

World leaders in the conservation of man-made resources and the environment

1. PRODUCT NAME Belzona® 1121 (Super XL-Metal)

Engineering grade repair system with extended working life for repairing and rebuilding machinery and equipment.

2. MANUFACTURER

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

Belzona Polymerics Ltd.

Claro Road, Harrogate, HG1 4AY, England.

3. PRODUCT DESCRIPTION

A two component paste grade system based on a silicon steel alloy blended with high molecular weight reactive polymers and oligomers. For ease of application this material has an extended working life. Once cured, the repair is durable and fully machinable.

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

4. TECHNICAL DATA

Base Component	
Appearance	Paste
Color	Dark gray
Gel strength	
at 77°F (25°C)	150 - 350 g/cm HF
Density	2.60 - 2.80 g/cm ³

Solidifier ComponentAppearancePasteColorLight grayGel strengthat 77°F (25°C)100 - 250 g/cm QVDensity2.34 - 2.40 g/cm³

<u>Mixed Properties</u>	
Mixing Ratio by Weight	
(Base : Solidifier)	1.2 : 1
Mixing Ratio by Volume	
(Base : Solidifier)	1:1
Mixed Form	Paste
Peak Exotherm	
Temperature	113 - 131ºF
	(45 - 55°C)
Time to Peak Exotherm	50 - 70 mins.
Slump Resistance	nil at 0.5 inch
	(1.27 cm)
Mixed Density	2.5 - 2.64 g/cm ³

• Shelf Life:

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

• Working Life:

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

• Volume Capacity:

Each 1 kg unit will cover 23.5 cu.in. (385 cm³).

• Cure Time:

Will be reduced for thicker sections and extended for thinner applications. At a thickness of approximately 1/4 in. (6 mm), allow to solidify for the times shown in the chart below before subjecting it to the conditions indicated.

PRODUCT SPECIFICATION SHEET BELZONA[®] 1121

5. PHYSICAL / MECHANICAL PROPERTIES

Determined after 7 days cure at 77°F (25°C). Post curing the material with heat results in a more highly cross-linked polymer. For enhanced performance this material may be post-cured by heating to 212°F (100°C) for a period of up to 24 hours.

Abrasion Resistance: Taber

The Taber abrasion resistance with 1 kg load is typically: H10 Wheels (Wet) 1200 mm³ CS17 Wheels (Dry)210 mm³ loss per 1000 cycles

• Adhesion:

Cleavage

When tested to ASTM D1062 typical values will be: Mild steel 1250 lbs./in. (22.3 kgs/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 2400 psi (168 kgs/cm²) - mild steel 1700 psi (119 kgs/cm²) - aluminium 1800 psi (126 kgs/cm²) - copper

• Chemical Resistance:

Once fully cured, the material will demonstrate excellent resistance to the following chemicals;

carbonic acid 10% hydrochloric acid 10% nitric acid 10% sulfuric acid

- 20% sodium hydroxide
- lime water
- * For a more detailed description of chemical resistance properties, refer to Product Data M501.

CURE TIMES									
TEMPERATURE	41°F (5°C)	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)	86°F (30°C)			
Movement or use involving no loading or immersion Machining and/or light loading Full mechanical or thermal loading Immersion in chemicals	28 hrs 4 days 10 days 24 days	15 hrs 2 days 5 days 12 days	9 hrs 27 hrs 3 days 7 days	4¾ hrs 16 hrs 1½ days 4 days	21/2 hr 9 hrs 1 day 21⁄2 days	11/2 hr 5 hrs 16 hrs 1½ days			

• Compressive Strength:

When tested in accordance with ASTM D695, typical values obtained will be 12,500 psi (879 kgs/cm²).

• 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 D419 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^{14} ohm.

Volume Resistivity

Tested to ASTM D257 is typically 6.0×10^{15} ohm cm.

• Flexural Strength:

When tested to ASTM D790, typical values obtained will be 8,200 psi (577 kgs/cm²).

• Hardness:

The hardness of the material when tested to ASTM D2240 is typically 87 Shore D.

• Heat Resistance:

For many typical applications, the product is thermally stable to $350^{\circ}F(175^{\circ}C)$ dry and $140^{\circ}F(60^{\circ}C)$ wet.

Heat Distortion Temperature:

Tested to ASTM D648 (264 psi fiber stress), typical values obtained will be 124°F (51°C).

• Impact Strength:

Izod unnotched is typically 1.67 ft.lb./in. (90 J/m).

• Thermal Expansion:

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

• U.S.D.A. Acceptance:

The material is authorized by the United States Department of Agriculture (U.S.D.A.) for use in federally inspected meat and poultry plants.

6. SURFACE PREPARATION AND APPLICATION PROCEDURES

For proper technique, refer to the Belzona Instructions for Use leaflet which is enclosed with each packaged product.

7. 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.

8. WARRANTY

Belzona® guarantees this product will meet the performance claims stated herein when material is stored and used as instructed in the Belzona® Instructions 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, etc.). Since Belzona® has no control over the use of the product described herein, no warranty for any application can be given.

9. TECHNICAL SERVICES

Complete technical assistance is available and includes fully trained Technical Consultants, technical service personnel and fully staffed research, development and quality control laboratories.

10. HEALTH AND SAFETY

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

11. APPROVALS/ ACCEPTANCES

U.S.D.A. ABS

Belzona Polymerics Ltd., Claro Road, Harrogate, HG1 4AY, England. Tel: +44 (0) 1423 567641 Fax:+44 (0) 1423 505967 E-Mail: Belzona@belzona.co.uk

Belzona Inc., 2000 N.W. 88 Court,

2000 N.W. 88 Court, Miami, Florida 33172, U.S.A. Tel: +1 (305) 594 4994 Fax:+1 (305) 599 1140 E-Mail: Belzona@belzona.com



BS EN ISO 9002 : 1994 Certificate No. Q/09335



www.belzona.com

Copyright © 2001 by Belzona International Limited. All rights reserved. Certain portions of this work copyright © 1998 by Belzona International Limited. No part of this work covered by the copyrights hereon may be reproduced or used in any form or by any means - graphic, electronic or mechanical including photocopying, recording, taping or information storage and retrieval systems - without written permission of the publisher.

Belzona® is a registered trademark

Printed in England 09/01 UK

Private and Confidential - For Internal Use Only

Belzona® 1121 - Product Specification Sheet (2)