BELZONA®

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polymeric solutions for a sustainable future.

PRODUCT POCKET GUIDE

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Product Plus

Belzona is more than just a product - via Belzona Head Offices and the Global Distributor Network, Belzona offers value-added services to meet the diverse needs of our industrial market.

Contact your Belzona Distributor to learn more about Product Plus services.

PRODUCT POCKET GUIDE

This guide is a quick reference for Belzona Technical Consultants. For full information on Belzona's Product range, refer to the appropriate Product Flyer, Product Specification Sheet (PSS), Instructions for Use (IFU), Safety Data Sheet (SDS), Chemical Resistance Sheet, and/or obtain further information from the Belzona Technical Department.

The information contained in this guide is up to date at the time of printing. Contact your local Belzona representative for the latest information on Belzona's products and services.

TERMS AND DEFINITIONS

Abrasion Resistance
Measured after 1,000 cycles of Taber Testing with a 1 kg load as per ASTM D4060.

Accelerated Weathering Resistance (BS 3900 Part F3)
Exposure to artificial UV and moisture cycles to simulate long-term weathering.

Adhesion
Tensile shear is tested per ASTM D1002.
Pull-Off Adhesion is tested per ASTM D4541, ISO 4624.
Elastomer Peel Adhesion is tested per ASTM D429, ASTM D413.
90° Peel Adhesion is tested per ASTM D3330.
180° Peel Adhesion is tested per ASTM D903.

Application Temperature Range (Min/Max)
The minimum and maximum temperatures at which the product can be successfully applied and cured.

Cavitation Resistance
Tested to a modified version of ASTM G32.

Compressive Strength
Tested per ASTM D695.

Cool-To-Touch Surface (ASTM C1055)
Evaluates surface temperature to prevent burns from contact with hot surfaces; relates to thermal conductivity and surface finish.

Corrosion Resistance
Tested per ASTM B117, BS 3900.

Corrosion Under Insulation (CUI)
Tested under cyclic wet/dry and thermal insulation conditions to assess coating performance when exposed to trapped moisture.

Coverage Rate and Volume Capacity
Coverage rates are theoretical for the recommended system. Consult the Instructions for Use for specific details.

Crack Bridging
Tested in accordance with German DIB test standards.

Creep Under Load
Measured per ASTM D2990.

Dielectric Strength
Tested per ASTM D149.

Elongation and Tensile Strength
Tested per D412.

Elongation at Break
Tested per BS 2782.

Expansion Joints
Tested in accordance with a modified version of ASTM C719.

Explosive Decompression Testing
Tested to NACE TM 0185.

Fatigue Resistance
Resistance to failure under repeated loading and unloading cycles, often tested using mechanical flexing or tension tests.

Flexural Strength
Tested per ASTM D790.

Mixing Ratio (Base:Solidifier)/(Base:Solidifier:Aggregate)
The required proportion of base component to solidifier by volume or weight to ensure correct curing and performance.

Rain Erosion Testing
Rigorously tested and fully validated in accordance with DNV-RP-0573 (evaluation of erosion and delamination for leading edge protection systems of rotor blades).

Service Temperature Limit (Min/Max)
The lowest and highest temperatures at which the product maintains its performance.

Shear Strength
Tested in accordance with ASTM D732.

Shelf Life
Separate base and solidifier components shall have the specified shelf life when stored between 41°F (5°C) and 86°F (30°C) unless otherwise stated.

Shore A Hardness and Shore D Hardness
Tested per ASTM D2240.

Solar Reflectance
Tested per ASTM E903.

Surface Resistivity
Tested in accordance with ANSI/ESD S7.1/ASTM F150.

Surface Roughness
Measured using a 'Talysurf 120L' profiling system.

Tear Strength
Tested per ASTM D624 (Die C).

Thermal Conductivity
Tested in accordance with EN 12667 and ASTM C177.

UV Resistance
Tested in accordance with ISO 4892-2 (Xenon Arc).

Water Vapor Permeability
Tested per ASTM 1653, ASTM E96.

Working Life
Measured at 77°F (25°C) unless otherwise stated.

BELZONA PRODUCT GUIDE

This document uses icons to represent each product's application method. Refer to this page as a guide to identify the correct method(s) for applying the product in use.

Paint Brush 

Paint Roller 

Belzona Applicator 

Belzona Spatula 

Pouring 

Spray Gun 

Cartridge Gun 

Trowel Tool 

Squeegee 

1000 SERIES
METALLIC POLYMERS

2000 SERIES
ELASTOMERIC POLYMERS

3000 SERIES
POLYMERIC MEMBRANES

4000 SERIES
MAGMA POLYMERS

5000 SERIES
ENVIRONMENTAL POLYMERS

OTHER PRODUCTS

SERIES 1100

MACHINABLE REBUILDING METALS

High-performance, paste-grade, and machinable polymers for the repair and protection of metallic and non-metallic components of industrial equipment.

APPLICATIONS INCLUDE

- Shafts
- Hydraulic rams
- Bearing housings
- Keyways
- Engine blocks
- Casings
- Pumps
- Heat exchangers
- Tube sheets
- Centrifugal/turbine pumps
- Butterfly or gate valves
- Propellers
- Pipes
- Tanks
- Flange faces
- Sleeves
- Slideways
- Bushings
- Low-friction surfaces
- Kort nozzles
- Bow thrusters
- Division bars
- Stripped threads
- Bearing seats
- Insulators
- Ducts
- Underwater structures
- Water box ends
- Damp or oily substrates
- Plus many others

BELZONA 1111

SUPER METAL

Engineering-Grade Repair System

A solvent-free epoxy resin composite for repairing and resurfacing metal—reinforced with silicon steel alloy. This repair material will not corrode and resists a wide range of chemicals. It is easy to mix and apply without the need of specialist tools and can be machined using conventional tools.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
5 : 1 by weight

Volume Capacity
24.4 in³ (400 cm³) / 1 kg

Working Life
15 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
12,800 psi (88.2 MPa) at 72°F (22°C)

Service Temperature Limit
140°F (60°C) wet
176°F (80°C) dry

Abrasion Resistance
H10 - 616 mm³ wet
CS17 - 25 mm³ dry

Adhesion (Tensile Shear)
Mild steel: 3,170 psi (21.8 MPa)
Stainless steel: 2,340 psi (16.1 MPa)

Approvals

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	3 hrs	2.25 hrs	1.75 hrs	1 hr
Machining and/or light loading	4 hrs	3 hrs	2 hrs	1.5 hrs
Full mechanical or thermal loading	2 days	1.5 days	24 hrs	20 hrs
Immersion in chemicals	4 days	3 days	2 days	1.5 days

BELZONA 1111

SUPER METAL

Engineering-Grade Repair System

A solvent-free epoxy resin composite for repairing and resurfacing metal—reinforced with silicon steel alloy. This repair material will not corrode and resists a wide range of chemicals. It is easy to mix and apply without the need of specialist tools and can be machined using conventional tools.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
5 : 1 by weight

Volume Capacity
398 cm^3 (24.3 in^3) / 1 kg

Working Life
15 minutes at 25°C (77°F)

Shelf Life
5 years

Compressive Strength
84.4 MPa (12,238 psi) at 20°C (68°F)

Service Temperature Limit
60°C (140°F) wet
80°C (176°F) dry

Abrasion Resistance
H10 - 852 mm^3 wet
CS17 - 24 mm^3 dry

Adhesion (Tensile Shear)
Mild steel: 19.2 MPa (2,790 psi)
Stainless steel: 20.4 MPa (2,960 psi)

Approvals

WRAS APPROVED MATERIAL

CURE TIMES				
Temperature	**10°C (50°F)**	**15°C (59°F)**	**20°C (68°F)**	**25°C (77°F)**
No loading or immersion	3 hrs	2.25 hrs	1.75 hrs	1 hr
Machining and/or light loading	4 hrs	3 hrs	2 hrs	1.5 hrs
Full mechanical or thermal loading	2 days	1.5 days	24 hrs	20 hrs
Immersion in chemicals	4 days	3 days	2 days	1.5 days

BELZONA 1121

SUPER XL-METAL

Engineering-Grade Repair System

A solvent-free epoxy resin composite for repairing and resurfacing metal surfaces— reinforced with silicon steel alloy. This repair material has been developed to offer an extended working life and is ideal for large applications where greater volumes of material are required or to provide adequate working time at higher temperatures.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
1.2 : 1 by weight

Volume Capacity
23 in^3 (374 cm^3) / 1 kg

Working Life
35 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
9,000 psi (62.0 MPa) at 72°F (22°C)

Service Temperature Limit
122°F (50°C) wet
140°F (60°C) dry

Abrasion Resistance
H10 - 1,345 mm^3 wet
CS17 - 66 mm^3 dry

Adhesion (Tensile Shear)
Copper: 2,600 psi (17.9 MPa)
Aluminum: 2,500 psi (17.2 MPa)
Carbon steel: 3,500 psi (24.1 MPa)

Approvals

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	15 hrs	9 hrs	4.75 hrs	2.5 hrs
Machining and/or light loading	2 days	27 hrs	16 hrs	9 hrs
Full mechanical or thermal loading	5 days	3 days	1.5 days	24 hrs
Immersion in chemicals	12 days	7 days	4 days	2.5 days

BELZONA 1121

SUPER XL-METAL

Engineering-Grade Repair System

A solvent-free epoxy resin composite for repairing and resurfacing metal surfaces— reinforced with silicon steel alloy. This repair material has been developed to offer an extended working life and is ideal for large applications where greater volumes of material are required or to provide adequate working time at higher temperatures.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
1.2 : 1 by weight

Volume Capacity
385 cm^3 (23.5 in^3) / 1 kg

Working Life
35 minutes at 25°C (77°F)

Shelf Life
5 years

Compressive Strength
66.1 MPa (9,593 psi) at 20°C (68°F) cure

Service Temperature Limit
50°C (122°F) wet
60°C (140°F) dry

Abrasion Resistance
H10 - 1,660 mm^3 wet
CS17 - 55 mm^3 dry

Adhesion (Tensile Shear)
Mild steel: 22.8 MPa (3,300 psi)
Aluminum: 13.1 MPa (1,900 psi)

Approvals

CURE TIMES				
Temperature	**10°C (50°F)**	**15°C (59°F)**	**20°C (68°F)**	**25°C (77°F)**
No loading or immersion	15 hrs	9 hrs	4.75 hrs	2.5 hrs
Machining and/or light loading	2 days	27 hrs	16 hrs	9 hrs
Full mechanical or thermal loading	5 days	3 days	1.5 days	24 hrs
Immersion in chemicals	12 days	7 days	4 days	2.5 days

BELZONA 1131

BEARING METAL

Self-Lubricated Metal Repair Compound

An epoxy metal repair composite with self-lubricating properties. This solvent-free repair composite has a unique micro-porous structure which allows it to trap and hold lubricating oil, minimizing friction at start-up, and it also reduces risk of seizure in the event of lubrication starvation.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 3 : 1 by volume 4 : 1 by weight	**Volume Capacity** 34.2 in^3 (561 cm^3) / 1 kg
Working Life 15 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 11,987 psi (82.7 MPa) at 68°F (20°C) cure	**Service Temperature Limit** 140°F (60°C) wet 167°F (75°C) dry
Abrasion Resistance H10 - 1,022 mm^3 wet CS17 - 61 mm^3 dry	**Adhesion (Tensile Shear)** *Mild steel:* 3,020 psi (20.8 MPa)

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	3 hrs	2.25 hrs	1.75 hrs	1 hr
Machining and/or light loading	4 hrs	3 hrs	2 hrs	1.5 hrs
Full mechanical or thermal loading	2 days	1.5 days	24 hrs	20 hrs

BELZONA 1151

SMOOTHING METAL

Repair System Designed for Rebuilding

An epoxy-based repair composite for rebuilding shallow pitting in metals damaged by erosion and corrosion. This solvent-free material is specifically formulated to easily fill in areas of metal loss up to 0.2in (6 mm) deep, quickly restoring large areas and avoiding hot work and plate welding.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 4 : 1 by volume 10.8 : 1 by weight	**Volume Capacity** 24.95 in^3 (409 cm^3) / 1 kg 74.9 in^3 (1,227 cm^3) / 3 kg
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 10,353 psi (71.4 MPa) at 68°F (20°C) cure	**Service Temperature Limit** 140°F (60°C) wet 167°F (75°C) dry
Abrasion Resistance H10 - 802 mm^3 wet CS17 - 27 mm^3 dry	**Adhesion (Tensile Shear)** *Mild steel:* 2,800 psi (19.3 MPa)

CURE TIMES

Temperature	**41°F (5°C)**	**59°F (15°C)**	**77°F (25°C)**
Overcoating	5 hrs	3.5 hrs	2.5 hrs
Machining and/or light loading	18 hrs	9 hrs	4.5 hrs
Full mechanical or thermal loading	7 days	2 days	24 hrs

BELZONA 1161

SUPER UW-METAL

Surface-Tolerant Repair System

A composite material for repairing and resurfacing metal. It is based on a 100% solids, surface tolerant epoxy resin reinforced with silicon steel alloy. This composite material is specifically designed for application to wet and oil contaminated surfaces, as well as for underwater applications.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2 : 1 by volume
4 : 1 by weight

Volume Capacity
26.1 in^3 (428 cm^3) / 1 kg

Working Life
16 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
14,513 psi (100.1 MPa) at 68°F (20°C) cure

Adhesion (Tensile Shear)
Grit blasted (SSPC-SP10):
3,007 psi (20.7 MPa) clean and dry
2,735 psi (18.9 MPa) oily
2,284 psi (15.8 MPa) wet
1,982 psi (13.7 MPa) underwater

Ground (SSPC-SP11):
2,130 psi (14.7 MPa) clean and dry
2,256 psi (15.6 MPa) oily
1,869 psi (12.9 MPa) wet
1,574 psi (10.9 MPa) underwater

Service Temperature Limit
122°F (50°C) wet
131°F (55°C) dry

Abrasion Resistance
H10 - 712 mm^3 wet
CS17 - 43 mm^3 dry

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
Machining and/or light loading	4 hrs	3 hrs	2 hrs	1.5 hrs
Full mechanical or thermal loading	2 days	1.5 days	24 hrs	20 hrs

SERIES 1200

EMERGENCY METALS

High-performance paste-grade materials for emergency in-situ repairs.

APPLICATIONS INCLUDE

- Shafts
- Hydraulic rams
- Bearing housings
- Keyways
- Engine blocks
- Casings
- Pumps
- Heat exchangers
- Tube sheets
- Butterfly valves
- Propellers
- Pipes
- Tanks
- Flange faces
- Sleeves
- Bushings
- Kort nozzles
- Bow thrusters
- Division bars
- Stripped threads
- Bearing seats
- Insulators
- Plastic or metal joints
- Metalwork under insulation
- Ducts
- Underwater structures
- Water box ends
- Damp or oily substrates
- Plus many others

BELZONA 1212

Rapid Solidifying Surface-Tolerant Repair System

A surface-tolerant epoxy composite engineered specifically for in-situ applications to wet, oil contaminated, and underwater surfaces. This multipurpose 100% solids material exhibits rapid cure and excellent adhesion to manually prepared substrates, where grit blasting cannot be achieved.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
5 : 6 by weight

Volume Capacity
12.9 in^3 (212 cm^3) / 450 g

Working Life
9 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
12,869 psi (88.7 MPa) cure at 68°F (20°C)

Adhesion (Tensile Shear)
Grit blasted (SSPC-SP10):
2,615 psi (18.0 MPa) clean and dry
2,920 psi (20.1 MPa) oily
2,170 psi (15.0 MPa) wet
2,000 psi (13.8 MPa) underwater

Ground (SSPC-SP11):
2,575 psi (17.8 MPa) clean and dry
2,615 psi (18.0 MPa) oily
1,970 psi (13.6 MPa) wet
1,915 psi (13.2 MPa) underwater

Service Temperature Limit
122°F (50°C) wet
131°F (55°C) dry

Abrasion Resistance
H10 - 1,061 mm^3 wet
CS17 - 54 mm^3 dry

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Machinable	2 hrs	40 mins	30 mins	20 mins
Light loading	4 hrs	90 mins	60 mins	30 mins
Full loading	12 hrs	8 hrs	5 hrs	2.5 hrs

BELZONA 1221

SUPER E-METAL

Rapid Solidifying Repair System

A composite material for metal repair based on a silicone steel reinforced polymer system. Due to its fast curing characteristics, this material is ideal for emergency repair situations. It can be machined using conventional tools and provides a permanent metal bonding or rebuilding solution.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
2 : 1 by weight

Volume Capacity
33.5 in^3 (550 cm^3) / 1 kg

Working Life
3 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
8,559 psi (59.0 MPa)

Service Temperature Limit
140°F (60°C) wet
158°F (70°C) dry

Dielectric Strength
218 volts/mil (8,720 volts/mm)

Adhesion (Tensile Shear)
Mild steel: 2,500 psi (17.2 MPa)
Copper: 1,800 psi (12.4 MPa)
Aluminum: 1,500 psi (10.3 MPa)
Polyethylene: 815 psi (5.6 MPa)
Polypropylene: 665 psi (4.6 MPa)

Approvals

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	16 mins	15 mins	14 mins	13 mins
Machining and/or light loading	50 mins	45 mins	40 mins	35 mins
Full mechanical or thermal loading	100 mins	90 mins	75 mins	60 mins
Immersion in chemicals	36 hrs	30 hrs	24 hrs	20 hrs

BELZONA 1251

HA-METAL

Heat-Activated Engineering-Grade System

A durable metal repair composite designed to repair and protect metal surfaces suffering from corrosion under insulation (CUI). This heat-activated material can be applied directly onto hot surfaces (158-302°F / 70-150°C) with minimal surface preparation, avoiding production downtime.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) Single Component	**Volume Capacity** 24.5 in^3 (401 cm^3) / 1 kg
Working Life Unlimited - cure will not commence until product is heated	**Shelf Life** 2 years
Compressive Strength 14,515 psi (100.1 MPa) at 158°F (70°C) cure	**Service Temperature Limit** 194°F (90°C) wet 221°F (105°C) dry
Adhesion (Tensile Shear) *Clean ground steel:* 2,475 psi (17.1 MPa) at 212°F (100°C) *Rusty steel (prepared to ISO 8501-1 St 2):* 1,200 psi (8.3 MPa) at 212°F (100°C)	

CURE TIMES

Temperature	**158°F (70°C)**	**185°F (85°C)**	**212°F (100°C)**	**239°F (115°C)**
Light loading	75 mins	25 mins	15 mins	15 mins
Full mechanical or thermal loading	5 hrs	2 hrs	60 mins	60 mins
Optimum heat resistance	7 days	5 days	3 days	24 hrs

SERIES 1300

EROSION-CORROSION METALS

High-performance epoxy materials for rebuilding and coating industrial equipment subject to erosion and corrosion.

