



PRODUCT CATALOGUE

Belzona Protective Coatings and Engineering Composites

BELZONA®
Repair • Protect • Improve


BELZONA
1391
BASE

PRODUCT CATALOGUE

A guide to Belzona materials

This catalogue is a quick reference guide to Belzona´s product range. For the latest and full information on our products, please refer to the appropriate Product Flyer, Product Specification Sheet (PSS), Instructions for Use (IFU), Safety Data Sheet (SDS) and Chemical Resistance Chart (CRC), or obtain further information from the Belzona Technical Department.

The information contained in this catalogue is up to date at the time of printing. Please always refer to www.belzona.com and your local Belzona representative for the latest information on Belzona's products and services.

TERMS AND DEFINITIONS

Please note the following with regards to the figures quoted in this guide:

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

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

Compressive strength
Tested per ASTM D695

Corrosion resistance
Tested per ASTM B117, BS 3900

Coverage rates and volume capacity
Coverage rates are theoretical for the recommended system. Please consult the Instructions for Use for specific details

Dry heat resistance
Tested per ISO 11357

Elongation and tensile strength
Tested per D412

Elongation at break
Tested per BS 2782

Flexural strength
Tested per ASTM D790

Heat distortion temperature
Tested per ASTM D648

Shelf life
Separate base and solidifier components shall have the specified shelf life from date of manufacture when stored in their original unopened containers between 5°C (41°F) and 30°C (86°F)

Hardness
Tested per ASTM D2240, ASTM D2583

Tear strength
Tested per ASTM D624 (Die C)

Water vapor permeability
Tested per ASTM 1653, ASTM E96

1000 Series

METALLIC POLYMERS

Repair and Protection of Rigid Components

1100 SERIES	Paste grade rebuilding, resurfacing and bonding materials
1200 SERIES	Fast curing rebuilding, resurfacing and bonding materials
1300 SERIES	Erosion-corrosion resistant coatings and rebuilding materials
1500 SERIES	High temperature coatings and rebuilding materials
1800 SERIES	Abrasion resistant linings and positive grip systems
1900 SERIES	Composite repair systems

Belzona 1111
(Super Metal)

Engineering grade repair system

A two-component, paste grade material for the repair, rebuilding and bonding of metallic surfaces, based on solvent free polymeric resin reinforced with silicon steel alloy. This multi-purpose composite 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.

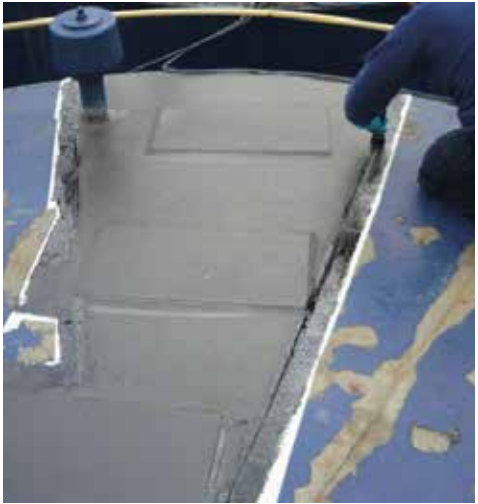
Colour:

Technical Data

Mixing ratio (Base : Solidifier)	3:1 by volume	5:1 by weight
Working life	15 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel - 2,790 psi (19.2 Mpa)	Stainless steel - 2,960 psi (20.4 Mpa)
Compressive strength	9620 psi (66.3 Mpa) at 20°C (68°F)	
Volume capacity	24.3in³ (398cm³) /kg	
Heat distortion temperature	53°C (127°F) at 20°C (68°F)	91°C (195°F) at 100°C (212°F)
Abrasion resistance	H10 Wheels (Wet) 852mm³	CS17 - 24 mm³ dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	3 hours	2¼ hours	1¾ hours	1 hour
Machining and/or light loading	4 hours	3 hours	2 hours	1½ hours
Full mechanical or thermal loading	2 days	1½ days	1 day	20 hours
Immersion in chemicals	4 days	3 days	2 days	1½ days



Belzona 1121
(Super XL-Metal)

