BELZONA 5111 Product Specification Sheet

1. PRODUCT NAME
Belzona® 5111 (Ceramic Cladding)

2. MANUFACTURER
Belzona Inc.,
2000 NW 88th Court,
Miami, Florida 33172.

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

3. PRODUCT DESCRIPTION
A two-part modified urethane, solvent based system for protecting metallic and masonry surfaces against chemical, abrasive and corrosive attack. The system produces a coating of extreme hardness, durability and chemical resistance, yet giving a highly decorative, aesthetically pleasing, non-toxic surface. The material can be applied by brush or spray.

Prior to application of **Belzona® 5111**, depending on the nature of the substrate there are two kinds of pre-treatments required:

1) On steel and other ferrous surfaces apply two coats of **Belzona® 6111** (Liquid Anode) and two coats of **Belzona® 5111**.

2) On cementitious and non-ferrous metallic surfaces apply one coat of **Belzona® 5911** (Ceramic Conditioner) and one coat of **Belzona® 5111**.

Applications
All structural steelwork
Tanks (external surfaces)
Pipes
Cooling towers
Bridges
Walls
Floors

4. TECHNICAL DATA
Belzona® 5111 Base Component

Appearance		Moderately viscous liquid
Color		White or gray
Odor		Solvent
Viscosity		4.4 - 6.4 poise at 77°F (25°C)
Density	Gray	1.37 - 1.41 g/cm³
	White	1.51 - 1.55 g/cm³
Solids by weight		68.9%
Solids by volume		49.5%

Belzona® 5111 Solidifier Component

Appearance	Clear moderately viscous liquid
Color	Pale yellow
Odor	Solvent
Viscosity	1.5 - 3.5 poise at 77°F (25°C)
Density	1.06 - 1.08 g/cm³
Solids by weight	75.0%
Solids by volume	70.8%

Mixed Components

Density	1.33 - 1.39 g/cm³
Solids by weight	70.3%
Solids by volume	55.9%

Belzona® 5911 Base Component

Appearance	Viscous free flowing liquid
Color	White
Odor	Solvent
Viscosity	Gray 6 - 9 poise White 5 - 8 poise at 77°F (25°C)
Density	1.50 - 1.53 g/cm³

Belzona® 5911 Solidifier Component

Appearance	Clear viscous liquid
Color	Water white
Odor	Solvent
Viscosity	15 - 25 poise at 77°F (25°C)
Density	1.15 - 1.17 g/cm³

Mixed Components

Density	1.46 - 1.47 g/cm³
Solids by weight	64.2%
Solids by volume	43.8%

• ***VOC Content:***
Belzona® 5111

	lbs/US gal	g/liter
Base	3.90	467
Solidifier	2.26	271
Mixed	3.40	408

Belzona® 5911

	lbs/US gal	g/liter
Base	4.61	552
Solidifier	3.21	385
Mixed	4.38	525

• ***Shelf Life:***
All base and solidifier components will have a shelf life of at least 5 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:

Belzona® 5111	8 hours
Belzona® 5911	8 hours

• ***Coverage Rate:***
The average practical coverage rate depends on roughness, porosity, profile and the nature of the substrate.

Belzona® 5911

Film thickness per coat	
Wet	5 mils (125 microns)
Dry	1½ mils (38 microns)
Aluminum	86 sq.ft. (8.0 sq.m.)/liter
New Asbestos	81 sq.ft. (7.5 sq.m.)/liter
Smooth concrete	65 sq.ft. (6.0 sq.m.)/liter
Plaster	65 sq.ft. (6.0 sq.m.)/liter
Smooth brick	65 sq.ft. (6.0 sq.m.)/liter

Belzona® 5111

Film thickness per coat	
Wet	2¾ mils (70 microns)
Dry	1½ mils (38 microns)
Steel	151 sq.ft. (14.0 sq.m.)/liter
Aluminum	151 sq.ft. (14.0 sq.m.)/liter
New Asbestos	130 sq.ft. (12.0 sq.m.)/liter
Smooth concrete	119 sq.ft. (11.0 sq.m.)/liter
Plaster	130 sq.ft. (12.0 sq.m.)/liter
Smooth brick	108 sq.ft. (10.05 sq.m.)/liter

• ***Cure Time:***
At 77°F (25°C) the mixed materials shall conform to the guidelines in the chart below.

CURE TIMES

	Belzona® 5911	**Belzona® 5111**
Touch dry	2 hours	6 hours
Hard dry for overcoating	8 hours	8 hours
Maximum overcoating	2 days	2 days
Full cure	7 days	7 days

5. PHYSICAL/MECHANICAL PROPERTIES

Determined after 7 days cure at 77°F (25°C).

• ***Abrasion Resistance:***
Elcometer
The weight of silicon carbide grit required to remove 1 micron of coating equals 7.1 grams.

Taber
Using CS17 wheels and 1 kg load is 30 mm^3 loss/1000 cycles.

• ***Accelerated Weathering Resistance:***
In accordance with BS 3900 Part F3, the system will show no discoloration, loss of gloss, blistering, flaking, rusting or other breakdowns after 3000 hours exposure in weatherometer.

• ***Adhesion:***
Cross Hatch
When tested to BS 3900 Part E6 on steel is Class "0" (100% pass).

Pull Off Adhesion
When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will be typically:
Belzona® 5911
550 psi (39 kg/cm^2) ambient cure
Belzona® 6111
1500 psi (105 kg/cm^2) ambient cure

• ***Chemical Resistance:***
Although not recommended for total immersion applications, the material has been tested as below:

When exposed to the following chemicals, the system should show no signs of breakdown after 6 months at 77°F (25°C).
5% Hydrochloric acid
10% Sulfuric acid
10% Sodium hydroxide
Xylene
Aviation Fuel
Gasoline
Ethyl acetate
Ethylene glycol

• ***Corrosion Resistance:***
The system demonstrates no rusting, blistering or flaking when exposed to 2000 hours in the salt spray cabinet operating to BS 3900 Part F4.

• ***Extensibility:***
Tested in accordance with ASTM D522 Conical Mandrel test is 34%.

• ***F.D.A. Acceptance:***
The product meets the requirements of CFR21 Part 175.300, paragraphs C,D,E, and F.

• ***Hardness:***
Pencil hardness in accordance with ASTM D3363 is 4H.
Perzos hardness with glass as standard is 72%.

• ***Impact Resistance:***
Pass 1/16 inch (1.5 mm) tested to BS 3900 Part E3.

• ***Scratch Resistance:***
2000 grams tested to BS 3900 Part E3.

6. SURFACE PREPARATION AND APPLICATION PROCEDURES

For proper techniques, refer to Belzona® Instructions For Use which is enclosed with each packaged product.

7. AVAILABILITY AND COST

Belzona® 5111 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

U.S.D.A.
Rhode Island Department of Transportation.

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BELZONA®
Repair • Protect • Improve

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