APPLICATIONS INCLUDE

- Engine blocks
- Casings
- Pumps
- Chutes
- Hoppers
- Heat exchangers
- Tube sheets
- Centrifugal
- Girth welds
- Butterfly valves
- Gate valves
- Propellers
- Pipes
- Pipe elbows
- Process vessels
- Tanks
- Separators
- Flange faces
- Sleeves
- Bushings
- Kort nozzles
- Bow thrusters
- T-pieces
- Division bars
- Bearing seats
- Ducts
- Water box ends
- Evaporators
- Clarifiers
- Scrubber units
- Distillation units
- Autoclaves
- Plus many others

BELZONA 1311

CERAMIC R-METAL

Designed for Rebuilding Eroded/Corroded Metals

An epoxy-based repair composite designed for metal repair and protection against the effects of erosion and corrosion. This 100% solids repair composite has excellent chemical resistance and will bond to all metals and most other rigid surfaces.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
5 : 1 by weight

Volume Capacity
25.3 in^3 (415 cm^3) / 1 kg
50.6 in^3 (830 cm^3) / 2 kg

Working Life
15 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
12,627 psi (87.1 MPa) at 68°F (20°C)

Service Temperature Limit
140°F (60°C) wet
176°F (80°C) dry

Abrasion Resistance
H10 - 194 mm^3 wet
CS17 - 25 mm^3 dry

Adhesion (Tensile Shear)
Mild steel: 3,000 psi (20.7 MPa)
Stainless steel: 2,760 psi (19.0 MPa)

Approvals

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	3 hrs	2.5 hrs	1.75 hrs	1 hr
Machining and/or light loading	4 hrs	3 hrs	2 hrs	1.5 hrs
Full mechanical or thermal loading	2 days	1.5 days	24 hrs	20 hrs
Immersion in chemicals	4 days	3 days	2 days	36 hrs

BELZONA 1321

CERAMIC S-METAL

Erosion- and Corrosion-Resistant Coating

A ceramic-filled epoxy coating designed to provide erosion and corrosion resistance to metal surfaces. This 100% solids epoxy coating has outstanding chemical resistance and will bond to almost any rigid surface. Due to its high compressive strength, it can also be used to create a perfect shim.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
4 : 1 by volume
11 : 1 by weight

Coverage Rate
7.6 ft² (0.71 m²) / kg at 24 mils (600 microns)

Working Life
30 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
13,127 psi (90.5 MPa)

Maximum Immersion Resistance
140°F (60°C)

Abrasion Resistance
H10 - 178 mm³ wet
CS17 - 14 mm³ dry

Adhesion (Tensile Shear)
Mild steel: 2,710 psi (18.68 MPa)
Stainless steel: 3,180 psi (21.92 MPa)

Adhesion (Pull-Off)
Grit blasted mild steel:
6,330 psi (43.64 MPa) at 68°F (20°C)
6,290 psi (43.37 MPa) at 212°F (100°C)

Approvals

WRAS APPROVED MATERIAL

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	8 hrs	5.5 hrs	4 hrs	3.5 hrs
Machining and/or light loading	12 hrs	9 hrs	6 hrs	4.5 hrs
Full mechanical or thermal loading	3 days	2 days	36 hrs	24 hrs
Immersion in chemicals	5 days	3 days	2 days	36 hrs

BELZONA 1331

Erosion- and Corrosion-Resistant Coating

An epoxy coating for erosion and corrosion protection to equipment operating under continuous immersion up to 122°F (50°C). Belzona 1331 is ideally suited to be used as an epoxy pipe lining for the protection of girth welds on internal field joints.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2 : 1 by volume
2.2 : 1 by weight

Coverage Rate
21.5 ft² (2 m²) / L or 18.8 ft² (1.75 m²) / kg at 20 mils (500 microns)

Working Life
40 minutes at 77°F (25°C)

Shelf Life
3 years

Compressive Strength
13,949 psi (96.2 MPa)

Maximum Immersion Resistance
122°F (50°C)

Abrasion Resistance
H10 - 46 mm³ wet
CS17 - 13 mm³ dry

Adhesion (Pull-Off)
Grit blasted mild steel:
4,900 psi (33.8 MPa) at 68°F (20°C)

Approvals

WRAS APPROVED MATERIAL

Fusion bonded epoxy:
3,200 psi (22.1 MPa) at 68°F (20°C)

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	24 hrs	12 hrs	8 hrs	7 hrs
Light loading	48 hrs	24 hrs	16 hrs	14 hrs
Full mechanical or thermal loading	14 days	7 days	3 days	2.5 days
Chemical contact	21 days	10 days	7 days	6 days

BELZONA 1341

SUPERMETALGLIDE

Erosion/Corrosion Protection and Fluid Efficiency

A coating designed to improve efficiency of pumps, pipes, valves, and other fluid-handling equipment while protecting them from the effects of erosion and corrosion. Belzona 1341 improves efficiency by using hydrophobic technology to repel process fluids and reduce turbulent flow.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
10 : 7 by weight

Coverage Rate
18.9 ft² (1.76 m²) / 1 kg at 16 mils (400 microns)

Working Life
40 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
12,366 psi (85.3 MPa) at 68°F (20°C)

Maximum Immersion Resistance
140°F (60°C)

Abrasion Resistance
H10 - 76 mm³ wet

Adhesion (Pull-Off)
Grit blasted mild steel:
>4,500 psi (31.0 MPa) at 68°F (20°C) / 7-day cure

Approvals

WRAS APPROVED MATERIAL

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	24 hrs	12 hrs	8 hrs	7 hrs
Machining and/or light loading	48 hrs	24 hrs	16 hrs	14 hrs
Full mechanical or thermal loading	14 days	7 days	3 days	2.5 days
Chemical contact	21 days	10 days	7 days	6 days

BELZONA 1341N

SUPERMETALGLIDE

Erosion/Corrosion Protection and Fluid Efficiency

A coating designed to improve efficiency of pumps, pipes, valves, and other fluid-handling equipment while protecting them from the effects of erosion and corrosion. Belzona 1341N improves efficiency by using hydrophobic technology to repel process fluids and reduce turbulent flow.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 2 by volume
2 : 1 by weight

Coverage Rate
18.9 ft² (1.76 m²) / kg at 16 mils (400 microns)

Working Life
25 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
7,705 psi (53.1 MPa) at 68°F (20°C)

Maximum Immersion Resistance
140°F (60°C)

Adhesion (Pull-Off)
Grit blasted mild steel:
4,030 psi (27.8 MPa)

Abrasion Resistance
H10 - 52 mm³ wet
CS17 - 6 mm³ dry

Approvals

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	24 hrs	12 hrs	8 hrs	7 hrs
Machining and/or light loading	48 hrs	24 hrs	16 hrs	14 hrs
Full mechanical or thermal loading	14 days	7 days	3 days	2.5 days
Chemical contact	21 days	10 days	7 days	6 days

BELZONA 1381

Erosion- and Corrosion-Resistant Coating

A spray- or brush-applied high-temperature epoxy coating for erosion and corrosion protection to equipment operating under continuous immersion up to 203°F (95°C). Belzona 1381 is ideally suited to be used as an epoxy pipe lining for protection of girth welds on internal field joints.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
5 : 2 by volume
5 : 2 by weight

Coverage Rate
21.5 ft² (2 m²) / L at 20 mils (500 microns)

Working Life
40 minutes at 77°F (25°C)

Shelf Life
3 years

Compressive Strength
5,518 psi (38.0 MPa)

Maximum Immersion Resistance
203°F (95°C)

Adhesion (Pull-Off)
Grit blasted mild steel:
4,000 psi (27.6 MPa) at 68°F (20°C)
4,550 psi (31.4 MPa) at 212°F (100°C) post cure
Fusion bonded epoxy:
3,000 psi (20.7 MPa) at 68°F (20°C) / 7-day cure

Abrasion Resistance
H10 - 46 mm³ wet
CS17 - 9 mm³ dry

Steam Out Resistance
No blistering, cracking or delamination after 96 hours exposure to pressurized steam at 338°F (170°C)

Explosive Decompression Testing (NACE TM0185)
No breakdown after 28 days immersion at 183°F (84°C) and 40 bar followed by decompression over 10 mintues

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until full-service	96 hrs	48 hrs	20 hrs	14 hrs
Dry post cure	32 hrs	10 hrs	8 hrs	4 hrs
Wet post cure	60 hrs	24 hrs	14 hrs	8 hrs

BELZONA 1391S

Spray-Applied Coating System

An epoxy coating designed to provide corrosion resistance to high-temperature equipment operating under continuous immersion up to 230°F (110°C). This 100% solids coating provides excellent resistance to a wide range of aqueous solutions, hydrocarbons, and process chemicals.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
4 : 1 by volume
7.5 : 1 by weight

Coverage Rate
21.5 ft² (2 m²) / L at 20 mils (500 microns)

Working Life
45 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
11,058 psi (76.2 MPa) at 68°F (20°C)

Maximum Immersion Resistance
230°F (110°C)

Adhesion (Pull-Off)
5,070 psi (34.96 MPa) at 68°F (20°C)
3,520 psi (24.27 MPa) at 212°F (100°C)

Abrasion Resistance
H10 - 940 mm³ wet
CS17 - 24 mm³ dry

Steam Out Resistance
No blistering, cracking or delamination after 96 hours exposure to pressurized steam at 410°F (210°C)

Explosive Decompression Testing (NACE TM0185)
Yes, see PSS for futher details

Approvals FDA

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	32 hrs	10 hrs	8 hrs	4 hrs
Time until full-service	96 hrs	48 hrs	20 hrs	14 hrs
Time until dry post cure	32 hrs	10 hrs	8 hrs	4 hrs
Time until wet post cure	60 hrs	24 hrs	14 hrs	8 hrs

BELZONA 1391T

Hand Applied Coating System

A 100% solids ceramic-filled epoxy coating which provides erosion and corrosion resistance to high-temperature equipment operating under immersion up to 266°F (130°C). It offers excellent resistance to a wide range of aqueous solutions, hydrocarbons, and process chemicals.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
4 : 1 by volume
8.5 : 1 by weight

Coverage Rate
21.5 ft² (2 m²) / L at 20 mils (500 microns)

Working Life
45 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
13,287 psi (91.6 MPa) at 68°F (20°C)

Maximum Immersion Resistance
266°F (130°C)

Adhesion (Pull-Off)
3,770 psi (25.99 MPa) at 68°F (20°C)
4,260 psi (29.51 MPa) at 212°F (100°C)

Abrasion Resistance
H10 - 320 mm³ wet
CS17 - 31mm³ dry

Steam Out Resistance
No blistering, cracking or delamination after 96 hours exposure to pressurized steam at 410°F (210°C)

Explosive Decompression Testing (NACE TM0185)
Yes, see PSS for futher details

Approvals FDA

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	72 hrs	24 hrs	12 hrs	5 hrs
Time until full-service	post cure required	28 days	10 days	24 hrs
Time until dry post cure	72 hrs	24 hrs	12 hrs	5 hrs
Time until wet post cure	28 days	7 days	48 hrs	12 hrs

BELZONA 1392

CERAMIC HT2

For High-Temperature Equipment Handling

A high-temperature epoxy coating formulated to provide metal surfaces with erosion and corrosion protection in combination with excellent chemical resistance. Belzona 1392 will resist water, aqueous solutions, and hydrocarbons in acid-contaminated water and hydrocarbons up to temperatures of 248°F (120°C) in continuous immersion.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
20 : 1 by weight

Coverage Rate
7.9 ft² (0.73 m²) / 1 kg at 24 mils (600 microns)

Working Life
35 minutes at 68°F (20°C)

Shelf Life
2 years

Compressive Strength
12,217 psi (84.2 MPa) at 68°F (20°C)

Maximum Immersion Resistance
248°F (120°C)

Adhesion (Pull-Off)
2,720 psi (18.75 MPa) at 68°F (20°C)
3,690 psi (25.44 MPa) at 212°F (100°C)

Abrasion Resistance
H10 - 145 mm³ wet

Explosive Decompression Testing (NACE TM0185)
No breakdown after 21-day immersion period at 212°F (100°C) and 100 bar pressure, followed by decompression over 15 minutes

CURE TIMES

Temperature	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	12 hrs	5 hrs	3 hrs
Time until full-service	96 hrs	18 hrs	10 hrs
Time until dry post cure	12 hrs	5 hrs	3 hrs
Time until wet post cure	28 hrs	8 hrs	5 hrs

SERIES 1500

HIGH-TEMPERATURE METALS

High-performance epoxy materials for rebuilding and coating industrial equipment subject to corrosion at elevated temperatures.

APPLICATIONS INCLUDE

- Absorbers
- Boilers
- Condensers
- Deaerators
- Knock-out drums
- Pipework
- Piping
- Tanks
- Regenerators
- Separators
- Heat exchangers
- Evaporators
- Clarifiers
- Scrubber units
- Distillation units
- Slug catchers
- Autoclaves
- Plus many others

BELZONA 1511

SUPER HT-METAL

For Rebuilding Metals Damaged by Erosion and Corrosion

A composite designed for repairing metal and rebuilding equipment while providing excellent corrosion protection. Under immersion, Belzona 1511 is suitable for applications up to 320°F (160°C).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
5 : 1 by weight

Volume Capacity
23.4 in³ (383 cm³) / 1 kg

Working Life
60 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
10,381 psi (71.6 MPa) at 68°F (20°C)
17,550 psi (121.0 MPa) at 212°F (100°C)

Service Temperature Limit
320°F (160°C) wet
338°F (170°C) dry

Adhesion (Tensile Shear)
Mild steel:
3,060 psi (21.1 MPa) at 68°F (20°C)
2,780 psi (19.2 MPa) at 212°F (100°C)

Abrasion Resistance
H10 - 591 mm³ wet
CS17 - 12.8 mm³ dry

Approvals

WRAS APPROVED MATERIAL

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Light loading	72 hrs	18 hrs	5 hrs	4 hrs
Full mechanical or thermal loading	post cure required	30 hrs	24 hrs	6 hrs
Immersion in chemicals	post cure required	post cure required	60 hrs	8 hrs

BELZONA 1523

Spray-Applied System for High-Temperature Equipment

An epoxy coating designed to provide long-term corrosion and chemical resistance to equipment operating in continuous immersion at temperatures up to 284°F (140°C). This 100% solids coating reduces downtime and ensures equipment rapidly returns to service.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
8 : 1 by weight
4.5 : 1 volume

Coverage Rate
21.5 ft² (2 m²) / L at 20 mils (500 microns)

Working Life
45 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
11,258 psi (77.6 MPa) at 68°F (20°C)

Maximum Immersion Resistance
284°F (140°C)

Adhesion (Pull-Off)
4,450 psi (30.7 MPa) at 68°F (20°C)
3,780 psi (26.1 MPa) at 212°F (100°C)
3,360 psi (23.2 MPa) at 284°F (140°C)

Steam Out Resistance
No blistering, cracking or delamination after 96 hours exposure to pressurized steam at 482°F (250°C)

Explosive Decompression Testing (NACE TM0185)
No breakdown after 21-day immersion period at 248°F (120°C) and 70 bar pressure, followed by decompression over 15 minutes

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	45 hrs	11 hrs	7 hrs	4 hrs
Time until full-service	7 days	25 hrs	14 hrs	9 hrs
Time until dry post cure	45 hrs	11 hrs	7 hrs	4 hrs
Time until wet post cure	85 hrs	18 hrs	10 hrs	6 hrs

BELZONA 1593

High-Temperature Coating System

An epoxy coating designed to provide long-term corrosion and chemical resistance to equipment operating in continuous immersion at temperatures up to 320°F (160°C). This coating reduces downtime and ensures equipment rapidly returns to service.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
11 : 1 by weight
5.6 : 1 by volume

Coverage Rate
11.84 ft² (1.10 m²) / 1 kg at 20 mils (500 microns)

Working Life
45 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
11,638 psi (80.2 MPa) at 68°F (20°C)
24,976 psi (172.2 MPa) at 320°F (160°C)

Maximum Immersion Resistance
320°F (160°C)

Adhesion (Pull-Off)
4,350 psi (30.0 MPa) at 68°F (20°C)
3,430 psi (23.7 MPa) at 212°F (100°C)
2,770 psi (19.1 MPa) at 284°F (140°C)
2,290 psi (15.8 MPa) at 320°F (160°C)

Steam Out Resistance
No blistering, cracking or delamination after 96 hours exposure to pressurized steam at 482°F (250°C)

Explosive Decompression Testing (NACE TM0185)
Yes, see PSS for further details

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	42 hrs	20 hrs	8 hrs	4 hrs
Time until full-service	10 days	72 hrs	30 hrs	9 hrs
Time until dry post cure	42 hrs	20 hrs	8 hrs	4 hrs
Time until wet post cure	4 days	40 hrs	14 hrs	7 hrs

SERIES 1800

ABRASION-RESISTANT METALS

High-performance abrasion-resistant materials for protecting industrial equipment from extreme wear operating conditions.

