

# PRODUCT SPECIFICATION SHEET

## BELZONA 1321

FN10026



### GENERAL INFORMATION

#### Product Description:

A two component coating system designed to operate under continuous immersion at operating temperatures up to 140°F (60°C). Exhibits excellent erosion-corrosion resistance. Resistant to a broad range of aqueous solutions, hydrocarbons and process chemicals. Also used as a high strength 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:

- Centrifugal and turbine pumps
- Propellers
- Pipe elbows
- Heat exchangers, water box ends, division bars and tube sheets
- Butterfly and gate valves
- Kort nozzles
- T-pieces

### APPLICATION INFORMATION

#### Working Life

Will vary according to temperature. At 77°F (25°C) the usable life of mixed material is 30 minutes.

#### Cure Time

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

#### Volume Capacity

25.7 cu. in. (422 cm<sup>3</sup>)/kg.

#### Coverage rate

**Belzona 1321** should be applied as a two coat system at a recommended average thickness of 15 mil (375 µm) per coat.

At the minimum recommended two coat system thickness of 24 mil (600 µm), the theoretical coverage rate will be 7.6 ft<sup>2</sup> (0.71m<sup>2</sup>)/kg.

#### Base Component

Appearance Paste  
Colour Grey  
Density 2.60 - 2.80 g/cm<sup>3</sup>

#### Solidifier Component

Appearance Liquid  
Colour Blue or Violet  
Density 1.03 - 1.09 g/cm<sup>3</sup>

#### Mixed Properties

Mixing Ratio by Weight (Base : Solidifier) 11 : 1  
Mixing Ratio by Volume (Base : Solidifier) 4 : 1  
Mixed Form Liquid  
Peak Exotherm Temperature 158 - 185°F (70 - 85°C)  
Time to Peak Exotherm 53 - 63 mins.  
Sag Resistance nil at 25 mil (625 microns)  
Mixed Density 2.32 - 2.42 g/cm<sup>3</sup>  
VOC content (ASTM D2369 / EPA ref. 24) 0.74% / 17.6 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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### ABRASION

#### Taber

The Taber abrasion resistance determined in accordance with ASTM D4060 with 1 kg load is typically:

H10 Wheels (Wet) 178 mm<sup>3</sup> loss per 1000 cycles  
 CS17 Wheels (Dry) 14 mm<sup>3</sup> loss per 1000 cycles

### ADHESION

#### Tensile Shear

When tested in accordance with ASTM D1002, using degreased strips, grit blasted to a 3-4 mil profile, typical values will be:

Mild steel 2,710 psi (18.68 MPa)  
 Copper 3,050 psi (21.03 MPa)  
 Stainless steel 3,180 psi (21.92 MPa)  
 Aluminium 2,090 psi (14.41 MPa)

#### Tensile shear Fatigue

The Tensile shear fatigue in accordance with ASTM D3166 at ambient temperature and 595 psi (4.1 MPa) applied static tensile stress is >1,000,000 cycles

#### Pull Off Adhesion

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

6330 psi (43.64 MPa) 68°F (20°C) cure  
 6290 psi (43.37 MPa) 212°F (100°C) cure

#### Cleavage strength

When tested in accordance with ASTM D 1062, the cleavage strength to grit blasted steel will be typically:

1634 pli 68°F (20°C) cure

### CHEMICAL RESISTANCE

Once fully cured, the material will demonstrate excellent resistance to most commonly found inorganic acids and alkalis at concentrations up to 20%.

The material is also resistant to hydro-carbons, mineral oils, lubricating oils and many other commonly found chemicals.

\* For a more detailed description of chemical resistance properties, refer to relevant Chemical Resistance chart.

### 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	90.5 MPa 13,127 psi	73.2 MPa 10,621 psi	1,628.3 MPa 2.36 x 10 <sup>5</sup> psi
212°F/100°C cure & 68°F/20°C test	122.3 MPa 17,743 psi	80.8 MPa 11,723 psi	1,539.2 MPa 2.23 x 10 <sup>5</sup> psi

### CORROSION PROTECTION

#### Corrosion Resistance

Once fully cured, will show no visible signs of corrosion after 5,000 hours exposure in the ASTM B117 salt spray cabinet.

### ELONGATION & TENSILE PROPERTIES

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

#### Elongation

0.49% 68°F (20°C) cure  
 0.75% 212°F (100°C) cure

#### Tensile Strength

4,177 psi (28.80 MPa) 68°F (20°C) cure  
 5,510 psi (37.99 MPa) 212°F (100°C) cure

#### Young's Modulus:

9.87x10<sup>5</sup> psi (6,807 MPa) 68°F (20°C) cure  
 1.02x10<sup>6</sup> psi (7,056 MPa) 212°F (100°C) cure

### FLEXURAL PROPERTIES

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

#### Flexural Strength

9,400 psi (64.81 MPa) 68°F (20°C) cure

#### Flexural Modulus

7.70 x 10<sup>5</sup> psi (5309MPa) 68°F (20°C) cure

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### HARDNESS

#### Shore D

When determined in accordance with ASTM D2240, typical values will be:

84 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 (212°F/100°C)
<b>Barcol 934-1</b>	20	31
<b>Barcol 935</b>	87	92

### 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	5.1 KJ/m <sup>2</sup> 54.3 J/m	5.5 KJ/m <sup>2</sup> 72.3 J/m
212°F/100°C cure & 68°F/20°C test	6.8 KJ/m <sup>2</sup> 73.5 J/m	7.8 KJ/m <sup>2</sup> 103.1 J/m

### HEAT RESISTANCE

#### Heat Distortion Temperature (HDT)

Tested to ASTM D648 (264 psi fibre stress), typical values obtained will be:

118°F (48°C) 68°F (20°C) cure  
189°F (87°C) 212°F (100°C) cure

#### Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 428°F (220°C).

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

#### Wet Heat Resistance

Designed to operate under continuous immersion at operating temperatures up to 140°F (60°C). Suitable for steaming out up to 410°F (210°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).

### APPROVALS/ACCEPTANCES

The material has received recognition from organizations worldwide including:

ABS  
BUREAU VERITAS  
LLOYDS REGISTER  
NATO  
YORK INTERNATIONAL  
UK WRAS

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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 1321** 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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