

# PRODUCT SPECIFICATION SHEET

## BELZONA 1121

FN10012



### GENERAL INFORMATION

#### Product Description:

A two component paste grade system with extended working life for repairing and rebuilding machinery and equipment. Based on a silicon steel alloy blended with high molecular weight reactive polymers and oligomers. Also used as a high strength structural adhesive for bonding or for creation of irregular load bearing shims with good electrical insulation characteristics. Once cured, the repair is durable and fully machinable. 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:

- Shafts
- Hydraulic rams
- Bearing housings
- Bushing fits
- Keyways
- Engine blocks
- Casings
- Levelling
- Pipes
- Tanks
- Flange faces

### APPLICATION INFORMATION

#### Working Life

Will vary according to temperature. At 77°F (25°C) the usable life of mixed material is 35 minutes.

#### Cure Time

Cure times will vary depending on the ambient conditions and will be reduced for thicker sections and extended for thinner applications. Consult the Belzona IFU for specific details.

#### Volume Capacity

23.5 cu.in. (385 cm<sup>3</sup>)/kg.

#### Base Component

Appearance	Paste
Colour	Dark grey
Gel Strength at 77°F (25°C)	175 - 325 g/cm QH
Density	2.80 - 3.00 g/cm <sup>3</sup>

#### Solidifier Component

Appearance	Paste
Colour	Light grey
Gel Strength at 77°F (25°C)	100 - 250 g/cm QV
Density	2.37 - 2.43 g/cm <sup>3</sup>

#### Mixed Properties

Mixing Ratio by Weight (Base : Solidifier)	1.2 : 1
Mixing Ratio by Volume (Base : Solidifier)	1 : 1
Mixed Form	Paste
Peak Exotherm Temp.	86-113°F (30 - 45°C)
Time to Peak Exotherm	43 - 63 mins.
Slump Resistance	nil at 1.0 inch (2.5 cm)
Mixed Density	2.57- 2.71 g/cm <sup>3</sup>
VOC content (ASTM D2369 / EPA ref. 24)	0.06% / 1.54 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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## BELZONA 1121

FN10012



### ABRASION

#### Taber

The Taber abrasion resistance with 1 kg load is typically:  
 H10 Wheels (Wet) 1660 mm<sup>3</sup> loss per 1000 cycles  
 CS17 Wheels (Dry) 55 mm<sup>3</sup> loss per 1000 cycles

### ADHESION

#### Cleavage

When tested to ASTM D1062 typical values will be:  
 Mild steel 1250 lbs./in. (22.3 kg/mm)

#### Tensile Shear

When tested in accordance with ASTM D1002, using substrates which are degreased and grit blasted to a 3 mil (75 microns) profile, typical values will be :

Mild steel	3300 psi (22.8 MPa)
Aluminium	1900 psi (13.1 MPa)
Copper	2000 psi (13.8 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:  
 2180 psi (15.0 MPa)

### CHEMICAL ANALYSIS

The mixed **Belzona 1121** 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	132
Chloride	168
Bromide	ND (<11)
Sulphur	14153
Nitrite	1
Nitrate	4
Zinc	4.2
Antimony, Arsenic, Bismuth, Cadmium, Lead, Tin, Silver, Mercury, Gallium and Indium	ND (<3.0)
	ND : Not Detected

### CHEMICAL RESISTANCE

Once fully cured, the material will demonstrate excellent resistance to most commonly found inorganic acids and alkalis at concentrations up to 10%.

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**  
 12,500 psi (86.2 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.

### ELECTRICAL PROPERTIES

#### Dielectric Strength

Tested to ASTM D149 is typically: 149 volts/mil (5960 volts/mm)

#### Dielectric Constant

Tested to ASTM D150 is typically: 8 at 1000Hz  
 6 at 1 MHz

#### Dissipation Factor

Tested to ASTM D150 is typically: < 0.0005 at 1 MHz  
 0.0050 at 1000 HZ

#### Surface Resistivity

Tested to ASTM D257 is typically: 8.7 x 10<sup>14</sup> ohm.

#### Volume Resistivity

Tested to ASTM D257 is typically: 6.0 x 10<sup>15</sup> ohm cm.

### SHEAR PROPERTIES

When determined in accordance with ASTM D5379, typical V-notched shear values will be:

Temperature (Cure/Test)	Ultimate Shear Strength	Shear Modulus
72 °F (22 °C)	3,420 psi (23.6 MPa)	4.3 x 10 <sup>5</sup> psi (2,965 MPa)

# PRODUCT SPECIFICATION SHEET

## BELZONA 1121

FN10012



### TENSILE PROPERTIES

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

Temperature (Cure/Test)	Ultimate Tensile Strength	Young's Modulus	Elongation	Poisson's Ratio
72 °F (22 °C)	3,090 psi (21.3 MPa)	1.2 x 10 <sup>5</sup> psi (827.4 MPa)	0.25%	0.143
122 °F (50 °C)	1,160 psi (8.0 MPa)	9.4 x 10 <sup>4</sup> psi (648.1 MPa)	2.80%	0.208

### FLEXURAL PROPERTIES

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

**Flexural Strength**  
6500 psi (44.8 MPa)

### HARDNESS

#### Shore D

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

87 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>	9	26
<b>Barcol 935</b>	85	90

### HEAT RESISTANCE

#### Heat Distortion Temperature (HDT)

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

122°F (50°C) 68°F (20°C) cure  
160°F (71°C) 212°F (100°C) cure

#### Service Temperature Limits

For many typical applications, the product will be suitable for use at the following service temperatures:

Type of Service	Temperature
Lower temperature limit	-40 °C (-40 °F)
Upper temperature limit (dry)	60 °C (140 °F)
Upper temperature limit (wet)	50 °C (122 °F)

#### Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 392°F (200°C).

### IMPACT RESISTANCE

When tested to ASTM D256 the Izod impact strength (un-notched) is typically:

1.0 ft.lb./in. (51 J/m).

### THERMAL EXPANSION

Tested to ASTM E228 the coefficient of thermal expansion is typically 68 ppm/°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

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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 1121** 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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