APPLICATIONS INCLUDE

- Pipes
- Chutes
- Hoppers
- Screens
- Slurry pumps
- Grinding hills
- Hydrocyclones
- Wear plates
- Centrifuges
- Mixing bowls
- Pulverizers
- Conveyors
- Drive rollers
- Feed rollers
- Brake test rollers
- Cyclones
- Tank tops
- Vechile step-ups
- Fork lift grab arms
- Fire escape
- Loading ramps
- Walkways
- Plus many others

BELZONA 1811

CERAMIC CARBIDE

For Repairing and Protecting Against Abrasive Attack

An epoxy-based composite material incorporating abrasion-resistant ceramic aggregates for the repair and protection of metal surfaces suffering from sliding abrasion. Belzona 1811 resists wear and provides long-term abrasion resistance.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 4 : 1 by volume 8.5 : 1 by weight	**Coverage Rate** 0.82 ft^2 (0.077 m^2) / 1 kg at 0.25 in (6 mm)
Working Life 60 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 10,461 psi (72.1 MPa)	**Service Temperature Limit** 140°F (60°C) slurry 176°F (80°C) dry
Adhesion (Tensile Shear) 2,400 psi (169 kg/cm^2)	**Abrasion Resistance** H10 - 90 mm^3 wet CS17 - 7 mm^3 dry

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
Movement or use involving no loading	16 hrs	12 hrs	8 hrs	6 hrs
Machining and/or light loading	24 hrs	18 hrs	12 hrs	8 hrs
Full mechanical or thermal loading	5 days	4 days	3 days	2 days
Contact with chemicals	10 days	7 days	5 days	3 days

BELZONA 1812

CERAMIC CARBIDE FP

For Repairing and Protecting Against Abrasive Attack

An epoxy-based composite material combining extremely hard, closely packed, abrasion-resistant ceramic aggregates in a polymeric binder for the repair and protection of equipment damaged by fine-particle abrasion.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 4 : 1 by volume 4.5 : 1 by weight	**Coverage Rate** 3.23 ft^2 (0.3 m^2) / 2 kg at 0.118 in (3 mm)
Working Life 20 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 10,250 psi (70.7 MPa)	**Service Temperature Limit** 176°F (80°C) slurry 212°F (100°C) dry
Adhesion (Tensile Shear) 1,980 psi (13.6 MPa)	**Abrasion Resistance** H10 - 110 mm^3 wet

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
Movement or use involving no loading	8 hrs	6 hrs	4 hrs	3 hrs
Machining and/or light loading	12 hrs	9 hrs	6 hrs	4 hrs
Full mechanical or thermal loading	5 days	4 days	3 days	2 days
Contact with chemicals	10 days	7 days	5 days	3 days

BELZONA 1812

CERAMIC CARBIDE FP

For Repairing and Protecting Against Abrasive Attack

An epoxy-based composite material combining extremely hard, closely packed, abrasion-resistant ceramic aggregates in a polymeric binder for the repair and protection of equipment damaged by fine-particle abrasion.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
4 : 1 by volume
4.5 : 1 by weight

Coverage Rate
0.15 m^2 (1.61 ft^2) / 1 kg at 3 mm (0.118 in)

Working Life
20 minutes at 25°C (77°F)

Shelf Life
5 years

Compressive Strength
81.6 MPa (11,827 psi) after 24-hour cure at 20°C (68°F)

Service Temperature Limit
80°C (176°F) slurry
100°C (212°F) dry

Adhesion (Tensile Shear)
13.4 MPa (1,950 psi)

Abrasion Resistance
H10 - 120 mm^3 wet

CURE TIMES

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
Movement or use involving no loading	8 hrs	6 hrs	4 hrs	3 hrs
Machining and/or light loading	12 hrs	9 hrs	6 hrs	4 hrs
Full mechanical or thermal loading	5 days	4 days	3 days	2 days
Contact with chemicals	10 days	7 days	5 days	3 days

BELZONA 1813

For Repairing and Protecting Surfaces Against Abrasive Attack

A paste-grade epoxy composite material combining abrasion-resistant ceramic aggregates in a polymeric binder for the repair and protection of equipment operating at temperatures up to 392°F (200°C).

Application Methods

Available Color(s)

Mixing Ratio (Base:Solidifier) 3 : 1 by volume 3.84 : 1 by weight	**Coverage Rate** 1.61 ft2 (0.15 m2) / 1 kg at 0.125 in (3 mm)
Working Life 40 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 12,743 psi (87.9 MPa) at 68°F (20°C)	**Service Temperature Limit** 374°F (190°C) slurry 410°F (210°C) dry
Adhesion (Tensile Shear) 2,970 psi (20.5 MPa) at 68°F (20°C) >3,000 psi (>20.7 MPa) at 212°F (100°C)	**Abrasion Resistance** H10 - 101 mm3 wet

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
Movement or use involving no loading	16 hrs	12 hrs	8 hrs	6 hrs
Machining and/or light loading	24 hrs	18 hrs	12 hrs	8 hrs
Full mechanical or thermal loading	10 days	8 days	6 days	4 days
Contact with chemicals	20 days	14 days	10 days	6 days

BELZONA 1814

Repair System for Protection Against Abrasive Attack

Supplied as a three-part system, with a base, solidifier and aggregate, Belzona 1814 is easy to mix and apply without the need for specialist tools. This thixotropic material will adhere to a wide range of substrates, providing a seamless abrasion resistant lining at thicknesses up to 0.5 in (12.7mm).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 2 : 1 : 5 by volume 2.36 : 1 : 9.65 by weight	**Coverage Rate** 23.03 ft² (2.14 m²) / 30 kg at 0.25 in (6 mm)
Working Life 60 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 8,515 psi (58.7 MPa) at 68°F (20°C)	**Service Temperature Limit** 140°F (60°C) slurry 176°F (80°C) dry
Adhesion (Pull-Off) 2,745 psi (18.9 MPa) at 68°F (20°C) 3,870 psi (>26.7 MPa) at 194°F (90°C)	**Abrasion Resistance** H10 - 106 mm³ wet CS17 - 10 mm³ dry

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	68°F (20°C)	77°F (25°C)
Movement or use involving no loading	32 hrs	12 hrs	10 hrs	6 hrs
Machining and/or light loading	5 days	24 hrs	16 hrs	12 hrs
Full mechanical or thermal loading	14 days	7 days	4 days	2 days

BELZONA 1814

Repair System for Protection Against Abrasive Attack

Supplied as a three-part system, with a base, solidifier and aggregate, Belzona 1814 is easy to mix and apply without the need for specialist tools. This thixotropic material will adhere to a wide range of substrates, providing a seamless abrasion resistant lining at thicknesses up to 12.7mm (0.5 in).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 2 : 1 : 5 by volume 2.40 : 1 : 9.65 by weight	**Coverage Rate** 2.14 m^2 (23.03 ft^2) / 30 kg at 6 mm (0.25 in)
Working Life 60 minutes at 20°C (68°F)	**Shelf Life** 5 years
Compressive Strength 74.4 MPa (10,787 psi) at 20°C (68°F)	**Service Temperature Limit** 60°C (140°F) slurry 75°C (167°F) dry
Adhesion (Pull-Off) 10.2 MPa (1,480 psi) at 20°C (68°F) 26.0 MPa (3,760 psi) at 90°C (194°F)	**Abrasion Resistance** H10 - 107 mm^3 wet CS17 - 11 mm^3 dry

CURE TIMES

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Movement or use involving no loading	32 hrs	12 hrs	10 hrs	6 hrs
Light loading	5 days	24 hrs	16 hrs	12 hrs
Full mechanical or thermal loading	14 days	7 days	4 days	2 days

BELZONA 1818

Fast-Curing, Surface-Tolerant, and Abrasion-Resistant System for Patch Repair

A two-component, fast-curing, surface-tolerant, abrasion-resistant system ideal for patch repairs on surfaces subject to high erosion and abrasive environments. Its fast-curing properties result in minimal downtime for damaged equipment, and the product can experience full mechanical loading in as little as two hours after application.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 2 by volume
4 : 3 by weight

Coverage Rate
1.55 ft² (0.14 m²) at 0.12 in (3 mm) / 1 kg

Working Life
16 minutes at 68°F (20°C)

Shelf Life
3 years

Compressive Strength
12,814 psi (88.4 MPa) 24-hour cure at 68°F (20°C)
19,242 psi (132.7 MPa) 7-day cure at 68°F (20°C)

Service Temperature Limit
176°F (80°C) slurry
212°F (100°C) dry

Adhesion (Pull-Off)
Grit blasted mild steel:
2,370 psi (16.3 MPa) clean and dry
2,040 psi (14.1 MPa) transformer oil
2,300 psi (15.9 MPa) wet
2,220 psi (15.3 MPa) underwater

Abrasion Resistance
H10 - 100 mm³ wet
CS17 - 4 mm³ dry

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Movement or use involving no loading	4 hrs	3 hrs	1.5 hrs	1 hr	20 mins
Light loading	6 hrs	4.5 hrs	2 hrs	1.5 hrs	30 mins
Full mechanical or thermal loading	24 hrs	18 hrs	8 hrs	6 hrs	2 hrs

BELZONA 1821

FLUID METAL

Fluid-Grade Repair System for Creating Grip Surfaces

A fluid epoxy resin designed for the repair and creation of positive grip systems on metallic surfaces of machinery and equipment and walking areas. This solvent-free material is ideal where slip reduction, chemical and wear resistance are required.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2.7 : 1 by volume 6.7 : 1 by weight	**Coverage Rate** 9.25 ft² (0.86 m²) / 1 kg at 500 microns (20 mils)
Working Life 20 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 11,641 psi (80.3 MPa)	**Maximum Immersion Resistance** 140°F (60°C)
Adhesion (Pull-Off) *Grit blasted mild steel:* 2,300 psi (15.9 MPa) *Grit blasted aluminum:* 1,800 psi (12.4 MPa) *Manually abraded aluminum:* 1,900 psi (13.1 MPa)	**Abrasion Resistance** CS17 - 40 mm³ dry

CURE TIMES

Temperature	41°F (5°C)	59°F (15°C)	77°F (25°C)
No loading or immersion	16 hrs	6 hrs	3 hrs
Machining and/or light loading	16 hrs	6 hrs	3 hrs
Full mechanical or thermal loading	1.5 days	1.5 days	1 day
Contact with chemicals	14 days	10 days	5 days

SERIES 1900

SUPERWRAP

Thermoset resins reinforced with fibers and tested as a repair system to the requirements of internationally recognized standards.

APPLICATIONS INCLUDE

- Pipelines
- Pipework
- Pipe bends
- Pipe tees
- Risers
- Flanges
- Valves
- Nozzles
- Instrumentation
- Tank side walls
- Tank roofs
- Support pads
- Saddles
- Attachments
- Metallic plates
- Clamps
- Patches
- Pressure Vessels
- Plus many others

BELZONA 1981

SUPERWRAP II

ISO/ASME Compliant Composite Repair System

Low-temperature, fast-curing resin system for use with Belzona 9381 reinforcing fabric. The system can be applied at a minimum temperature of 41°F (5°C) and has a maximum service temperature of up to 140°F (60°C).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2.5 : 1 by volume
2.9 : 1 by weight

Coverage Rate
0.06 L per linear meter of Belzona 9381 (84mm width)

Working Life
18 minutes at 68°F (20°C)

Shelf Life
3 years

Surface Preparation Requirements
Grit blast: ISO 8501-1/SSPC SP 10 or
Power tool: SSPC SP 11

Shore D Hardness
90

Application Temperature Range
41°F (5°C) minimum
68°F (20°C) maximum

Service Temperature Limit
-76°F (-60°C) minimum
140°F (60°C) maximum

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)
Touch dry	8 hrs	7 hrs	3 hrs
Full-service	48 hrs	24 hrs	24 hrs
Contact with chemicals	7 days	4 days	2 days

BELZONA 1982

SUPERWRAP II

ISO/ASME Compliant Composite Repair System

Long-working-life resin system for use with Belzona 9381 reinforcing fabric. The system can be applied at a minimum temperature of 68°F (20°C) and has a maximum service temperature of up to 176°F (80°C).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2.5 : 1 by volume 2.7 : 1 by weight	**Coverage Rate** 0.06 L per linear meter of Belzona 9381 (84mm width)
Working Life 25 minutes at 104°F (40°C)	**Shelf Life** 3 years
Surface Preparation Requirements *Grit blast:* ISO 8501-1/SSPC SP 10 or *Power tool:* SSPC SP 11	**Shore D Hardness** 91
Application Temperature Range 68°F (20°C) minimum 104°F (40°C) maximum	**Service Temperature Limit** -76°F (-60°C) minimum 176°F (80°C) maximum

CURE TIMES			
Temperature	**68°F (20°C)**	**86°F (30°C)**	**104°F (40°C)**
Touch dry	3 hrs	2.5 hrs	2 hrs
Full-service	24 hrs	24 hrs	24 hrs
Contact with chemicals	7 days	4 days	2 days

BELZONA 1983

SUPERWRAP II

ISO/ASME Compliant Composite Repair System

High-temperature resin used with Belzona 9381 fabric for ISO 24817 and ASME PCC2 Article 4.1-compliant composite repairs. Applies at 41°F (5°C) and withstands up to 302°F (150°C). Suitable for thin- and through-wall defects in Class 1 water, Class 2 safety-critical, Class 3 hydrocarbon systems, and storage tank walls.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2.5 : 1 by volume 2.9 : 1 by weight	**Coverage Rate** 0.06 L per linear meter of Belzona 9381 (84mm width)
Working Life 30 minutes at 68°F (20°C)	**Shelf Life** 3 years
Surface Preparation Requirements *Grit blast:* ISO 8501-1/SSPC SP 10	**Shore D Hardness** 91
Application Temperature Range 41°F (5°C) minimum 104°F (40°C) maximum	**Service Temperature Limit** -76°F (-60°C) minimum 302°F (150°C) maximum
Adhesion (Tensile Shear) *Mild steel:* 2,550 psi (17.6 MPa)	**Approvals**

CURE TIMES			
Temperature	**41°F (5°C)**	**50°F (10°C)**	**68°F (20°C)**
Touch dry	16 hrs	6 hrs	3.5 hrs
Full-service	7 days	5 days	48 hrs
Contact with chemicals	post cure required	post cure required	7 days

BELZONA 1984

SUPERWRAP II

ISO/ASME Compliant Composite Repair System

This resin can be applied directly to damp, wet, and underwater surfaces without the need for abrasive blasting. Once cured, Belzona 1984 resists temperatures up to 122°F (50°C) and can be applied in temperatures ranging from 41°F to 104°F (5°C to 40°C).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 1.6 : 1 by volume 1.9 : 1 by weight	**Coverage Rate** 0.06 L per linear meter of Belzona 9381 (84mm width)
Working Life 60 minutes at 68°F (20°C)	**Shelf Life** 3 years
Surface Preparation Requirements *Power tool:* SSPC SP 11	**Shore D Hardness** 82
Application Temperature Range 41°F (5°C) minimum 104°F (40°C) maximum	**Service Temperature Limit** -76°F (-60°C) minimum 122°F (50°C) maximum
Adhesion (Tensile Shear) *Underwater (3.5% salt solution):* 1,286 psi (8.87 MPa)	**Approvals**

CURE TIMES			
Temperature	**41°F (5°C)**	**50°F (10°C)**	**68°F (20°C)**
Touch dry	16 hrs	10 hrs	5 hrs
Full-service	14 days	10 days	4 days

SERIES 2100

DURABLE & ABRASION-RESISTANT ELASTOMERS

Durable and abrasion-resistant elastomers of various grades for the repair and protection of rubber and metal surfaces.

