

# PRODUCT SPECIFICATION SHEET

## BELZONA 1321

FN10025



### GENERAL INFORMATION

**Product Description:**

A two component coating system designed to operate under continuous immersion at operating temperatures up to 140°F (60°C). Suitable for design temperatures up to 194°F (90°C) and steaming out up to 410°F (210°C). Exhibits excellent erosion-corrosion resistance. 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.ins. (425 cm<sup>3</sup>)/kg.

**Coverage Rate**

Each 1 kg. unit applied at the correct film thickness of 10 - 15 mils. (250 - 375 microns) will cover approximately 11 sq.ft. (1.0 sq.m.).

**Base Component**

Appearance Paste  
Color Gray  
Density 2.60 - 2.80 g/cm<sup>3</sup>

**Solidifier Component**

Appearance Liquid  
Color Blue or Violet  
Density 1.00 - 1.08 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 2,35 - 2.45 g/cm<sup>3</sup>

*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)	172 mm <sup>3</sup> loss per 1000 cycles
CS17 Wheels (Dry)	55 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	2,900 psi (20.0 MPa)
Brass	2,200 psi (15.17 MPa)
Copper	2,400 psi (16.55 MPa)
Stainless steel	3,000 psi (20.69 MPa)
Aluminium	2,000 psi (13.79 MPa)

#### Pull Off Adhesion

When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will be typically: 5190 psi (35.78 MPa)

### 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**  
13,000 psi. (89.63 MPa)

### CORROSION PROTECTION

#### Corrosion Resistance

Once fully cured, will show no visible signs of corrosion after 5,000 hours exposure in the ASTM B117-73 salt spray cabinet.

#### Cathodic Disbondment

When tested in accordance with ASTM G8 a rating Class B is obtained.

### ELECTRICAL PROPERTIES

#### Dielectric Constant

Tested to ASTM D150 is typically 12 at 1000Hz.  
Tested to ASTM D150 is typically 8 at 1MHz.

#### Dielectric Strength

Tested to ASTM D149 is typically 33 volts/mil (1320 volts/mm)

#### Dissipation Factor

Tested to ASTM D150 is typically < 0.0005 at 1000 Hz  
Tested to ASTM D150 is typically < 0.0005 at 1 MHz

#### Surface Resistivity

Tested to ASTM D257 is typically 6.7 x 10<sup>13</sup> ohm

#### Volume Resistivity

Tested to ASTM D257 is typically 3.3 x 10<sup>13</sup> ohm cm

### FLEXURAL PROPERTIES

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

**Flexural Strength**  
10,000 psi (68.95MPa)

**Flexural Modulus**  
8.50 x 10<sup>5</sup> psi (5860 MPa)

### HARDNESS

#### Shore D

When determined in accordance with ASTM D2240, typical value will be:  
80

#### Barcol

When determined in accordance with ASTM D2583, typical values will be:  
89 68°F (20°C) cure  
91 212°F (100°C) cure

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### HEAT RESISTANCE

#### Heat Distortion Temperature (HDT)

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

117°F (47°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 design temperatures up to 194°F (90°C) and steaming out up to 410°F (210°C).

### IMPACT RESISTANCE

#### Impact Strength

The impact strength (reverse notched) when tested to ASTM D256 is typically:

0.93 ft.lb./in., 50 J/m

### SHRINKAGE

0.0% minimum  
0.005% maximum

### THERMAL EXPANSION

Tested to ASTM E228 the coefficient of thermal expansion is typically 38.4 ppm/°C.

### VOC

When measured in accordance with ASTM D 2369 the VOC content of the mixed product is typically 0.91% (22g/litre).

### SHELF LIFE

Separate base and solidifier components will have a 5 year shelf life when stored between 32°F (0°C) and 86°F (30°C).

### APPROVALS/ACCEPTANCES

The material has received recognition from organizations worldwide including:

- U.S.D.A.
- ABS
- NATO
- GENERAL MOTORS
- TOYOTA
- FORD
- YORK INTERNATIONAL
- RUSSIAN REGISTER OF SHIPPING
- KOREAN REGISTER OF SHIPPING
- CHINA CLASSIFICATION SOCIETY
- BUREAU VERITAS

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### 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 recognised 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.

### HEALTH AND SAFETY

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

### MANUFACTURER

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

Belzona Inc.  
2000 N.W. 88<sup>th</sup> Court,  
Miami, Florida, USA, 33172

### 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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