance (BS 5350-B9)	>50 mils / >1250 µm
Edge Retention (NACE TM0304)	Pass at 0.7mm radius
VOC content (ASTM D2369 / EPA ref. 24)	1.16% / 13.2 g/L

#### Mix Ratio (base : solidifier)

2 : 1 (pbv) and 2.2 : 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 77°F/25°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

Wet and dry sliding abrasion resistance, when determined in accordance with ASTM D4060 with 1kg load will typically result in:

Wet (H10 wheels): 46mm<sup>3</sup> loss per 1000 cycles  
 Dry (CS17 wheels): 13mm<sup>3</sup> loss per 1000 cycles  
 (68°F/20°C cure & test)

### ADHESION

#### Tensile Shear

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

3900 psi / 26.9 MPa (68°F/20°C cure & test)

#### Pull Off Adhesion

The PosiTect Dolly Pull Off Strength as determined in accordance with ASTM D4541 and ISO 4624, will typically be:

Blasted Mild Steel: 4900 psi / 33.8 MPa (68°F/20°C cure & test)  
 Fusion Bonded Epoxy: 3200 psi / 22.1 MPa (68°F/20°C cure & test)

### CHEMICAL ANALYSIS

The mixed **Belzona 1331** 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	39451
Chloride	897
Bromide	ND (<12)
Sulphur	40
Nitrite	ND (<7)
Nitrate	ND (<7)
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 wide range of chemicals including; dilute acids, alkalis and hydrocarbons.

### COMPRESSIVE PROPERTIES

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

	Compressive Strength	Proportional Limit	Youngs Modulus
68°F/20°C cure & test	96.2 MPa 13,949 psi	48.6 MPa 7,048 psi	1,189.2 MPa 1.72 x 10 <sup>5</sup> psi
212°F/100°C cure & 68°F/20°C test	212.2 MPa 30,779 psi	50.1 MPa 7,271 psi	1,178.2 MPa 1.71 x 10 <sup>5</sup> psi

### CORROSION PROTECTION

#### Cathodic Disbondment

When tested in accordance with ASTM G95 at 68°F (20°C), the average disbondment radius will typically be 0.135 inch (3.43 mm).

#### 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 36.7 kV/mm

### ELONGATION & TENSILE PROPERTIES

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

<b>Tensile Strength</b> 2,770 psi (19.10 MPa)	(68°F/20°C cure & test)
<b>Elongation</b> 0.90%	(68°F/20°C cure & test)
<b>Young's Modulus</b> 3.46x10 <sup>5</sup> psi / 2,383 MPa	(68°F/20°C cure & test)

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### FLEXURAL PROPERTIES

When determined in accordance with the relevant test method, typical values will be:

<b>Flexural Strength</b> (ASTM D790) 6250 psi / 43.1 MPa	(68°F/20°C cure & test)
<b>Flexural Modulus</b> (ASTM D790) 2.95x10 <sup>5</sup> psi / 2037.4 MPa	(68°F/20°C cure & test)
<b>Mandrel Flexibility</b> (NACE RP0394) Pass at 2.5"/pipe diameter	(68°F/20°C cure & test)

### HARDNESS

**Shore D**  
When determined in accordance with ASTM D2240, typical value will be:  
77 68°F (20°C) cure

**Barcol Hardness**  
The Barcol hardness, when determined in accordance with ASTM D2583, will typically be:

	Ambient cure (68°F/20°C)	Post cure (122°F/50°C)
<b>Barcol 935</b>	56	62

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

147 seconds ambient cure

### HEAT RESISTANCE

**Heat Distortion Temperature (HDT)**  
The HDT when determined in accordance with ASTM D648 will typically be:  
113°F / 45°C (68°F/20°C cure)  
153°F / 67°C (212°F/100°C cure)

**Atlas Cell Cold Wall Immersion Test**  
Atlas Cell Immersion Resistance, when determined in accordance with NACE TM0174 procedure A, will result in no rusting (ASTM D610 rating 10) or blistering (ASTM D714 rating 10) after 6 months continuous immersion in deionised water at 122°F/50°C.

**Dry Heat Resistance**  
The coating will exhibit no significant degradation when exposed to dry heat at temperatures up to 248°F (120°C) and 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:

	Reversed notched Izod Impact Strength	Un-notched Izod Impact Strength
68°F/20°C cure & test	3.2 KJ/m <sup>2</sup> 35.0 J/m	2.8 KJ/m <sup>2</sup> 35.5 J/m
212°F/100°C cure & 68°F/20°C test	12.4 KJ/m <sup>2</sup> 130.7 J/m	12.9 KJ/m <sup>2</sup> 164.5 J/m

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

24.4 in.lbs / 0.28 kg.m (68°F/20°C cure & test)

### POTABLE WATER APPROVAL

**KC**  
Listed in Barrier Materials as epoxy resin-based waterproof and anticorrosion material, which has passed full test of sanitation and safety.



### THERMAL PROPERTIES

**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).

### SHELF LIFE

Separate base and solidifier components shall have a shelf life of 3 years from date of manufacture when stored in their original unopened containers between 41°F (5°C) and 86°F (30°C).

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### 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 1331** 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 Limited  
Claro Road, Harrogate,  
HG1 4DS, UK

Belzona Inc.  
14300 NW 60<sup>th</sup> 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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