APPLICATIONS INCLUDE

- Conveyor belts
- Storage hoppers
- Chutes
- Screens
- Wear plates
- Pump casings
- Impellers
- Guide vanes
- Pipes
- Tanks
- Fluid handling machinery
- Propellers
- Diaphragms
- Drive couplings
- Casting flexible molds
- Casting shock absorbers
- Casting guide bearings
- Kort nozzles
- Rudders
- Hydroelectric turbines
- Expansion joints
- Gasket seals
- Tire sidewalls (off road)
- Rubber rollers
- Valves
- Protecting exposed threads
- Hoses
- Cables
- Floating hoses
- Plus many others

BELZONA 2111

D & A HI-BUILD ELASTOMER

Abrasion-Resistant Rebuilding-Grade Product

A polyurethane resin designed for repairing, rebuilding, and coating rubber and metal components. This flexible rubber repair material is appropriate for applications where high build, durability, elasticity, high abrasion, and tear resistance are required.

Application Methods

Technical Data

Available Color(s)

Working Life
12 minutes at 68°F (20°C)

Volume Capacity
27.0 in^3 (442 cm^3) / 500 g

Coverage Rate
1.83 ft^2 (0.17 m^2) / 500 g at 100 mils (2,500 microns)

Shelf Life
3 years

Abrasion Resistance
H18 - 16 mm^3 wet
H18 - 41 mm^3 dry

Shore A Hardness
93

Adhesion (180° Peel)
Natural rubber: 22 pli (385 kg/m)*
Neoprene: 20 pli (365 kg/m)*
Nitrile: 39 pli (690 kg/m)*
EPDM: 24 pli (425 kg/m)*

*cohesive failure of substrate

Service Temperature Limit
104°F (40°C) wet
194°F (90°C) dry

Elongation
24 hours at 68°F (20°C): 450 - 550%
7 days at 68°F (20°C): 350 - 450%

Tear Strength
370 pli / 6,600 kg/m

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
No loading	4 hrs	2 hrs	1.5 hrs	1 hr
Light loading	16 hrs	8 hrs	6 hrs	4 hrs
Full mechanical loading	48 hrs	24 hrs	20 hrs	16 hrs
Immersion in chemicals	96 hrs	60 hrs	48 hrs	36 hrs

BELZONA 2131

D & A FLUID ELASTOMER

Abrasion-Resistant Coating-Grade Product

A polyurethane resin designed for coating metal and rubber surfaces as well as casting new rubber components. This flexible rubber material is appropriate for applications where durability, elasticity, high abrasion, and tear resistance are required.

Application Methods

Technical Data

Available Color(s)

Working Life
12 minutes at 68°F (20°C)

Volume Capacity
27.0 in^3 (443 cm^3) / 500 g

Coverage Rate
19.05 ft^2 (1.77 m^2) / 500 g at 10 mils (250 microns)

Shelf Life
3 years

Abrasion Resistance
H18 - 30 mm^3 wet
H18 - 30 mm^3 dry

Shore A Hardness
93

Adhesion (180° Peel)
Natural rubber: 14 pli (250 kg/m)*
Neoprene: 28 pli (510 kg/m)*
Nitrile: 37 pli (655 kg/m)*
EPDM: 20 pli (350 kg/m)*

*cohesive failure of substrate

Service Temperature Limit
104°F (40°C) wet
194°F (90°C) dry

Elongation
24 hours at 68°F (20°C): 500 - 600%
7 days at 68°F (20°C): 400 - 500%

Tear Strength
385 pli/ 6,875 kg/m

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
No loading	4 hrs	2 hrs	1.5 hrs	1 hr
Light loading	16 hrs	8 hrs	6 hrs	4 hrs
Full mechanical loading	48 hrs	24 hrs	20 hrs	16 hrs
Immersion in chemicals	96 hrs	60 hrs	48 hrs	36 hrs

BELZONA 2141

ACR-FLUID ELASTOMER

Abrasion/Cavitation-Resistant Fluid-Grade Product

A polyurethane resin designed for coating metal and rubber components. This flexible rubber material is appropriate for coating extremely high localized pressure areas where abrasion, cavitation, erosion, and corrosion resistance are required.

Application Methods

Technical Data

Available Color(s)

Working Life
13 minutes at 77°F (25°C)

Volume Capacity
41.6 in^3 (682 cm^3) / 750 g

Coverage Rate
6.6 ft^2 (0.61 m^2) / 750 g at 40 mils (1 mm)

Shelf Life
3 years

Abrasion Resistance
H18 - 39 mm^3 at 70°F (21°C) wet
H18 - 50 mm^3 at 70°F (21°C) dry

Shore A Hardness
87

Adhesion (180° Peel)
Commercial rubber: 15.61 pli*
Insertion rubber: 16.87 pli*
Natural rubber: 40.64 pli*
Neoprene: 18.70 pli*
Nitrile: 16.22 pli*
EPDM: 17.25 pli*

*peak adhesion

Service Temperature Limit
104°F (40°C) anti-cavitation
212°F (100°C) dry

Cavitation Resistance
0.07 mm^3/hr volume loss at 36 µm wave amplitude
5.50 mm^3/hr volume loss at 50 µm wave amplitude

Tear Strength
463 pli/ 8,260 kg/m

Elongation
7 days at 68°F (20°C): 658%

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	8 hrs	6 hrs	4 hrs	3 hrs
Full mechanical or thermal loading	4 days	3 days	2 days	2 days
Contact with chemicals	7 days	6 days	5 days	4 days

SERIES 2200

MULTI PURPOSE ELASTOMERS

Flexible and tough elastomers of various grades for multipurpose repair applications on metal, concrete, and, rubber surfaces.

APPLICATIONS INCLUDE

- Conveyor belts
- Storage hoppers
- Chutes
- Screens
- Wear plates
- Pump casings
- Impellers
- Guide vanes
- Pipes
- Tanks
- Fluid handling machinery
- Propellers
- Diaphragms
- Drive couplings
- Casting flexible molds
- Casting shock absorbers
- Casting guide bearings
- Kort nozzles
- Rudders
- Hydroelectric turbines
- Expansion joints
- Gasket seals
- Tire sidewalls (off road)
- Rubber rollers
- Valves
- Protecting exposed threads
- Hoses
- Cables
- Floating hoses
- Plus many others

BELZONA 2211

MP HI-BUILD ELASTOMER

Multi-Purpose Rebuilding-Grade Product

A polyurethane resin designed for repairing, rebuilding, and coating rubber and metal components. This flexible rubber material makes cost effective repairs possible and is appropriate for applications where high build, durability, and elasticity are required.

Application Methods

Technical Data

Available Color(s)

Working Life 15 minutes at 68°F (20°C)	**Volume Capacity** 28.5 in^3 (467 cm^3) / 550 g
Shelf Life 3 years	**Shore A Hardness** 73
Adhesion (180° Peel) *Natural rubber:* 12 pli (214 kg/m) *Neoprene:* 38 pli (671 kg/m) *Nitrile:* 50 pli (897 kg/m) *EPDM:* 27 pli (488 kg/m)	**Abrasion Resistance** H18 - 180 mm^3 wet H18 - 400 mm^3 dry
Tear Strength 190 pli / 3,392 kg/m - 24 hours 230 pli / 4,106 kg/m - 7 days	**Service Temperature Limit** 150°F (65°C)
Elongation 24 hours at 68°F (20°C): 1000% 7 days at 68°F (20°C): 1000%	**Expansion Joints** Class 25, Type M, Grade N Sealant (±25% movement) under modified ASTM C-719

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Light loading	24 hrs	12 hrs	9 hrs	6 hrs
Full mechanical loading	72 hrs	36 hrs	32 hrs	28 hrs
Immersion in	5 days	3 days	2.5 days	2 days

BELZONA 2221

MP FLUID ELASTOMER

Multi-Purpose Coating-Grade Product

A polyurethane resin designed for repairing and coating rubber and metal components as well as casting new components. This flexible rubber material makes cost effective repairs possible and is designed for applications where durability and elasticity are required.

Application Methods

Technical Data

Available Color(s)

Working Life
15 minutes at 68°F (20°C)

Volume Capacity
40.3 in^3 (661 cm^3) / 750 g

Coverage Rate
18.9 ft^2 (1.76 m^2) / 750 g at 15 mils (375 microns)

Shelf Life
3 years

Abrasion Resistance
H18 - 88 mm^3 wet
H18 - 313 mm^3 dry

Shore A Hardness
73

Adhesion (180° Peel)
Natural rubber: 9 pli (163 kg/m)
Neoprene: 40 pli (723 kg/m)
Nitrile: 39 pli (697 kg/m)
EPDM: 33 pli (584 kg/m)

Service Temperature Limit
150°F (65°C)

Elongation
24 hours at 68°F (20°C): 1000%
7 days at 68°F (20°C): 1000%

Tear Strength
190 pli / 3,392 kg/m - 24 hours
230 pli / 4,106 kg/m - 7 days

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Light loading	24 hrs	12 hrs	9 hrs	6 hrs
Full mechanical loading	72 hrs	36 hrs	32 hrs	28 hrs
Immersion in chemicals	5 days	3 days	2.5 days	2 days

SERIES 2300

EMERGENCY ELASTOMERS

Rapid-curing elastomers for multipurpose repair applications.

APPLICATIONS INCLUDE

- Conveyor belts
- Storage hoppers
- Chutes
- Screens
- Wear plates
- Pump casings
- Impellers
- Guide vanes
- Pipes
- Tanks
- Fluid handling machinery
- Propellers
- Diaphragms
- Drive couplings
- Casting flexible molds
- Casting shock absorbers
- Casting guide bearings
- Kort nozzles
- Rudders
- Hydroelectric turbines
- Expansion joints
- Gasket seals
- Tire sidewalls (off road)
- Rubber rollers
- Valves
- Protecting exposed threads
- Hoses
- Cables
- Floating hoses
- Plus many others

BELZONA 2311

SR ELASTOMER

Rapid-Curing, Flexible, Emergency Repair Product

A polyurethane resin designed for a fast repair, rebuilding and coating of rubber and metal components. This flexible rubber repair material is designed for emergency and permanent applications where high build, durability, elasticity, high abrasion, and tear resistance are required.

Application Methods

Technical Data

Available Color(s)

Working Life 2 minutes at 77°F (25°C)	**Volume Capacity** 4.1 in³ (66.5 cm³) / 75 g
Shelf Life 3 years	**Shore A Hardness** 75
Adhesion (180° Peel) *Natural rubber:* 14 pli (250 kg/m)* *SBR:* 14 pli (250 kg/m)*	**Abrasion Resistance** H18 - 45 mm³ wet H18 - 109 mm³ dry
*cohesive failure of substrate	**Service Temperature Limit** 150°F (65°C)
Tear Strength 260 pli / 4,643 kg/m	**Elongation** 450%

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
No loading or immersion	40 mins	30 mins	25 mins	20 mins
Full mechanical or thermal loading	2 hrs	1.5 hrs	60 mins	50 mins
Contact with chemicals	36 hrs	24 hrs	18 hrs	15 hrs

SERIES 3100

WATERPROOFING MEMBRANES

Waterproofing systems for the repair and protection of buildings and structures.

APPLICATIONS INCLUDE

- Gutters
- Parapet walls
- Glazing bars
- Joints
- Seams
- Flashings
- Ponded areas
- Flat roof areas
- Complex roofs and domes
- Pipes
- Valve boxes
- Flange covers
- Boilers
- Pressure vessels
- Bulk storage tanks
- Tank bases
- Heat exchangers
- Air conditioning ducts
- Plus many others

BELZONA 3111

FLEXIBLE MEMBRANE

Flexible Waterproofing System

A cold-applied liquid coating with outstanding waterproofing and weatherproofing properties. This single component, 100% solids coating will bond strongly to all types of substrates, following even complex contours, and will allow the surface to breathe due to its microporous structure.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
Single component

Working Life
Indefinite at temperatures between 41°F (5°C) to 86°F (30°C)

Elongation at Break
20% lengthwise
100% crosswise

Shelf Life
5 years

Tensile Strength
1,450 psi (10.0 N/mm^2) lengthwise
580 psi (4.0 N/mm^2) crosswise

Water Vapor Permeability
30 g/m^2 per 24 hours at 68°F (20°C)
Permeance: 2.16 US Perms

Tear Strength
213 pli (37 N/mm) lengthwise
188 pli (33.0 N/mm) crosswise
after 7 days cure at 68°F (20°C)

Service Temperature Limit
-4°F (-20°C) minimum
176°F (80°C) maximum

Solar Reflectance
Average SRI of 98.95%

Certifications

COVERAGE RATES

Coats (per liter)	First Coat	Second Coat
Concrete/brick	14 ft^2 (1.3 m^2)	33 ft^2 (3.0 m^2)
Asphalt	21 ft^2 (1.9 m^2)	33 ft^2 (3.0 m^2)
Galvanized steel	21 ft^2 (1.9 m^2)	33 ft^2 (3.0 m^2)
Recoating Belzona 3111	21 ft^2 (1.9 m^2)	33 ft^2 (3.0 m^2)

BELZONA 3121

MR7

Emergency Repair and Waterproofing

A polymer composite designed to provide emergency repair and weatherproofing for leaking areas. Belzona 3121 is liquid applied and bonds strongly to all common surfaces including slate, tile, asphalt, felt, asbestos cement sheet, and metal, even during adverse weather conditions.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2.2 : 1 by volume 3.6 : 1 by weight	**Working Life** 2 hours at 68°F (20°C)
Elongation at Break 400% unreinforced 150% reinforced	**Shelf Life** 5 years
Tensile Strength 1,140 psi (7.9 MPa) unreinforced 800 psi (5.5 MPa) reinforced	**Water Vapor Permeability** 17 g/m² per 24 hours
Tear Strength 140 pli (2,512 kg/m) unreinforced 180 pli (3,229 kg/m) reinforced	

COVERAGE RATES

Coats (per liter)	First Coat	Second Coat
Metals/plastic	20 ft² (1.9 m²)	21 ft² (2.0 m²)
Asphalt	20 ft² (1.9 m²)	21 ft² (2.0 m²)
Smooth concrete	17.5 ft² (1.7 m²)	21 ft² (2.0 m²)
Rough concrete	12.5 ft² (1.2 m²)	20 ft² (1.9 m²)

BELZONA 3131

WG MEMBRANE

Flexible Waterproofing System

A cold-applied, single-component system which can be used in all weather conditions to provide long-term repair and protection of roofs. The system provides long-term weatherproofing and waterproofing of almost all types of substrates and offers outstanding protection against infrared and ultra-violet radiation and industrial pollutants.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) Single component	**Working Life** Indefinite at temperatures between 41°F (5°C) to 86°F (30°C)
Elongation at Break 190%	**Shelf Life** 12 months
Tensile Strength 925 psi (6.4 N/mm^2)	**Water Vapor Permeability** 25 g/m^2 per 24 hrs at 68°F (20°C)
Tear Strength 195 pli (34.3 N/mm) after 7 days cure at 68°F (20°C)	

COVERAGE RATES

Coats (per liter)	First Coat	Second Coat
Concrete/brick	10.3 ft^2 (0.96 m^2)	33 ft^2 (3.0 m^2)
Asphalt	16.1 ft^2 (1.5 m^2)	33 ft^2 (3.0 m^2)
Galvanized steel	16.1 ft^2 (1.5 m^2)	33 ft^2 (3.0 m^2)
Recoating Belzona 3131	16.1 ft^2 (1.5 m^2)	33 ft^2 (3.0 m^2)

SERIES 3200

FIRE-RESISTANT MEMBRANE

Waterproofing and fire-resistant membrane for the protection of insulation and cladding materials.

