

Product Specification Sheet

Belzona 1321 (Ceramic S-Metal)

FN10231



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

Application Information

Application Methods: Brush, Applicator

Application Temperature: The application should ideally occur from 41 °F to 104 °F (5 °C to 40 °C).

Working Life: The working life will vary according to application temperature. The usable life of mixed material will typically be 37 minutes at 68 °F (20 °C). Consult the Belzona IFU for specific details.

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

Volume Capacity: 25.7 in³/kg (422 cm³/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 ft² (0.71m²)/kg.

Base Component

Appearance	Paste
Color	Grey
Gel Strength	200 – 350 g/cm
Density	2.6 - 2.8 g/cm ³

Solidifier Component

Appearance	Liquid
Color	Blue or Violet
Density	1.03 – 1.09 g/cm ³

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	40 - 60 min
Sag Resistance	40 - 80 mil
Mixed Density	2.32 - 2.42 g/cm ³
VOC content (ASTM D2369 -10 Method E)	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

When tested in accordance with ASTM D4060 (1-kg load), the sliding abrasion of samples cured at 72 °F (22 °C) for 7 days will typically be:

CS17 Wheels (Dry)	27 mm ³ loss per 1000 cycles
H10 Wheels (Wet)	672 mm ³ loss per 1000 cycles

Adhesion

Tensile Shear

When tested in accordance with ASTM D1002, the tensile shear of Belzona 1321 applied onto abrasive-blasted strips to an average surface profile of 3 mil (75 µm) and cured at 72 °F (22 °C) for 7 days will typically be:

Mild steel	3683 psi (25.4 MPa)
Copper	3124 psi (21.5 MPa)
Stainless Steel	2525 psi (17.4 MPa)
Aluminium	2703 psi (18.6 MPa)

Pull off adhesion

When tested in accordance with ASTM D4541/ISO 4624, the pull-off adhesion of Belzona 1321 applied onto steel samples blasted and cured under the conditions stated below for 7 days will typically be:

5169 psi (35.6 MPa)	72°F (22°C)
6575 psi (45.3 MPa)	212°F (100°C)

Cleavage strength

When tested in accordance with ASTM D1062, the cleavage strength of Belzona 1321 applied onto steel samples blasted and cured under the conditions stated below for 7 days will typically be:

242.7 N/mm (1387 pli)	72 °F (22 °C)
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Chemical Analysis

The mixed Belzona 1321 has been independently analyzed for halogens, heavy metals, and other corrosion-causing impurities in accordance with ASTM D4327 and ASTM E1479. Typical results are displayed as follows:

Analyte	Total Concentration (ppm)
Fluoride	<9
Chloride	465
Bromide	<47
Sulfur	878
Nitrite	<7
Nitrate	<16
Zinc	8
Antimony, Arsenic, Bismuth, Cadmium, Lead, Tin, Silver, Mercury, Gallium, and Indium	ND (<5)

Analyte	Leachable Concentration (ppm)
Fluoride	<8
Chloride	<8
Bromide	<39
Sulfur	<26
ND: Not Detected	

Compressive Properties

When tested in accordance with ASTM D695, the compressive properties of samples cured under the conditions stated below for 7 days will typically be:

<u>Compressive Strength</u>	72°F (22°C)
11094 psi (76.4 MPa)	

Corrosion Protection

Upon full curing at 72 °F (22 °C) for 7 days, Belzona 1321 will show no visible signs of corrosion after 5,000 hours of salt spray exposure in accordance with ASTM B117.

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Flexural Properties

When tested in accordance with ASTM D790, the flexural strength and strain-at-break of samples cured under the conditions stated below for 7 days will typically be:

Flexural Strength
9735 psi (67.1 MPa) 72°F (22°C)

Flexural Modulus
9.9x10⁵ psi (6849 MPa) 72°F (22°C)

Impact Resistance

Izod Pendulum

When tested in accordance with ASTM D256, the impact (reverse notched) resistance of samples cured under the conditions stated below for 7 days will typically be:

1.2 ft-lb/in (67.9 J/m) 72°F (22°C)
1.6 ft-lb/in (86.2 J/m) 212°F (100°C)

Hardness

Shore D

When tested in accordance with ASTM D2240, the Shore D hardness of samples cured at the conditions stated below for 7 days will typically, be:

83 72°F (22°C)

Elongation & Tensile Properties

When determined in accordance with ASTM D638, typical values of samples cured under the conditions stated below for 7 days will be:

Tensile Strength
5767 psi (39.7 MPa) 72°F (22°C)
7535 psi (51.9 MPa) 212°F (100°C)

Elongation
0.51 % 72°F (22°C)
0.66 % 212°F (100°C)

Young's Modulus
1.3x10⁶ psi (8971 MPa) 72°F (22°C)
1.4x10⁶ psi (9529 MPa) 212°F (100°C)

Heat Resistance

Glass Transition Temperature (T_g)

When tested to ISO 11357-2, T_g of samples cured at the conditions stated below for 7 days will typically be:

131°F (55°C) 72°F (22°C)
189°F (87°C) 212°F (100°C)

Heat Distortion Temperature (HDT)

When tested to ASTM D648 (264 psi fibre stress), HDT of samples cured at the conditions stated below for 7 days will typically be:

113°F (45°C) 72°F (22°C)
189°F (87°C) 212°F (100°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).

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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 (IFU) 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 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/Supplier

Belzona Limited
Claro Road
Harrogate HG1 4DS
United Kingdom

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

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. Nothing in the foregoing statement shall exclude or limit any liability of Belzona to the extent such liability cannot by law be excluded or limited.

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