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

PRODUCT SPECIFICATION SHEET
BELZONA® 2111

1. PRODUCT NAME
Belzona® 2111
(D & A Hi-Build Elastomer)
A durable and abrasion resistant system for coating metal surfaces and for repairing, rebuilding and protecting rubber substrates.

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 high performance system designed for rebuilding, repairing and resurfacing elastomeric or metal components. A two component, thixotropic, non-slumping material designed for applications where significant thicknesses (in excess of 50 mils.) and durability are required.

Applications
Rubber linings.
Protection of clip joints on conveyor belts.
Repair of worn, split or torn areas on sheet rubber.
Building-up flights on conveyor belts.
Storage hoppers.
Chutes, screens and wear plates.
Pumps and impellers.

4. TECHNICAL DATA
Base Component

Appearance	Oil white viscous liquid
Density	1.06 - 1.09 g/cm^3
Viscosity	22,000 - 32,000 cps at 77°F (25°C)

Solidifier Component

Appearance	Thin black liquid
Odor	Slightly glycolic
Density	0.99 - 1.01 g/cm^3
Viscosity	200 - 400 cps at 77°F (25°C)

• *Shelf Life:*
Separate base and solidifier components will have a shelf life of at least 3 years 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 12 minutes.

• *Coverage Rate:*
Applied at a thickness of 100 mil. (2,500 microns), each 500 gram unit will cover an area of 1.95 sq.ft. (0.183 sq.m.).

• *Volume Capacity:*
The volume capacity of mixed **Belzona® 2111** is 28.5 in.^{3} (468 cm^3) per 500g unit.

• *Cure Time:*
Will be reduced for thicker sections and extended for thinner applications. At a thickness of approximately 0.10ins (2.5 mm), allow to solidify for the times shown in the chart below before subjecting it to the conditions indicated.

5. PHYSICAL / MECHANICAL PROPERTIES
Determined after 7 days cure at 77°F (25°C).

• *Abrasion Resistance:*
DIN
The abrasion resistance of the material when tested to DIN 53-516 will be typically 130 (relative volume loss).

Taber
The Taber abrasion resistance with 1 kg load is typically:
H18 Wheels (Wet)
at 70°F (21°C) 10 mm^3
at 170°F (77°C) 192 mm^3
loss per 1000 cycles

H18 Wheels (Dry)
at 70°F (21°C) 33 mm^3
at 170°F (77°C) 187 mm^3
loss per 1000 cycles

• *Adhesion:*
Typical adhesion values achieved when the material is used in conjunction with the designated surface conditions are:

Mild steel	ASTM D429 180 pli (3214 kgs/m)
Copper	ASTM D429 180 pli (3214 kgs/m)
Aluminum	ASTM D429 80 pli (1428 kgs/m)
Concrete	Elcometer Pulloff Test 900 psi (63.3 kgs/cm^2)*
GRP	ASTM D413 60 pli (1071 kgs/m)
Natural rubber	ASTM D413 14 pli (250 kgs/m)*
Polychloroprene	ASTM D413 47 pli (839 kgs/m)*
PVC	ASTM D413 18 pli (321 kgs/m)*
Styrene-butadiene	ASTM D413 80 pli (1428 kgs/m)*
Polyurethane	ASTM D413 80 pli (1428 kgs/m)*

** Cohesive failure in the substrate material*

• *Chemical Resistance:*
Once fully cured, the material will demonstrate excellent resistance to the following chemicals;
carbonic acid
15% hydrochloric acid
10% hydrofluoric acid
20% sulfuric acid
stearic acid
tartaric acid
10% ammonia solution
barium hydroxide
calcium hydroxide
lime water
magnesium hydroxide
25% potassium hydroxide
25% sodium hydroxide
grease
mercury
oil/water mixture
emulsion paint
distilled water
sea water
wax emulsion
fertilizer solution
starch
silicone oil
inorganic salts

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	6 hrs	4 hrs	3 hrs	2 hrs	1½ hrs	1 hr
Full mechanical or thermal	3 days	2 days	2 days	1 day	1 day	1 day
Immersion in chemicals	5 days	3½ days	3 days	2½ days	2 days	1½ days

** For a more detailed description of chemical resistance properties, refer to Product Data E502.*

• *Compression Set:*
When tested in accordance with BS903 Part A6 typical compression set is 4.9%.

• *Electrical Properties:*
Dielectric Strength
Tested to ASTM D149 is typically 500 volts/mil (20,000 volts/mm).

Dielectric Constant
Tested to ASTM D150 is typically 7.5 at 1 MHz

Dissipation Factor
Tested to ASTM D150 is typically 0.085 at 1 MHz

Volume Resistivity
Tested to ASTM D257 is typically 1.4×10^{12} ohm cm.

Surface Resistivity
Tested to ASTM D257 is typically 1.8×10^{11} ohm.

• *Elongation:*
Tested in accordance with ASTM D412 (Die C) is typically 550%.

• *Heat Resistance:*
For many typical applications the product is suitable for operation in the temperature range -40°F to 150°F (-40°C to 65°C).

• *Leachable Chlorides:*
The leachable chloride levels of the solidified material when tested to ASTM D512C will be less than 20 ppm.

• *Radiation Resistance:*
The material, when tested to BS 4247, Part 1, 1981, "Surface materials for use in radioactive areas" has a typical Decontamination Factor (DF) of 35 and an Ease of Decontamination (ED) classification of Fair.

This test determines the ease with which a radiation contaminated surface may be rendered free from contamination.

• *Sag Resistance:*
0.5 inch (12 mm) minimum when mixed with Base component.

• *Shore A Hardness:*
Tested in accordance with ASTM D2240 is 85.

• *Tear Strength:*
Tested in accordance with ASTM D624 is typically 350 pli.

• *Tensile Strength:*
Tested in accordance with ASTM D412 (Die C) is typically 2000 psi (141 kgs/cm^2).

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® 2111 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
ABS
GENERAL MOTORS
FORD
LAKE ONTARIO STEEL CO.

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,
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

Printed in England 5/02 UK