APPLICATIONS INCLUDE

- Encapsulation of insulation
- Steam lines
- Exhaust ducts
- Valves
- Tanks
- Tank bases
- Pipework
- Boilers
- Flange covers
- Pressure vessels
- Heat exchangers
- Air conditioning
- Roofs
- Plus many others

BELZONA 3211

LAGSEAL

Seamless and Flexible Waterproofing System

A water-based acrylic emulsion membrane combined with a polymer-bonded glass reinforcing sheet (Belzona 9321), designed to provide seamless, flexible protection to all types of thermal insulation and cladding systems.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
Single component

Working Life
Indefinite at temperatures between 41°F (5°C) to 86°F (30°C)

Elongation at Break
40% unreinforced
2.4% reinforced crosswise
1.2% reinforced lengthwise

Shelf Life
5 years

Water Vapor Permeability
10.5 Perms unreinforced
8.6 Perms reinforced

Tensile Strength
600 psi (4.14 N/mm^2) unreinforced
2,435 psi (16.8 N/mm^2) reinforced crosswise
2,261 psi (15.6 N/mm^2) reinforced lengthwise

Tear Strength
75 pli (13 N/mm) unreinforced
324 pli (57 N/mm) reinforced crosswise
304 pli (53 N/mm) reinforced lengthwise

DRYING TIMES

Number of Coats	First Coat	Second Coat
Touch dry	2 hrs	1 hr
Hard dry for overcoating	4 hrs	2 hrs
Maximum overcoating time	3 days	3 days
Full hardness, anticipated chemical contact	7 days	7 days

SERIES 3400

ENCAPSULATING MEMBRANE

Peelable encapsulating system for protecting pipework and other structures from external corrosion.

APPLICATIONS INCLUDE

- Flanges
- Fastenings
- Pipework
- Plus many others

BELZONA 3412

ENCAPSULATING MEMBRANE

100% Solids Encapsulating Membrane

A 100% solids flexible encapsulating membrane, protecting various joints and equipment from moisture ingress, dust, and the environment. It can be applied by brush or spray gun to new or corroded assets, eliminating corrosion. When used in conjunction with Belzona 8411, Belzona 3412 can be cut and peeled for inspection during maintenance, then resealed for continued protection.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
13 : 1 by weight

Coverage Rate
8.6 ft² (0.8 m²) / 1 kg at 40 mils (1,000 microns)

Working Life
40 minutes at 68°F (20°C) and 50% relative humidity

Shelf Life
3 years

Elongation
260% unreinforced
52% reinforced

Tensile Strength
500 psi (3.4 MPa) unreinforced
800 psi (5.5 MPa) reinforced

Adhesion (90° Peel)
Carbon steel: 6.0 pli (107 kg/m)
Epoxy paint: 8.2 pli (146 kg/m)

Tear Strength
100 pli (1,830 kg/m) unreinforced
180 pli (3,180 kg/m) reinforced

UV Resistance
No significant chalking or colour change following 8,500 hours exposure

Corrosion Resistance
Excellent corrosion resistance when exposed to 3,000 hours in the salt spray cabinet

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	104°F (40°C)
30% relative humidity	7 days	6 days	5 days	4 days
50% relative humidity	6 days	5 days	4 days	3 days
80% relative humidity	5 days	4 days	3 days	2 days

SERIES 4100

REBUILDING MAGMAS

High-performance, epoxy-based concrete and stonework rebuilding and resurfacing materials with outstanding chemical, abrasion, and impact resistance.

APPLICATIONS INCLUDE

- Floors
- Ramps
- Stairways
- Walkways
- Chemical storage areas
- Loading docks
- Machinery
- Production areas
- Aisles
- Expansion joints
- Loose railings
- Pump bases
- Sumps
- Gulleys
- Spalled concrete
- Stonework
- Window sills
- Archways
- Walls
- Bridges
- Canopies
- Roofs
- Lintels
- Heavy equipment bases
- Plus many others

BELZONA 4111

MAGMA-QUARTZ

Concrete Repair and Grouting System

A fast-curing epoxy composite designed for repairing, resurfacing, and protecting concrete and stone. This material provides outstanding chemical and abrasion resistance as well as protection from environmental attack, simplifying maintenance procedures.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 2 : 1 : 30 by weight	**Volume Capacity** 414 in^3 (6,783 cm^3) / 15 kg
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 13,000 psi (89.63 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Wet concrete:* 450 psi (3.10 MPa)* *Dry concrete:* 525 psi (3.62 MPa)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 820 mm^3 wet CS17 - 14 mm^3 dry

CURE TIMES

Temperature	41°F (5°C)	59°F (15°C)	77°F (25°C)
To resist pedestrian traffic	16 hrs	6 hrs	4 hrs
Machine hard	24 hrs	8 hrs	6 hrs
Full mechanical hardness	2 days	24 hrs	16 hrs
Full chemical resistance	14 days	10 days	5 days

BELZONA 4111

MAGMA-QUARTZ

Concrete Repair and Grouting System

A fast-curing epoxy composite designed for repairing, resurfacing, and protecting concrete and stone. This material provides outstanding chemical and abrasion resistance as well as protection from environmental attack, simplifying maintenance procedures.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 2 : 1 : 30 by weight	**Volume Capacity** 6,555 cm^3 (400 in^3) / 15 kg
Working Life 30 minutes at 25°C (77°F)	**Shelf Life** 5 years
Compressive Strength 86.8 MPa (12,588 psi)	**Service Temperature Limit** 60°C (140°F)
Adhesion (Pull-Off) *Wet concrete:* 8.21 MPa (1,190 psi)* *Dry concrete:* 8.83 MPa (1,280 psi)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 535 mm^3 wet CS17 - 9 mm^3 dry

CURE TIMES

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
To resist pedestrian traffic	16 hrs	6 hrs	4 hrs
Machine hard	24 hrs	8 hrs	6 hrs
Full mechanical hardness	2 days	24 hrs	16 hrs
Full chemical resistance	14 days	10 days	5 days

BELZONA 4124

BULKFILL

For Repairing and Resurfacing Concrete

A cost-effective rebuilding system using a two-component epoxy resin and selected quartz particles for repairing large volumes of concrete and stonework subjected to mechanical and chemical damage.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 6.7 : 1 : 53 by weight	**Volume Capacity** 540 in³ (8,900 cm³) / 40 lb (18.13 kg)
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 10,500 psi (72.4 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Dry concrete:* >500 psi (3.45 MPa)* *cohesive failure of substrate	

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	77°F (25°C)
Overcoating	12 hrs	8 hrs	6 hrs	5 hrs
Full mechanical hardness	3 days	2 days	24 hrs	16 hrs

BELZONA 4131

MAGMA-SCREED

Concrete Resurfacing System

A non-porous epoxy repair composite designed for resurfacing and protecting large areas of concrete, stone and many other surfaces. This 100% solids material provides excellent chemical and abrasion resistance as well as protection from impact and environmental attack.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 30 : 1 by weight	**Volume Capacity** 524 in^3 (8,590 cm^3) / 20 kg
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 10,500 psi (72.4 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Dry concrete:* 600 psi (4.14 MPa)* *Wet concrete:* 425 psi (2.93 MPa)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 685 mm^3 wet

CURE TIMES

Temperature	**41°F (5°C)**	**59°F (15°C)**	**77°F (25°C)**
Pedestrian traffic	16 hrs	9 hrs	6 hrs
Full loading bearing capability	5 days	3 days	24 hrs
Full chemical resistance	18 days	12 days	7 days

BELZONA 4131

MAGMA-SCREED

Concrete Resurfacing System

A non-porous epoxy repair composite designed for resurfacing and protecting large areas of concrete, stone, and many other surfaces. This 100% solids material provides excellent chemical and abrasion resistance as well as protection from impact and environmental attack.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 35 : 1 by weight	**Volume Capacity** 8,525 cm^3 (520 in^3) / 20 kg
Working Life 45 minutes at 20°C (68°F)	**Shelf Life** 5 years
Compressive Strength 73.52 MPa (10,924 psi)	**Service Temperature Limit** 60°C (140°F)
Adhesion (Pull-Off) *Wet concrete:* 13.03 MPa (1,890 psi)* *Dry concrete:* 10.55 MPa (1,530 psi)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 208 mm^3 wet CS17 - 7 mm^3 dry

CURE TIMES

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
Pedestrian traffic	16 hrs	9 hrs	6 hrs
Full loading bearing capability	5 days	3 days	24 hrs
Full chemical resistance	18 days	12 days	7 days

BELZONA 4141

MAGMA-BUILD

Vertical and Overhead Concrete Repair System

A lightweight epoxy repair composite for rebuilding damaged vertical and overhead concrete and masonry surfaces. This high-build concrete repair material can be applied up to 5 in (12.7 cm) thick on vertical surfaces and up to 3 in (7.6 cm) thick on overhead surfaces.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 13 : 1 by volume 8 : 1 by weight	**Volume Capacity** 671 in^3 (11,000 cm^3) / 8 kg
Working Life 30 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 6,290 psi (43.4 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Wet concrete:* 605 psi (4.2 MPa)* *Dry concrete:* 520 psi (3.6 MPa)* *cohesive failure of substrate	**Abrasion Resistance** CS17 - 374 mm^3 dry

CURE TIMES

Temperature	**41°F (5°C)**	**50°F (10°C)**	**68°F (20°C)**	**86°F (30°C)**	**104°F (40°C)**
Dimensionally stable	8 hrs	6 hrs	3 hrs	2 hrs	1 hr
Full mechanical strength	3 days	2.5 days	2 days	16 hrs	2 hrs

BELZONA 4151

MAGMA-QUARTZ RESIN

Concrete Coating Protection System

An epoxy resin for concrete protection ideally suited for surfaces exposed to chemical attack and abrasion while offering excellent resistance to a broad range of aggressive chemicals. This clear amber epoxy resin system bonds strongly to concrete, stone, and other metallic and non-metallic surfaces.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2 : 1 by volume 2.4 : 1 by weight	**Volume Capacity** 330 in³ (5,420 cm³) / 6 kg
Working Life 12 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 13,000 psi (89.63 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Damp concrete:* 475 psi (3.27 MPa)* *Dry concrete:* 500 psi (3.45 MPa)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 427 mm³ wet CS17 - 72 mm³ dry

CURE TIMES

Temperature	41°F (5°C)	59°F (15°C)	77°F (25°C)
To resist pedestrian traffic	16 hrs	6 hrs	4 hrs
Full mechanical hardness	2 days	24 hrs	16 hrs
Full chemical resistance	14 days	10 days	5 days

BELZONA 4151

MAGMA-QUARTZ RESIN

Concrete Coating Protection System

An epoxy resin for concrete protection ideally suited for surfaces exposed to chemical attack and abrasion while offering excellent resistance to a broad range of aggressive chemicals. This clear amber epoxy resin system bonds strongly to concrete, stone, and other metallic and non-metallic surfaces.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2 : 1 by volume 2.3 : 1 by weight	**Volume Capacity** 4,455 cm^3 (272 in^3) / 4.95 kg
Working Life 12 minutes at 25°C (77°F)	**Shelf Life** 5 years
Compressive Strength 81.8 MPa (11,867 psi)	**Service Temperature Limit** 60°C (140°F)
Adhesion (Pull-Off) *Damp concrete:* 6.21 MPa (900 psi)* *Dry concrete:* 6.21 MPa (900 psi)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 890 mm^3 wet CS17 - 18 mm^3 dry

CURE TIMES

Temperature	**5°C (41°F)**	**15°C (59°F)**	**25°C (77°F)**
To resist pedestrian traffic	16 hrs	6 hrs	4 hrs
Full mechanical hardness	2 days	24 hrs	16 hrs
Full chemical resistance	14 days	10 days	5 days

BELZONA 4154

BULKFILL RESIN

For Repairing and Resurfacing Concrete

An epoxy resin designed to be used with various aggregates for repairing and resurfacing concrete and stonework damaged by impact, vibration, chemicals, and environmental attack.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 6.7 : 1 : 53 by weight	**Volume Capacity** 854 in³ (14,000 cm³) / 3.65 kg of Belzona 4154 mixed with 25 kg of aggregate
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 13,000 psi (89.63 MPa)	**Service Temperature Limit** 140°F (60°C)
Adhesion (Pull-Off) *Dry concrete:* >500 psi (3.45 MPa)* *cohesive failure of substrate	

CURE TIMES

Temperature	**50°F (10°C)**	**59°F (15°C)**	**72°F (22°C)**	**77°F (25°C)**
Overcoating	12 hrs	8 hrs	6 hrs	5 hrs
Full mechanical hardness	3 days	2 days	24 hrs	16 hrs

BELZONA 4181

AHR MAGMA-QUARTZ

Heat- and Acid-Resistant Concrete Repair System

An epoxy composite designed for repairing, resurfacing, and protecting concrete and stone subject to impact, abrasion, heat, and chemical attack. In addition to providing outstanding acid and heat resistance, this material is ideally suited for horizontal surfaces as well as vertical surfaces up to a thickness of 0.25 in (6 mm).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate) 100 : 30 : 1000 by weight	**Volume Capacity** 384 in³ (6,300 cm³) / 15 kg
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 10,403 psi (71.7 MPa)	**Service Temperature Limit** 300°F (150°C) dry
Adhesion (Elcometer) Dry concrete: 600 psi (4.14 MPa)* *cohesive failure of substrate	**Abrasion Resistance** H10 - 395 mm³ wet

CURE TIMES

Temperature	**59°F (15°C)**	**77°F (25°C)**
To resist pedestrian traffic	12 hrs	8 hrs
Machine hard	16 hrs	12 hrs
Full mechanical hardness	2 days	24 hrs
Full chemical resistance	10 days	5 days

SERIES 4300

CHEMICAL-RESISTANT COATINGS

High-performance chemical-resistant coatings and rebuilding materials for applications on several substrates.

APPLICATIONS INCLUDE

- Containment areas
- Pump bases
- Pump casings
- Heavy spillage areas
- Piping
- Drains and channels
- Sumps
- Walkways
- Storage tanks
- Acid retaining walls
- Transfer and holding areas
- Tank pads
- Secondary containment areas
- Plus many others

BELZONA 4301

MAGMA CR1 HI-BUILD

Rebuilding and Profile Restoring System

A durable repair composite for long-term metal and concrete protection from a broad range of chemicals, especially acids and alkalis. This paste-grade material is ideally suited for rebuilding surfaces damaged as a result of chemical attack and for repairing damaged chemical resistant linings.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2 : 1 by volume 2 : 1 by weight	**Volume Capacity** 40.7 in^3 (667 cm^3) / 1 kg
Working Life 40 minutes at 68°F (20°C)	**Shelf Life** 3 years
Compressive Strength 12,516 psi (86.3 MPa)	**Service Temperature Limits** 140°F (60°C) wet 176°F (80°C) dry
Abrasion Resistance H10 - 833 mm^3 wet CS17 - 44 mm^3 dry	

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Dimensionally stable	18 hrs	6 hrs	5 hrs	3 hrs
Machining	24 hrs	12 hrs	10 hrs	6 hrs
Full chemical resistance	14 days	7 days	6 days	5 days

BELZONA 4311

MAGMA CR1

Barrier Coating Protection System

A durable epoxy coating for the long-term protection of concrete and metal surfaces from chemical attack. This 100% solids coating isolates concrete and metal surfaces from aggressive chemicals, especially acids and alkalis. It is easy to mix and apply without the need of specialist tools and cures at room temperature.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
6 : 1 by weight

Coverage Rate
43 ft² (4 m²) / 1L at 10 mils (250 microns)

Working Life
20 minutes at 68°F (20°C)

Shelf Life
5 years

Adhesion (Pull-Off)
Steel:
4,710 psi (32.5 MPa) at 68°F (20°C)
5,460 psi (37.7 MPa) at 212°F (100°C)
Concrete:
770 psi (5.3 MPa) at 68°F (20°C)
815 psi (5.6 MPa) at 212°F (100°C)

Compressive Strength
10,963 psi (75.6 MPa)

Maximum Immersion Resistance
140°F (60°C)

CURE TIMES

Temperature	59°F (15°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
To resist pedestrian traffic	8 hrs	6 hrs	4 hrs	3 hrs
Vehicular traffic	24 hrs	18 hrs	12 hrs	10 hrs
Full chemical resistance	14 days	7 days	3 days	2 days

BELZONA 4331

MAGMA CR3

Barrier Coating Protection System

A high-performance epoxy coating optimized for resistance to hot organic acids, such as acetic acid and organic solvents, up to 194°F (90°C). This 100% solids coating isolates concrete and metal surfaces from deteriorating chemical environments.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 7.16 : 1 by volume 10.75 : 1 by weight	**Coverage Rate** 21 ft² (1.95 cm²) / 1.5 kg at 20 mils (500 microns)
Working Life 20 minutes at 68°F (20°C)	**Shelf Life** 3 years
Compressive Strength 16,729 psi (115.3 MPa)	**Maximum Immersion Resistance** 194°F (90°C)
Adhesion (Pull-Off) 4,770 psi (32.9 MPa)	

