PRODUCT SPECIFICATION SHEET
BELZONA 1211
FN10019

GENERAL INFORMATION

Product Description:
A two component rapid curing paste grade system based on a silicon steel alloy blended with high molecular weight reactive polymers and oligomers. Developed for high speed emergency repairs, bonding and rebuilding.

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:

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

APPLICATION INFORMATION

Working Life
Will vary according to temperature. At 77°F (25°C) the usable life of mixed material is 4 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
27.5 cu.in (450 cm^3)/kg
13.75 cu.in (225 cm^3)/ 500g unit.

Base Component

Appearance	Paste
Color	Dark gray
Gel strength at 77°F (25°C)	>150 g/cm HF
Density	2.70 - 2.90 g/cm^3

Solidifier Component

Appearance	Paste
Color	Light gray
Gel strength at 77°F (25°C)	250 g/cm HF
Density	1.57 - 1.63 g/cm^3

Mixed Properties

Mixing Ratio by Weight (Base : Solidifier)	2 : 1
Mixing Ratio by Volume (Base : Solidifier)	1 : 1
Mixed Form	Paste
Peak Exotherm Temperature	185 - 212°F (85 - 100°C)
Time to Peak Exotherm	8 - 10 mins.
Slump Resistance	nil at 0.5 inch (12.5 mm)
Mixed Density	2.15 - 2.27g/cm^3

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
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)
Aluminium	1800 psi (12.4 MPa)
Copper	2250 psi (15.5 MPa)
Brass	2500 psi (17.2 MPa)
Galvanized steel	2200 psi (15.2 MPa)
Cupronickel	2500 psi (17.2 MPa)
Stainless steel	2500 psi (17.2 MPa)
Formica	>500 psi (3.4 MPa)*
Polyester/Fiberglass	>700 psi (4.8 MPa)*

** Cohesive failure within substrate*

Pull Off Adhesion
When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will be typically:
1970 psi (13.6 MPa)

CHEMICAL RESISTANCE

Once fully cured, the material will demonstrate good resistance to a broad range of commonly found chemicals including hydro-carbons, mineral oils and lubricating oils
* *For a more detailed description of chemical resistance properties, refer to relevant Chemical Resistance chart*

COMPRESSIVE PROPERTIES

Compressive Strength
The compressive strength of the material, when tested to ASTM D695 after 7 days cure at 77°F (25°C), is typically 8200 psi (56.5 MPa).

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.

FLEXURAL PROPERTIES

Flexural Strength
The flexural strength, when tested to ASTM D790 after 7 days at 77°F (25°C), is typically 8200 psi (56.5 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 value will be:
78

HEAT RESISTANCE

Heat Distortion Temperature (HDT)
The heat distortion temperature of the material, when tested to ASTM D648 (264 psi fiber stress) after 7 days cure at 77°F (25°C), is typically 109°F (43°C).

Heat Resistance
For many typical applications the product is thermally stable to 212°F (100°C) dry and 140°F (60°C) wet.

IMPACT RESISTANCE

Impact Strength
The impact strength (reverse notched) when tested to ASTM D256 is typically:
0.73 ft.lb./in., 40 J/m

SHRINKAGE

Shrinkage is typically nil when tested in accordance with DOD-C-24176A method 4.6.12.

THERMAL EXPANSION

Tested to ASTM E228 the coefficient of thermal expansion is typically 53.3 ppm/°C.

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WATER UPTAKE

When tested for 3 days at 77°F (25°C) water uptake is typically 2.2%.

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 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
CHRYSLER
FORD
RJB MINING
LEAD SHEET ASSOCIATION

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 1211 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

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

Belzona Inc.
2000 N.W. 88th Court,
Miami, Florida, USA, 33172

HEALTH AND SAFETY

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

Belzona products are manufactured under an ISO 9001 Registered Quality Management System