

PRODUCT SPECIFICATION SHEET

BELZONA 1221

FN10020



GENERAL INFORMATION

Product Description:

A two component system consisting of a base and solidifier is packaged in sealed sachets. The product is based on a silicon steel alloy blended within high molecular weight polymers and oligomers.

Application Areas:

Developed for high speed emergency repairs it is ideally suited for application to:

- Leaking pipes
- Stripped threads
- Bearing seats
- Leaking tanks
- Plastic/metal joints
- Ducts
- Scored hydraulic rams
- Holed casings
- Broken insulators

APPLICATION INFORMATION

Working Life

Will vary according to temperature. At 77°F (25°C) use all mixed material within 3 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

33.5 cu.in (550 cm³)/kg.
4.19 cu.in (68.75cm³)/125g unit.

Base Component

Appearance	Paste
Colour	Dark grey
Gel strength at 77°F (25°C)	100 - 300 g/cm
Density	2.20 - 2.40 g/cm ³

Solidifier Component

Appearance	Paste
Colour	White
Gel strength at 77°F (25°C)	50 - 150 g/cm
Density	1.10 - 1.30 g/cm ³

Mixed Properties

Mixing Ratio by Weight (Base : Solidifier)	2 : 1
Mixing Ratio by Volume (Base : Solidifier)	1 : 1
Mixed Density	1.70 - 1.90g/cm ³
VOC content (ASTM D2369 / EPA ref. 24)	0.04% / 0.77 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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ADHESION

Tensile Shear- Metals

The tensile shear adhesion to a grit blasted substrate with a 3 mil. (75 micron) profile, when tested to ASTM D1002 after 7 days cure at 77°F (25°C), is typically :

Mild steel	2500 psi (17.2 MPa)
Copper	1800 psi (12.4 MPa)
Aluminum	1500 psi (10.3 MPa)

Tensile Shear- Plastics

The tensile shear adhesion to a roughing brush prepared substrate, when tested to ASTM D1002 after 7 days cure at 77°F (25°C), is typically :

Polyethylene	815 psi (5.6 MPa)
Polypropylene	665 psi (4.6 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: 1500 psi (10.3 MPa)

CHEMICAL ANALYSIS

The mixed **Belzona 1221** has been independently analysed for halogens, heavy metals, and other corrosion-causing impurities, with the following typical results:

Analyte	Total Concentration (ppm)
Fluoride	54
Chloride	150
Bromide	ND (<11)
Sulphur	191
Nitrite	2
Nitrate	8
Zinc	3.8
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 good resistance to a broad range of commonly found chemicals

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

COMPRESSIVE PROPERTIES

Compressive Strength

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

	Compressive Strength	Proportional Limit	Youngs Modulus
24 hours	51.0 MPa	42.2 MPa	1,082.0 MPa
68°F/20°C cure & test	7,403 psi	6,126 psi	1.57 x 10 ⁵ psi
68°F/20°C cure & test	59.0 MPa	49.3 MPa	1,187.8 MPa
68°F/20°C cure & test	8,559 psi	7,145 psi	1.72 x 10 ⁵ psi

CORROSION PROTECTION

Corrosion Resistance

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

ELECTRICAL PROPERTIES

Dielectric Strength	218 volts/mil (8720 volts/mm)
Dielectric Constant	
at 1000HZ	4
at 1 MHZ	4
Dissipation Factor	
at 1000 HZ	< 0.0005
at 1 MHZ	< 0.0005
Volume Resistivity	6.3 x 10 ¹⁵ (ohm cm)
Surface Resistivity	1.5 x 10 ¹⁵ (ohms)

ELONGATION & TENSILE PROPERTIES

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

	Cure temperature
Tensile Strength	
5,443 psi (37.53 MPa)	68°F (20°C)
5,475 psi (37.75 MPa)	212°F (100°C)
Elongation	
1.80%	68°F (20°C)
1.80%	212°F (100°C)
Young's Modulus	
4.68x10 ⁵ psi (3,226 MPa)	68°F (20°C)
4.48x10 ⁵ psi (3,092 MPa)	212°F (100°C)

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FLEXURAL PROPERTIES

Flexural Strength

When determined in accordance with ASTM D790, typical values will be: 8,600 psi (59.3 MPa)

HARDNESS

Shore D

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

Barcol

When determined in accordance with ASTM D2583, using Model 935, typical value will be: 71

HEAT RESISTANCE

Heat Distortion Temperature (HDT)

When tested in accordance with ASTM D648 (264 psi fibre stress) typical values will be:

Ambient cure 124°F (51°C)
100°C post cure 174°F (79°C)

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)	70 °C (158 °F)
Upper temperature limit (wet)	60 °C (140 °F)

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
24 hour cure & test	6.8 KJ/m ² 68.8 J/m	6.2 KJ/m ² 76.2 J/m
68°F/20°C cure & test	9.0 KJ/m ² 91.3 J/m	8.5 KJ/m ² 106.4 J/m

THERMAL EXPANSION

Tested to ASTM E228 the coefficient of thermal expansion is typically: 81.5 ppm/°C

WATER UPTAKE

When tested for 3 days at 77°F (25°C) water uptake is typically 1%.

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
U.S.D.A.
NUCLEAR POWER INDUSTRY
(DBA Tested)
NATO
G.E. NUCLEAR ENERGY
FORD

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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 1221 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 60th 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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