CURE TIMES

Temperature	**59°F (15°C)**	**68°F (20°C)**	**86°F (30°C)**
Light pedestrian traffic	12 hrs	8 hrs	4 hrs
Full chemical resistance	7 days	5 days	3 days

BELZONA 4341

MAGMA CR4

Barrier Coating Protection System

A durable epoxy barrier coating optimized for resistance to hot inorganic acids, such as sulfuric and hydrochloric acid, up to 194°F (90°C). This 100% solids coating isolates concrete and metal surfaces from deteriorating chemical environments.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 6.26 : 1 by volume 8.82 : 1 by weight	**Coverage Rate** 26.7 ft² (2.48 m²) / 1.5 kg at 16 mils (400 microns)
Working Life 15 minutes at 68°F (20°C)	**Shelf Life** 5 years
Adhesion (Pull-Off) *Grit blasted mild steel:* 3,540 psi (24.4 MPa) at 68°F (20°C) *Grit blasted aluminium:* 2,930 psi (20.2 MPa) at 68°F (20°C)	**Compressive Strength** 11,950 psi (82.4 MPa) **Maximum Immersion Resistance** 194°F (90°C)

CURE TIMES

Temperature	59°F (15°C)	68°F (20°C)	86°F (30°C)
Light pedestrian traffic	12 hrs	8 hrs	4 hrs
Full chemical resistance	7 days	5 days	3 days

BELZONA 4351

MAGMA CR5

Static Dissipative and Chemical-Resistant Coating

A two-component, chemical resistant, and static dissipative material for coating surfaces subject to chemical attack, static buildup, and electrostatic discharge sparks.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
6 : 1 by weight

Coverage Rate
31.0 ft^2 (2.9 m^2) / 1 kg at 10 mils (250 microns)

Working Life
20 minutes at 77°F (25°C)

Shelf Life
5 years

Compressive Strength
14,871 psi (102.5 MPa) at 68°F (20°C)
17,944 psi (123.7 MPa) at 212°F (100°C)

Maximum Immersion Resistance
140°F (60°C)

Adhesion (Pull-Off)
Mild steel: > 3,070 psi (> 21.2 MPa) at 68°F (20°C)*
>4,890 psi (>33.7 MPa) at 212°F (100°C)*

*failure of dolly adhesive

Surface Resistivity
Concrete: 10^6 - 10^7 ohm/square

Concrete (using conditioner): 10^7 - 10^8 ohm/square

Steel: 10^5 - 10^6 ohm/square

CURE TIMES

Temperature	59°F (15°C)	68°F (20°C)	77°F (25°C)	86°F (30°C)
Light pedestrian traffic	16 hrs	12 hrs	8 hrs	6 hrs
Vehicular traffic	48 hrs	36 hrs	24 hrs	20 hrs
Full chemical resistance	14 days	7 days	6 days	5 days

BELZONA 4361

Barrier Coating Protection System

A flexible epoxy coating for the long-term protection of concrete from chemical attack. This barrier epoxy coating is ideally suited to protect containment areas. It will stay intact in the event of concrete cracking underneath due to its superior flexibility and resistance to a wide range of chemicals, including acids and alkalis.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2.8 : 1 by volume
3.0 : 1 by weight

Coverage Rate
33.4 ft² (3.1 m²) / 1.5 kg at 16 mils (400 microns)

Working Life
30 minutes at 68°F (20°C)

Shelf Life
2 years

Compressive Strength
20,218 psi (139.4 MPa)

Crack Bridging
0.02mm/min
Gap width 0.38mm before failure

Adhesion (Pull-Off)
Dry concrete: 810 psi (5.6 MPa) at 68°F (20°C)*
Damp concrete: 780 psi (5.4 MPa) at 68°F (20°C)*

*failure of dolly adhesive

Elongation Values
68°F (20°C): 20%
104°F (40°C): 16%

CURE TIMES

Temperature	59°F (15°C)	68°F (20°C)	77°F (25°C)	86°F (30°C)
Light pedestrian traffic	7 hrs	5 hrs	4 hrs	3 hrs
Vehicular traffic	2 days	36 hrs	24 hrs	20 hrs
Full chemical resistance	14 days	7 days	6 days	5 days

SERIES 4400

GRIP SYSTEM

Chemical-resistant system for creating and repairing safety grip on walking surfaces.

APPLICATIONS INCLUDE

- Concrete floors
- Quarry tiles
- Loading docks
- Factory walkways
- Metal and wooden decks
- Tank roofs
- Tiled floors
- Ramps
- Shower and pool areas
- Metal ladder and rungs
- Warehouses
- Plus many others

BELZONA 4411

GRANOGRIP

A Safety Grip System for Non-Slip Surfaces

A fluid epoxy resin designed for the creation and repair of safety grip systems on walking surfaces. Used in conjunction with Belzona Aggregates, this 100% solids material is ideal where slip reduction, adhesion, chemical or wear resistance are required.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2 : 1 by volume 2.5 : 1 by weight	**Coverage Rate** 13.7-25 ft^2 (1.25 - 2.3 m^2) / 800 g
Working Life 30 minutes at 77°F (25°C)	**Shelf Life** 5 years
Compressive Strength 18,459 psi (127.3 MPa)	**Adhesion (Pull-Off)** *Dry concrete:* 930 psi (6.41 MPa)* *Damp concrete:* 1,040 psi (7.17 MPa)* *substrate failure

CURE TIMES

Temperature	41°F (5°C)	59°F (15°C)	77°F (25°C)	86°F (30°C)
Light pedestrian traffic	24 hrs	9 hrs	4 hrs	3 hrs
Vehicular traffic	4 days	2 days	24 hrs	12 hrs
Full chemical resistance	10 days	6 days	3 days	2 days

SERIES 4500

MAGMA SEALANTS

High-performance, flexible products for sealing and protecting vertical and horizontal surfaces, as well as expansion joints.

APPLICATIONS INCLUDE

- Vertical structures
- Horizontal structures
- Bleachers
- Steps
- Ramps
- Floors
- Concrete bases
- Doors
- Windows
- Adjacent walls
- Acid retaining walls
- Second containment areas
- Chemical drains
- Channels
- Plus many others

BELZONA 4511

MAGMA-FLEX HI-BUILD

Elastomeric Sealant for Building Expansion Joints

A fast-curing, hybrid polymer system designed to provide effective sealing of vertical and horizontal building and expansion joints on concrete, stone, brick, and other surfaces. This system is a cost-effective and high performance alternative to conventional mastic sealants. It is specifically designed for joints subject to ±12.5% movement.

Application Methods

Technical Data

Available Color(s)

Working Life 90 minutes at 68°F (20°C)	**Volume Capacity** 204.8 in³ (3,354 cm³) / 4.2 kg
Shelf Life 5 years	**Shore A Hardness** 63
Tear Strength 77.5 pli (1,384 kg/m)	**Elongation** 260%
Adhesion (90° Peel) *Blasted steel:* 45.1 pli (805.4 kg/m) *Aluminium:* 51.2 pli (914.3 kg/m) *Concrete:* 39.7 pli (708.8 kg/m) *Belzona 4111:* 43.2 pli (771.5 kg/m)	**Expansion Joints** Class 25, Type M, Grade N Sealant (±12.5% movement) under modified ASTM C-719

CURE TIMES

Temperature	50°F (10°C)	72°F (22°C)	86°F (30°C)	104°F (40°C)	122°F (50°C)
Light loading	20 hrs	8 hrs	4 hrs	2 hrs	1 hr
Full mechanical or thermal loading	2 days	1 day	12 hrs	6 hrs	3 hrs

BELZONA 4521

MAGMA-FLEX FLUID

Elastomeric Sealant for Building Expansion Joints

A two-component, 100% solids, fluid, elastomeric sealant for horizontal building and expansion joints. Once combined, the base and solidifier form a flexible, elastomeric compound with low modulus. It is specifically designed for sealing building and expansion joints with ±25% movement.

Application Methods

Technical Data

Available Color(s)

Working Life 120 minutes at 68°F (20°C)	**Volume Capacity** 196.8 in³ (3,224 cm³) / 4 kg
Shelf Life 5 years	**Shore A Hardness** 46
Tear Strength 77.5 pli (1,384 kg/m)	**Elongation** 400%
Adhesion (90° Peel) *Blasted steel:* 45.1 pli (805.4 kg/m)* *Aluminium:* 51.2 pli (914.3 kg/m)* *Concrete:* 39.7 pli (708.8 kg/m)* *Belzona 4111:* 43.2 pli (771.5 kg/m)* *cohesive failure in Belzona 4521	**Expansion Joints** Class 25, Type M, Grade N Sealant (±25% movement) under modified ASTM C-719

CURE TIMES

Temperature	50°F (10°C)	72°F (22°C)	86°F (30°C)	104°F (40°C)	122°F (50°C)
Light loading	24 hrs	8 hrs	4 hrs	2 hrs	1 hr
Full mechanical or thermal loading	2 days	1 day	12 hrs	6 hrs	3 hrs

SERIES 5100

WEATHER BARRIERS

Cladding materials for the protection of metallic and nonmetallic surfaces from environmental corrosion and physical and chemical attack.

APPLICATIONS INCLUDE

- Chutes
- Hoppers
- Walls
- Fan blades
- Tanks
- Pipes
- Masonries
- Structural steelwork
- Cooling towers
- Bridges
- Floors
- Ducts
- Pipework
- Ceilings
- Metal roofs
- Lintels
- Columns
- Plus many others

BELZONA 5111

CERAMIC CLADDING

Protective Coating with Aesthetic Properties

A urethane coating designed for the protection of metallic and masonry surfaces against physical, chemical, and bacterial attack. This durable material is ideal where toughness, environmental, erosion, and corrosion resistance are required, yet it provides a non-toxic surface that is easy to clean with commonly used cleaning agents.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2.25 : 1 by volume
2.5 : 1 by weight

Coverage Rate
Depends on roughness, porosity, profile and nature of the substrate. Refer to IFU for specific substrates

Working Life
8 hours at 68°F (20°C)

Shelf Life
5 years

Adhesion (Pull-Off)
Grit blasted steel:
Belzona 5911: 550 psi (3.79 MPa)
Belzona 6111: 1,500 psi (10.3 MPa)

Accelerated Weathering Resistance (BS 3900 Part F3)
No breakdown after 3,000 hours of exposure

Corrosion Resistance (BS 3900 Part F4)
No breakdown after 2,000 hours of exposure

Approvals

FDA

CURE TIMES

Product	Belzona 5111	Belzona 5911	Belzona 6111
Touch dry	6 hrs	2 hrs	10-15 mins
Hard dry for overcoating	8 hrs	8 hrs	16 hrs
Maximum overcoating	2 days	2 days	5 days
Full cure	7 days	7 days	7 days

BELZONA 5122

CLEAR CLADDING

Clear Repellent Treatment for Masonry Surfaces

A water-repellent, breathable treatment designed to protect masonry surfaces from water penetration without altering the natural appearance of the structures, as it becomes transparent when cured. This 100% solids material prevents spalling and cracking of surfaces such as concrete, stone, and brick, while reducing dirt retention.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) Product is supplied in concentrated form and must be diluted prior to application. For typical applications, we recommend 1 L of Belzona 5122 with 9 L of clean tap water	**Working Life** 24 hours once diluted
Water Absorption *Limestone:* 1.08 lb/ft² (5.26 kg/m²) untreated 0.07 lb/ft² (0.36 kg/m²) treated *Sandstone:* 10.57 lb/ft² (51.60 kg/m²) untreated 0.09 lb/ft² (0.43 kg/m²) treated *Brick:* 0.35 lb/ft² (1.70 kg/m²) untreated 0.002 lb/ft² (0.01 kg/m²) treated	**Shelf Life** 3 years

COVERAGE RATES

Coats (per liter)	First Coat
Rough concrete	14 ft² (1.3 m²) / L*
Soft brick	14 ft² (1.3 m²) / L*
Natural stone	22.6 ft² (2.1 m²) / L*
Smooth brick	28 ft² (2.6 m²) / L*
Smooth concrete	28 ft² (2.6 m²) / L*
Asbestos cement	28 ft² (2.6 m²) / L*

**After dilution*

SERIES 5200

INDUSTRIAL LAMINATE

A coating with outstanding mechanical strength that provides durable protection for commercial and industrial flooring applications.

APPLICATIONS INCLUDE

- Manufacturing plants
- Workshops
- Industrial utilities
- Storage facilities
- Processing areas
- Showrooms
- Education facilities
- Kitchens
- Walkways
- Corridors
- Tanks
- Warehouses
- Offices
- Decks
- Pipes
- Plus many others

BELZONA 5231

SG LAMINATE

Heavy-Duty Coating and Protection System

An epoxy coating for floor protection that provides excellent chemical, abrasion, and slip resistance. This 100% solids material can be easily mixed and applied by roller on a range of surfaces including concrete and steel, and will reduce downtime due to its fast curing properties.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume

Coverage Rate
121.6 ft² (11.3 m²) / 4 L at 6 mils (150 microns) per coat, total 12 mils (300 microns)

Working Life
60 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
11,147 psi (76.9 MPa) for 24 hours at 72°F (22°C)
12,142 psi (83.7 MPa) for 5 days at 72°F (22°C)

Maximum Service Temperature
104°F (40°C)

Adhesion (Pull-Off)
Damp concrete: 770 psi (5.31 MPa)
Dry concrete: 1,050 psi (7.24 MPa)
Dry brick: 1,250 psi (8.62 MPa)
Dry quarry tile: 2,580 psi (17.78 MPa)
Blasted steel: 3,270 psi (22.55 MPa)
Ground steel: 3,510 psi (24.20 MPa)

Slip Resistance (ASTM E303)
As supplied
Average PTV (wet) 33
Average PTV (dry) 81
+30% Belzona 9221 aggregate
Average PTV (wet) 40
Average PTV (dry) 82

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light pedestrian traffic or loading	10 hrs	5 hrs	3 hrs
Full traffic or loading	24 hrs	10 hrs	5 hrs
Chemical contact	7 days	5 days	3 days

BELZONA 5231

SG LAMINATE

Heavy-Duty Coating and Protection System

An epoxy coating for floor protection that provides excellent chemical, abrasion, and slip resistance. This 100% solids material can be easily mixed and applied by roller on a range of surfaces including concrete and steel, and will reduce downtime due to its fast curing properties.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume

Coverage Rate
13.3 m^2 (144 ft^2) / 4 L at 300 microns (12 mils)

Working Life
30 minutes at 20°C (68°F)

Shelf Life
5 years

Adhesion (Pull-Off)
Damp concrete: 5.31 MPa (770 psi)
Dry concrete: 7.24 MPa (1,050 psi)
Dry brick: 8.62 MPa (1,250 psi)
Dry quarry tile: 17.78 MPa (2,580 psi)
Blasted steel: 22.55 MPa (3,270 psi)
Ground steel: 24.20 MPa (3,510 psi)

Slip Resistance (BS 7976)
As supplied
Mean PTV (wet) 49
Mean PTV (dry) 65
Surface Roughness Rz 16.7
+20% Belzona 9221 aggregate
Mean PTV (wet) 61
Mean PTV (dry) 69
Surface Roughness Rz 28.6

CURE TIMES

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)
Light pedestrian traffic or loading	8 hrs	4 hrs	3 hrs
Full traffic or loading	24 hrs	8 hrs	5 hrs
Chemical contact	7 days	5 days	3 days

SERIES 5700

ENVIRONMENTAL BARRIERS

Materials for rebuilding and protecting the leading edge of wind turbine blades from erosion.

APPLICATIONS INCLUDE

- Long term protection
- Wind turbines blades
- Fan blades
- Other similar types of equipment

BELZONA 5711

Rebuilding Material for Leading Edge Protection (LEP) of Wind Turbine Blades

A high-performance, easy to apply system specially designed for the repair of erosion and impact damage on the leading edges of wind turbine blades. It is supplied in a cartridge format, making it easy to apply, ideally suited for applicators using rope access. This product has a good working life allowing it to be perfectly contoured to the leading edge, removing the need for sanding, eliminating a step in the repair process.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 2 : 1 by volume	**Volume Capacity** 23 in^3 (380 cm^3) per 600g cartridge
Working Life 12 mintues at 68°F (20°C)	**Shelf Life** 3 years
Compressive Strength 15,226 psi (53.07 MPa) 24-hour cure at 68°F (20°C) 9,631 psi (66.40 MPa) 7-day cure at 68°F (20°C)	**Service Temperature Limit** 122°F (50°C) wet 140°F (60°C) dry
Abrasion Resistance CS17 - 15 mm^3 dry 24-hour cure at 68°F (20°C) CS17 - 11 mm^3 dry 7-day cure at 68°F (20°C)	

CURE TIMES

Temperature	**41°F - 68°F (5°C - 20°C)**	**68°F - 104°F (20°C - 40°C)**
Touch dry (overcoatable)	80 mins	45 mins
Hard dry (sandable)	100 mins	65 mins

BELZONA 5721

High-Performance and UV-Stable Coating for Leading Edge Protection

A two-component, high-performance coating, specifically formulated for protecting the leading edge of wind turbine blades from erosion and impact damage. This system is ideally suited for the rigours of in-situ applications, being easy to apply by brush in a single coat. Together with its low-temperature cure technology, Belzona 5721 can maximize available maintenance opportunities and ensure the turbine's fast return to service.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2 : 1 by volume
3.04 : 1 by weight

Coverage Rate
14.0 ft² (1.3 m²) / 1 kg at 20 mils (500 microns)

Working Life
11 mintues at 68°F (20°C) and 50% humidity

Shelf Life
3 years

Compressive Strength
9,119 psi (62.9 MPa)
at 68°F (20°C) cure and test

Rain Erosion Testing
Validated in accordance with DNV-RP-0573. Full testing reports are available upon request

Adhesion (Pull-Off)
1,735 psi (12 MPa) at 68°F (20°C), cohesive failure of GRP composite

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Touch dry (overcoatable)	35 - 40 minutes				
Hard dry (movement and light loading)	3 hrs	3 hrs	2.5 hrs	2.5 hrs	2 hrs
Time until full-service	6 hrs	6 hrs	5 hrs	5 hrs	4 hrs

SERIES 5800

PROTECTIVE COATINGS

Coatings for protecting metallic and nonmetallic surfaces subject to both direct and indirect contact with liquids or chemicals.

APPLICATIONS INCLUDE

- Bunds
- Tanks
- Clarifiers
- Water boxes
- Cooling tower basins
- Pipes
- Pumps
- Marine buoys
- Concrete sumps
- Manholes
- Tube sheets
- Steel and concrete pilings
- Splash zones
- Transformers
- Valves
- Risers
- Columns
- Nozzles
- Absorbers
- Scrubbers
- Strippers
- Hot wells
- Evaporators
- Flare drums
- Filters
- Diffusers
- Plus many others

BELZONA 5811

IMMERSION GRADE

High-Performance Barrier Coating

An epoxy coating that provides outstanding chemical resistance and protects equipment operating under immersion in aqueous solutions up to 122°F (50°C) from the effects of corrosion. This 100% solids material can be easily applied by brush or spray to virtually any metallic and non-metallic surface, simplifying maintenance work.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
5 : 1 by weight

Coverage Rate
27 ft² (2.5 m²) / L at 16 mils (400 microns)

Working Life
105 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
6,200 psi (42.7 MPa) after 7 days cure at 72°F (22°C)

Maximum Immersion Resistance
122°F (50°C) wet

Adhesion (Tensile Shear)
Mild steel: 2,840 psi (19.9 MPa) 7-day cure at 72°F (22°C)
3,590 psi (24.7 MPa) 28-day cure at 72°F (22°C)
Aluminum: 2,470 psi (17.0 MPa) 7-day cure at 72°F (22°C)
2,530 psi (17.4 MPa) 28-day cure at 72°F (22°C)

Adhesion (Pull-Off)
4,430 psi (30.5 MPa) at 72°F (22°C) for 7 days
4,800 psi (33.1 MPa) at 72°F (22°C) for 28 days

Approvals

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light loading	36 hrs	18 hrs	9 hrs
Full mechanical/thermal loading	8 days	5 days	2 days
Chemical contact	12 days	7 days	5 days

BELZONA 5811

IMMERSION GRADE

High-Performance Barrier Coating

An epoxy coating that provides outstanding chemical resistance and protects equipment operating under immersion in aqueous solutions up to 50°C (122°F) from the effects of corrosion. This 100% solids material can be easily applied by brush or spray to virtually any metallic and non-metallic surface, simplifying maintenance work.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 3 : 1 by volume 5 : 1 by weight	**Coverage Rate** 2.5 m^2 (27 ft^2) / L at 400 microns (16 mils)
Working Life 105 minutes at 20°C (68°F)	**Shelf Life** 5 years
Compressive Strength 64.2 MPa (9,310 psi) after 7-day cure at 20°C (68°F)	**Maximum Immersion Resistance** 50°C (122°F)
Adhesion (Tensile Shear) *Mild steel:* 21.5 MPa (3,115 psi) for 7 days at 22°C (72°F) 22.5 MPa (3,260 psi) for 28 days at 22°C (72°F) *Aluminum:* 14.2 MPa (2,055 psi) for 7 days at 22°C (72°F) 15.5 MPa (2,250 psi) 28 days at 22°C (72°F)	**Adhesion (Pull-Off)** *Mild steel:* 26.3 MPa (3,820 psi) at 20°C (68°F) for 7 days 34.8 MPa (5,040 psi) at 20°C (68°F) for 28 days 33.6 MPa (4,880 psi) at 100°C (212°F) post cure for 1 hour *Concrete:* 5.6 MPa (810 psi) at 20°C (68°F) for 7 days 5.3 MPa (770 psi) at 20°C (68°F) for 28 days
Approvals	

CURE TIMES

Temperature	10°C (41°F)	20°C (68°F)	30°C (86°F)
Light loading	36 hrs	18 hrs	9 hrs
Full mechanical/thermal loading	8 days	5 days	2 days
Chemical contact	12 days	7 days	5 days

BELZONA 5811DW2

DW IMMERSION GRADE

High-Performance Barrier Coating

A two-part epoxy coating which provides outstanding chemical resistance and protects equipment operating under immersion in aqueous solutions up to 122°F (50°C) from the effects of corrosion. Belzona 5811DW2 (DW Immersion Grade) is a variant of Belzona 5811 (Immersion Grade) approved by WRAS for contact with potable water.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2.5 : 1 by volume
4 : 1 by weight

Coverage Rate
27 ft² (2.5 m²) / L at 16 mils (400 microns)

Working Life
30 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
9,748 psi (67.2 MPa) ambient cure
9,706 psi (66.9 MPa) post cure

Maximum Immersion Resistance
104°F (40°C)

Adhesion (Tensile Shear)
Mild steel:
2,020 psi (13.9 MPa) ambient cure
3,250 psi (22.4 MPa) post cure
Aluminum:
1,730 psi (11.9 MPa) ambient cure
2,040 psi (14.1 MPa) post cure

Adhesion (Pull-Off)
4,450 psi (30.7 MPa) at 68°F (20°C)

Approvals

WRAS APPROVED MATERIAL

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light loading	48 hrs	24 hrs	12 hrs
Full mechanical/thermal loading or water immersion	14 days	7 days	4 days

BELZONA 5812DW

DW IMMERSION GRADE

High-Performance Barrier Coating

A two-part epoxy coating which provides outstanding chemical resistance and protects equipment operating under immersion in aqueous solutions up to 122°F (50°C) from the effects of corrosion.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2.6 : 1 by volume
4.0 : 1 by weight

Coverage Rate
43 ft² (4 m²) / L at 10 mils (250 microns)

Working Life
60 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
7,310 psi (50.4 MPa) after 7-day cure

Maximum Immersion Resistance
122°F (50°C)

Adhesion (Pull-Off)
Wet concrete: 455 psi (3.17 MPa) at 72°F (22°C) for 2 days*
Dry concrete: 610 psi (4.21 MPa) at 72°F (22°C) for 2 days

*cohesive failure of substrate

Approvals

CURE TIMES

Temperature	50°F (10°C)	72°F (22°C)	86°F (30°C)
Light loading	24 hrs	6 hrs	3 hrs
Full mechanical/thermal loading or water immerssion	3 days	2 days	24 hrs

BELZONA 5813

High-Performance Static Dissipative, 100% solids and Barrier Coating

A two-component. 100% solids, ESD coating system for imparting electrostatic control properties to a variety of substrates whilst providing excellent barrier protection. This epoxy-based coating system is designed to transfer surface electrostatic charge build-up away from hazardous areas. Due to its excellent static dissipative properties, Belzona 5813 helps to eliminate electrostatic charge where flammable materials are stored.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
5 : 1 by weight

Coverage Rate
27 ft² (2.5 m²) / L at 16 mils (400 microns)

Working Life
90 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
9,200 psi (63.4 MPa)

Maximum Immersion Resistance
122°F (50°C)

Adhesion (Pull-Off)
Dry concrete:
>800 psi (5.5 MPa) at 72°F (22°C) for 28 days
>800 psi (5.5 MPa) at 212°F (100°C) for 2 days
Mild steel:
4,430 psi (30.5 MPa) at 72°F (22°C) for 28 days
4,960 psi (34.2 MPa) at 212°F (100°C) for 2 days

Surface Resistivity
Steel:
10^5 - 10^7 Ω/square
Concrete:
10^6 - 10^8 Ω/square

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Light loading	36 hrs	18 hrs	9 hrs	6 hrs
Full mechanical/thermal loading	8 days	5 days	2 days	1.5 days
Chemical contact	12 days	7 days	5 days	4 days

BELZONA 5815

Containment-Grade, Flexible Barrier Coating

A two-component, 100% solids, and flexible coating system designed for protecting non-metallic and metallic surfaces. This barrier coating provides a cost-effective solution for substrates exposed to short-term chemical immersion or accidental spillages.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by volume
4.1 : 1 by weight

Coverage Rate
27 ft² (2.5 m²) / L at 16 mils (400 microns)

Working Life
90 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
10,178 psi (70.2 MPa) at 72°F (22°C)

Maximum Immersion Resistance
104°F (40°C)

Adhesion (Pull-Off)
Dry concrete: 768 psi (5.3 MPa)*
Damp concrete: 566 psi (3.9 MPa)*
Mild steel: 2,420 psi (16.7 MPa)

*cohesive failure of substrate

Elongation Values
25% cured at 72°F (22°C) for 7 days

CURE TIMES

Temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Light loading	40 hrs	30 hrs	18 hrs	10 hrs	8 hrs
Full mechanical/thermal loading	11 days	9 days	7 days	5 days	3 days
Chemical contact	21 days	18 days	15 days	12 days	10 days

BELZONA 5821

Protective Coating for Equipment Operating in Immersed Erosive Conditions

A ceramic-filled epoxy coating that provides outstanding chemical resistance and protects equipment operating under immersion in aqueous solutions up to 122°F (50°C) from the effects of corrosion. This 100% solids material can be easily applied by brush or spray to virtually any metallic and non-metallic surface.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 3 : 1 by volume 5 : 1 by weight	**Coverage Rate** 27 ft² (2.5 m²) / L at 16 mils (400 microns)
Working Life 105 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 5,780 psi (39.9 MPa) 7 days cure at 72°F (22°C)	**Maximum Immersion Resistance** 104°F (40°C)
Adhesion (Pull-Off) 5,290 psi (36.5 MPa) for 7 days at 72°F (22°C)	**Abrasion Resistance** H10 - 402 mm³ wet CS17 - 86 mm³ dry

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light loading	36 hrs	18 hrs	9 hrs
Full mechanical/thermal loading	8 days	5 days	2 days
Chemical contact	12 days	7 days	5 days

BELZONA 5831

ST-BARRIER

Moisture-Tolerant Protective Barrier Coating

An epoxy coating formulated for application to wet, oily, or underwater surfaces. This advanced formulation actively displaces water and oil from the substrate, ensuring strong adhesion even in challenging conditions, including fully submerged environments.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 1 : 1 by volume 1.75 : 1 by weight	**Coverage Rate** 27 ft² (2.5 m²) / L at 16 mils (400 microns)
Working Life 45 minutes at 68°F (20°C)	**Shelf Life** 5 years
Compressive Strength 2,962 psi (20.4 MPa)	**Maximum Immersion Resistance** 104°F (40°C)
Adhesion (Pull-Off) *With surface preparation SSPC SP-11 for 7 days at 68°F (20°C):* 1,871 (12.9 MPa) underwater 2,234 (15.4 MPa) wet 2,379 (16.4 MPa) oil contaminated 3,000 (20.7 MPa) clean and dry	

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light loading	48 hrs	24 hrs	12 hrs
Full mechanical loading	14 days	5 days	2 days

BELZONA 5831LT

Moisture-Tolerant Protective Coating for Low Temperature Application

An environmental moisture-tolerant barrier coating, specially formulated for the protection of metallic and non-metallic surfaces at lower temperatures. This 100% solids material can be applied to virtually any surface and will cure even in low-temperature environments, as well as underwater.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
1 : 1 by volume
1.75 : 1 by weight

Coverage Rate
35.5 ft² (3.3 m²) / L at 12 mils (300 microns)

Working Life
45 minutes at 68°F (20°C)

Shelf Life
5 years

Adhesion (Pull-Off)
Mild steel (clean and dry):
2,050 psi (14.1 MPa) ground
2,280 psi (15.7 MPa) blasted
Mild steel (underwater):
1,170 psi (8.1 MPa) ground
1,780 psi (12.3 MPa) blasted
Mild steel (oil contaminated):
1,440 psi (9.9 MPa) ground
1,580 psi (10.9 MPa) blasted

Compressive Strength
5,878 psi (40.5 MPa)

Maximum Immersion Resistance
104°F (40°C)

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	86°F (30°C)
Light pedestrian traffic	60 hrs	40 hrs	20 hrs	8 hrs
Full mechanical cure	20 days	13 days	5 days	2 days

BELZONA 5841

High-Performance Protection System

A 100% solids epoxy coating designed to provide outstanding protection to hot metal surfaces against corrosion under insulation (CUI). This surface tolerant coating can be applied by brush directly onto hot metal surfaces from 86°F to 176°F (30°C - 80°C) with minimal preparation required.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 4 : 1 by volume 8.5 : 1 by weight	**Coverage Rate** Dependent on substrate temperature. Refer to IFU
Working Life 60 minutes at 68°F (20°C)	**Shelf Life** 5 years
Adhesion (Pull-Off) *Grit blasted/ ground steel:* 1,800 psi (12.4 MPa) *Rusty steel prepared to ISO 8501-1 St 3:* 1,400 psi (9.65 MPa)	**Compressive Strength** 16,687 psi (115.1 MPa) ambient cure 22,351 psi (154.1 MPa) post cure **Service Temperature Limit** 176°F (80°C)

CURE TIMES

Temperature	68°F (30°C)	122°F (50°C)	176°F (80°C)
Touch dry or light loading	2.5 hrs	1 hr	20 mins
Full mechanical/thermal loading	24 hrs	16 hrs	8 hrs

BELZONA 5851

HA-BARRIER

Barrier Coating for Application onto Hot Surfaces

A single-component coating consisting of a heat-activated resin and corrosion-resistant inert fillers for protecting metallic surfaces subject to corrosion under insulation (CUI) when the substrate temperatures are in the range of 158°F to 302°F (70°C – 150°C).

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) Single component	**Coverage Rate** 25 ft^2 (2.4 m^2) / 1 kg at 8 mils (200 microns)
Working Life Unlimited. Cure will not commence until product is heated	**Shelf Life** 2 years
Volume Capacity 29 in^3 (476 cm^3) / 1 kg	**Service Temperature Limit** 302°F (150°C)
Compressive Strength 26,422 psi (182.2 MPa) at 212°F (100°C) 27,997 psi (193.0 MPa) at 302°F (150°C)	

CURE TIMES

Temperature	176°F (80°C)	194°F (90°C)	248°F (120°C)	302°F (150°C)
Light loading	16 hrs	4 hrs	30 mins	10 mins
Full cure	5 days	3 days	24 hrs	16 hrs

BELZONA 5871

Thermal Insulation Barrier Providing Corrosion Protection “Cool-to-Touch” Properties

A novel, two-component, polymeric, 100% solids system providing a thermal insulation barrier for corrosion protection with thermal and sub-zero “cool-to-touch” properties. This material is designed to be applied to areas including metal pipework, ducting, and other industrial equipment.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
2 : 1 by volume
2.3 : 1 by weight

Coverage Rate
10.8 ft^2 (1.0 m^2) / 1 L

Working Life
20 minutes at 68°F (20°C)

Shelf Life
2 years

Compressive Strength
1,360 psi (9.4 MPa)

Maximum Temperature Limit
302°F (150°C)

Adhesion (Pull-Off)
Mild steel (ground): 620 psi (4.3 MPa) at 68°F (20°C) cure and test
680 psi (4.7 MPa) at 248°F (120°C) cure and 68°F (20°C) test
Mild steel (blasted): 650 psi (4.5 MPa) at 68°F (20°C) cure and test
Mild steel (ground): 530 psi (3.7 MPa) at 302°F (150°C) cure and 68°F (20°C) test

*cohesive failure of Belzona 5871

Corrosion Under Insulation (CUI)
No signs of failure after 1,000 hours simulated CUI, cycled between 140°F (60°C) and 248°F (120°C), with alternating, hourly dry and wet periods

Thermal Conductivity
At temperatures between -40 to 302°F (-40 to 150°C) - 0.0645 to 0.0874 W/m·K

Cool-To-Touch Surface (ASTM C1055)
Reduced surface temperature to below

CURE TIMES

Temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Return to service	36 hrs	24 hrs	16 hrs	12 hrs	8 hrs

BELZONA 5892

High-Temperature Barrier Coating

An epoxy coating for corrosion protection of metallic surfaces in contact with aqueous solutions at temperatures up to 203°F (95°C). This 100% solids material offers good chemical resistance against a wide range of chemicals and protects equipment from the effects of corrosion, salt, water, and environmental damage.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3.5 : 1 by volume
5.8 : 1 by weight

Coverage Rate
27 ft² (2.5 m²) / 1 L at 16 mils (400 microns)

Working Life
40 minutes at 68°F (20°C)

Shelf Life
5 years

Compressive Strength
8,900 psi (61.4 MPa) at 68°F (20°C)

Maximum Immersion Resistance
203°F (95°C)

Adhesion (Pull-Off)
Mild steel: 4,264 psi (29.4 MPa)

Steam Out Resistance
410°F (210°C) steam out resistance

Approvals

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
Time until inspection	42 hrs	18 hrs	5 hrs	4.5 hrs
Time until full-service	post cure required	post cure required	24 hrs	20 hrs
Time until dry post cure	42 hrs	18 hrs	5 hrs	4.5 hrs
Time until wet post cure	15 days	6 days	12 hrs	10 hrs

BELZONA 5892

High-Temperature Barrier Coating

An epoxy coating for corrosion protection of metallic surfaces in contact with aqueous solutions at temperatures up to 95°C (203°F). This 100% solids material offers good chemical resistance against a wide range of chemicals and protects equipment from the effects of corrosion, salt, water, and environmental damage.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3.5 : 1 by volume
5.74 : 1 by weight

Coverage Rate
2.5 m^2 (27 ft^2) / 1 L at 400 microns (16 mils)

Working Life
40 minutes at 20°C (68°F)

Shelf Life
5 years

Compressive Strength
87.98 MPa (12,761 psi)

Maximum Immersion Resistance
95°C (203°F)

Adhesion (Pull-Off)
Mild steel: >37.9 MPa (>5,500 psi)

Steam Out Resistance
210°C (410°F)

Approvals

CURE TIMES

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Time until inspection	42 hrs	18 hrs	5 hrs	4.5 hrs
Time until full-service	post cure required	post cure required	24 hrs	20 hrs
Time until dry post cure	42 hrs	18 hrs	5 hrs	4.5 hrs
Time until wet post cure	15 days	6 days	12 hrs	10 hrs

SERIES 6100

ZINC RICH EPOXY

Zinc-rich epoxy materials for corrosion protection to steelwork.

APPLICATIONS INCLUDE

- All structural steelwork
- Hoppers
- Tanks
- Pipes
- Cooling towers
- Bridges
- Silos
- Fire escapes
- Metal roofs and claddings
- Ducts
- Chemical storage
- Valves
- Digesters
- Manholes
- Plus many others

BELZONA 6111

LIQUID ANODE

Protective Coating with Aesthetic Properties

A zinc-rich epoxy resin designed for coating metallic surfaces to provide corrosion protection. This solvent-based material is ideal in marine and industrial environments where long-term corrosion resistance is required.

Application Methods

Technical Data

Available Color(s)

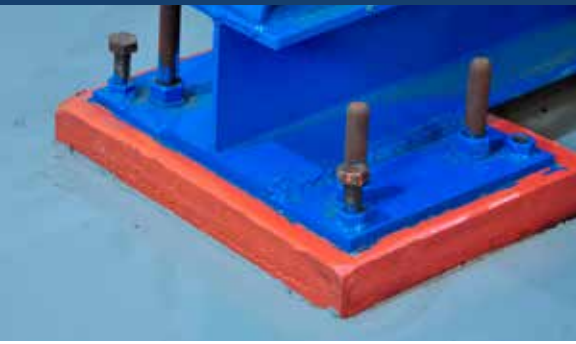
Mixing Ratio (Base:Solidifier) 3.5 : 1 by volume 12.5 : 1 by weight	**Coverage Rate** 19.4 ft² (1.8 m²) / 1 kg at 1.5 mils (38 microns)
Working Life 72 hours at 50°F (10°C) 48 hours at 68°F (20°C) 24 hours at 86°F (30°C)	**Shelf Life** 3 years
Adhesion (Tensile Shear) 1,150 psi (7.9 MPa)	**Service Temperature Limit** 140°F (60°C)
Corrosion Resistance (BS 3900 Part F4) No breakdown after 3,000 hours exposure	

CURE TIMES

Temperature	50°F (10°C)	68°F (20°C)	86°F (30°C)
Touch dry	17 mins	8 mins	3 mins
Minimum overcoating time	32 hrs	16 hrs	8 hrs
Maximum overcoating time	7 days	5 days	3 days
Full cure	10 days	7 days	5 days

SERIES 7100

CHOCKING AND SHIMMING



Pourable epoxy systems with high compressive strength for shimming and chocking applications.

APPLICATIONS INCLUDE

- Pumps
- Generators
- Compressors
- Reduction gears
- Crane rails
- Stern tubes
- Bearing blocks
- Strut bearings
- Pintle bearings
- Rudder bearings
- Stern winches
- Turbines
- Gas engines
- Pulverizers
- Foundations
- Blowers
- Propulsion machinery
- Other machinery

BELZONA 7111

Superior Pourable Chocking System

A cost-effective, two-part, 100% solids chocking/grouting material designed to endure the physical and thermal shock common to marine environments. Belzona 7111 is pourable and is specially formulated to spread out evenly across irregular surfaces.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier) 14.5 : 1 by weight	**Volume Capacity** 272 in³ (4,455 cm³) / 6.95 kg at 0.5-4 in (12-100 mm)
Working Life 30 minutes at 20°F (68°C)	**Shelf Life** 5 years
Compressive Strength 31,000 psi (214 MPa) 4-hour cure at 158°F (70°C)	**Service Temperature Limit** 176°F (80°C)
Adhesion (Pull-Off) *Mild steel:* 3,880 psi (26.8 MPa) *Concrete:* 980 psi (6.8 MPa)* *cohesive failure of substrate	**Shear Strength** 6,590 psi (45.4 MPa) **Tensile Strength** 6,410 psi (44.2 MPa)
Creep Under Load *Deform:* 0.31% when subjected to compressive loads of 725 psi (5 MPa)	**Approvals**

CURE TIMES			
Temperature	**60°F (15°C)**	**68°F (20°C)**	**86°F (30°C)**
	48 hrs	24 hrs	12 hrs

SERIES 7200

GROUTING

Low-exothermic, deep-pourable epoxy systems with enhanced mechanical strength for shimming and chocking applications.

APPLICATIONS INCLUDE

- Compressors
- Drums
- Engines
- Vibrating screens
- Generators
- Reducers
- Drivers
- Pumps
- Fans
- Other machinery

BELZONA 7211

Industrial Grouting Solution for Deep Pour Areas

A three-component, 100% solids, VOC-free epoxy system suitable for deep pour grouting of large machine bases, setting large levelling wedges and sole plates. It offers rapid strength development, superior creep resistance, and minimal shrinkage. This product is ideally suited for the repairs performed on horizontal surfaces where self-leveling capabilities are required.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier:Aggregate)
Standard flow:
4.6 : 1 : 41 by weight
High flow:
4.6 : 1 : 33 by weight

Volume Capacity
Deep grouting in depths of 2 - 8 in (50.8 - 203 mm)
27.65 in^3 (453 cm^3) / kg of standard flow mix
29.05 in^3 (476 cm^3) / kg of high flow mix

Working Life
45 minutes at 72°F (22°C)

Shelf Life
3 years

Compressive Strength (Yield)
Standard flow:
14,800 psi (102 MPa) 72 hours at 72°F (22°C)

High flow:
13,300 psi (92 MPa) 72 hours at 72°F (22°C)

Compressive Strength (Modulus)
Standard flow: 6.6 x 10^5 psi (4,550 MPa)
High flow: 6.8 x 10^5 psi (4,688 MPa)

Creep Under Load
Standard flow: 6.2 x 10^{-3} in/ in
High flow: 8.7 x 10^{-3} in/ in

Adhesion (Pull-Off)
Mild steel: 2,500 psi (17.2MPa)
Concrete: 610 psi (4.2 MPa)*

*cohesive failure of substrate

CURE TIMES

Temperature	60°F (15°C)	72°F (22°C)	86°F (30°C)
	48 hrs	24 hrs	12 hrs

SERIES 7300

STRUCTURAL ADHESIVES

Fatigue-resistant adhesive for structural bonding requiring high mechanical strength with strong cleavage and shear resistance.

APPLICATIONS INCLUDE

- Plate bonding
- Bonding of brackets
- Support installation
- Returning strength to structures
- Rubber bearing installation
- Housing bonding
- Load bearing clips
- Bonding vessel furniture
- Bonding of composite pads
- Other machinery

BELZONA 7311

Fatigue-Resistant Structural Adhesive

Belzona 7311 is a fatigue-resistant structural adhesive engineered for high mechanical strength, cleavage, and shear resistance. It offers a safe, durable alternative to traditional fastening or welding, eliminating the need for hot work while ensuring long-term bonding performance under cyclic and repeated loads in demanding industrial environments.

Application Methods

Technical Data

Available Color(s)

Mixing Ratio (Base:Solidifier)
3 : 1 by weight
3 : 1 by volume

Working Life
40 minutes at 68°F (20°C)

Shelf Life
3 years

Service Temperature Limit
140°F (60°C)

Adhesion (Pull-Off)
5,500 psi (37.9 MPa) at 68°F (20°C) applied, cure and test

4,890 psi (33.7 MPa) at 140°F (60°C) applied, cure and test

5,590 psi (38.6 MPa) at 68°F (20°C) applied and cure, tested at -22°F (-30°C)

Fatigue Resistance
From a mean breaking stress of 35% (8.461 MPa), Belzona 7311 will survive 10^6 cycles at 56.6% with an alternating stress amplitude of ± 4.791 MPa
From a mean breaking stress of 35% (4.003 MPa), Belzona 7311 will survive 10^6 cycles at 63.1% with an alternating stress amplitude of ± 2.526 MPa

Shear Strength
3,740 psi (25.8 MPa)

Tensile Strength
5,360 psi (37.0 MPa)

Flexural Strength
8,580 psi (59.2 MPa)

CURE TIMES

Temperature	68°F (20°C)	86°F (30°C)	104°F (40°C)
	48 hrs	24 hrs	4 hrs

SERIES 8200

HP ANTI-SIEZE

Multi-purpose and high-performance material for preventing seizure and galling of mating components.

APPLICATIONS INCLUDE

- Bolts
- Couplings
- Fulcrum pins
- Keys
- Nuts
- Pulleys
- Sleeves
- Splines
- Sprockets
- Studs
- Plus many others

STATIC LUBRICANT

BELZONA 8211

Multi-Purpose Material for Preventing Machinery Seizure

A single-component material for preventing seizure and galling of mating components subject to high temperatures, corrosion, vibration, and mechanic interlocking before assembly.

Application Methods

Technical Data

Available Color(s)

Covering Power 40 sq.ft/lb (9m²/kg)	**Shelf Life** 5 years
Working Temperature Range -40°F - 2000°F (-40°C - 1100°C)	**Coefficient of Friction** Steel 0.09

CHEMICAL ANALYSIS TO G.E. Nuclear Energy (SPEC D50YP12)	
Fluoride	21 ppm
Chloride	4 ppm
Bromide	N/D < 12 ppm*
Sulphur	123 ppm
Lead	N/D < 5 ppm*
Tin	N/D < 5 ppm*
Zinc	N/D < 5 ppm*
Mercury	N/D < 5 ppm*
Extractable Chloride	N/D < 7 ppm*
Extractable Nitrate	N/D < 7 ppm*
Extractable Nitrite	N/D < 7 ppm*

**N/D - Not Detected*

SERIES 8300

PENETRATING FLUID

Multi-purpose penetrating and lubricating material for disassembling seized components.

PROVIDE PROTECTION TO

- Corrosion
- Dewatering of electronics
- Seized components
- Mechanisms and components
- Electrical elements
- Machined surfaces
- Releasing/penetrating mechanisms and components
- Plus many others

BELZONA 8311

NATO FLUID

Multi-Purpose Penetrating and Lubricating Material

A single-component material for penetrating and releasing seized machinery parts, for dewatering, lubricating, and protecting equipment against external corrosion.

Application Methods

Technical Data

Available Color(s)

Shelf Life 5 years	**Closed Cup Flash Point** 100°F (38°C)
Effects on Painted Surfaces No effect on polyurethane, epoxy and old alkyd paint. New alkyd paint may be softened and blistered	**Compatibility with Oils** Complete compatibility with minerals, vegetable and glycol or ester types
Effects on Rubbers No effect on neoprene and other oil resistant rubbers but natural rubber and S.B.R. will swell with prolonged contact. Uncured rubbers, e.g. pressure sensitive adhesives on wrapping tapes, will be dissolved	**Effects on Plastics** No effect on phenolics, polyethylene, polyesters, nylon and rigid PVC. Plasticizers are extracted from flexible PVC

SERIES 8400

CORROSION INHIBITORS

Corrosion inhibiting material with releasing properties.

PROVIDE PROTECTION TO

- Flanges
- Fastenings
- Fittings
- Connectors
- Other pipe elements

BELZONA 8411

Corrosion Inhibiting Wax

A chlorine-free system used to provide protection to metal substrates exposed to low-level corrosion (e.g. in workshop environments). This one part, solvent-based corrosion inhibiting wax with release properties is used in conjunction with Belzona 3412.

Application Methods

Technical Data

Available Color(s)

Shelf Life
5 years

Closed Cup Flash Point
90°F (32°C)

Coverage Rate
86ft^2 (8 m^2) / L at 5 mil (125 microns) on smooth steel substrates

On rough or irregular surfaces, this coverage rate should be reduced by as much as 50%

VOC (ASTM D2369 / EPA ref. 24)
57.62% / 489.77 g/L

DRYING TIME

Temperature	41°F (5°C)	68°F (20°C)	104°F (40°C)
Touch dry	2 hrs	1 hr	30 mins

SERIES 9000

ACCESSORIES

Belzona 9111 (Cleaner/Degreaser)
A surface cleaner to ensure removal of oil and grease from surfaces prior to the application of other Belzona products. It can also be used for cleaning Belzona mixing tools.

Belzona 9121 (Universal Thinner)
For thinning Belzona solvent-based coatings; *Belzona 3911 (PSC Surface Conditioner), Belzona 3921 (GSC Surface Conditioner), Belzona 5111 (Ceramic Cladding), Belzona 5911 (Ceramic Conditioner), and Belzona 6111 (Liquid Anode). Also used for cleaning application equipment.*

Belzona 9200 Series (Aggregates)
These hard angular aggregates are either incorporated into or applied on top of Belzona coatings to create Safety Grip Systems. Four different grades are available; *Belzona 9211 (Supergrip Aggregate), Belzona 9221 (Surefoot White Aggregate), Belzona 9231 (Surefoot Black Aggregate), and Belzona 9232 (Malibu, Black Ice, Anti-slip).*

Belzona 9241DW (Aggregate)
This NSF approved quartz aggregate is incorporated into Belzona NSF approved coatings to create a concrete rebuilding system suitable for contact with potable water.

SERIES 9000

ACCESSORIES

Belzona 9300 Series (Reinforcing Fabrics)
Belzona 9311 (Flexible Membrane Reinforcing Sheet), Belzona 9321 (Lagseal Reinforcing Sheet), Belzona 9331 (MR7 Reinforcing Sheet), and Belzona 9351 (WG Membrane Reinforcing Sheet) are used to both reinforce and assist the control of film thickness of Belzona Membrane systems. *Belzona 9341 (Reinforcement Tape),* when used with Belzona metallic and elastomeric polymers, increases the tensile strength of composite repairs. *Belzona 9361 and Belzona 9371* are fiberglass reinforcing sheets and *Belzona 9381 is Belzona SuperWrap II Reinforcement Sheet. Belzona 9382* is a Release Film to be used in conjunction with *Belzona SuperWrap II.*

Belzona 9411 (Release Agent)
Applied to any surface where the Belzona application is not required to adhere. Use on molds and formers to allow for an easy release.

Belzona 9611 (ES Metal)
Rapid-curing putty system for sealing low pressure leaks prior to application of more permanent Belzona repairs.

Belzona 9631
Fast setting pre-impregnated composite using a fiberglass reinforcement sheet and a water activated resin.

Belzona 9811
Alumina tile sheet designed for ease of application and erosion protection. This product may be used in conjunction with *Belzona 5821 and Belzona 1321 as bonding agents, and Belzona 1812, Belzona 1813, and Belzona 1814 for grouting purposes.*

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