Repair system with extended working life

A two-component, paste grade material for the repair, rebuilding and bonding of metallic surfaces when extended working life is required. This system is ideal for large applications where greater volumes of material are required or to provide adequate working time at higher temperatures.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	1:1 by volume	1.2:1 by weight	
Working life	35 minutes at 25°C (77°F)		
Shelf life	5 years		
Dry heat resistance	200°C (392°F)		
Adhesion (tensile shear)	Mild steel: 22.8 MPa (3,300 psi)	Aluminum: 13.1 MPa (1,900 psi)	Copper: 13.8 MPa (2,000 psi)
Compressive strength	86.2 MPa (12,500 psi) at 20°C (68°F) cure		
Volume capacity	385 cm^3 (23.5 in^3) / 1 kg		
Heat distortion temperature	50°C (122°F) at 20°C (68°F) cure	71°C (160°F) at 100°C (212°F) cure	
Abrasion resistance	H10 - 1,660 mm^3 wet	CS17 - 55 mm^3 dry	

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	15 hours	9 hours	4¾ hours	2½ hours
Machining and/or light loading	2 days	27 hours	16 hours	9 hours
Full mechanical or thermal loading	5 days	3 days	1½ days	24 hours
Immersion in chemicals	12 days	7 days	4 days	2½ days

Belzona 1131
(Bearing Metal)

Self-lubricated repair system

A two-component, paste grade repair system with self-lubricating properties used to create low friction surfaces subject to intermittent contact and where specific loads are low. This repair material has a unique micro-porous structure which allows it to trap and hold lubricating oil, minimising friction at start-up and improving the efficiency of mechanical equipment.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	3 : 1 by volume	4 : 1 by weight
Working life	15 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 20.8 MPa (3,020 psi)	
Compressive strength	82.9 MPa (12,030 psi) at 20°C (68°F) cure	
Volume capacity	561 cm^3 (34.2 in^3) / 1 kg	
Heat distortion temperature	51°C (124°F) at 20°C (68°F) cure	88°C (190°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 1022 mm^3 wet	CS17 - 61 mm^3 dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	3 hours	2¼ hours	1¾ hours	1 hour
Machining and/or light loading	4 hours	3 hours	2 hours	1½ hours
Full mechanical or thermal loading	2 days	1½ days	24 hours	20 hours

Belzona 1151
(Smoothing Metal)

Repair system for shallow rebuilding

A two-component, semi-paste grade material based on a silicon steel alloy blended with high molecular weight reactive polymers and oligomers. The system is designed for rebuilding shallow pitting in metal substrates up to 6 mm (1/4 inch) deep, quickly rebuilding large areas.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	4 : 1 by volume	10.8 : 1 by weight
Working life	30 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 19.3 MPa (2,800 psi)	
Compressive strength	95.1 MPa (13,790 psi) at 20°C (68°F) cure	
Volume capacity	409 cm^3 (24.95 in^3) / 1 kg	1,227 cm^3 (74.9 in^3) / 3 kg
Heat distortion temperature	44°C (111°F) at 20°C (68°F) cure	87°C (189°F) at 100°C (212°F) cure

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
Overcoating	5 hours	3½ hours	2½ hours
Machining and/or light loading	18 hours	9 hours	4½ hours
Full mechanical or thermal loading	7 days	2 days	24 hours

Belzona 1161
(Super UW-Metal)

Water and oil tolerant metal repair system

A two-component, paste grade system for repair and rebuilding applications based on a silicon steel alloy blended with high molecular weight water tolerant reactive polymers and oligomers. This material is specifically designed for application to wet, oily and manually prepared surfaces.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	2 : 1 by volume		4 : 1 by weight	
Working life	16 minutes at 20°C (68°F)			
Shelf life	3 years			
Dry heat resistance	208°C (401°F)			
Adhesion (tensile shear)	Grit blasted mild steel - clean and dry: 20.7 MPa (3,007 psi)	Grit blasted mild steel - oily: 18.9 MPa (2,735 psi)	Abraded mild steel - clean and dry: 14.7 MPa (2,130 psi)	Abraded mild steel - oily: 15.6 MPa (2,256 psi)
Volume capacity	428 cm^3 (26.1 in^3) / 1 kg			
Heat distortion temperature	47°C (117°F) at 20°C (68°F) cure			
Abrasion resistance	H10 - 712 mm^3 wet		CS17 - 43 mm^3 dry	

Cure Times

Temperature	5°C (41°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Machinable or light loading	6 hours	4 hours	2 hours	1 hours	30 minutes
Full mechanical or thermal loading	4 days	2 days	1 day	16 hours	12 hours

Belzona 1212

Rapid curing surface tolerant repair system

A two-component, fast curing, surface tolerant, paste grade material engineered specifically for in-situ repair and rebuilding of wet, oil contaminated and underwater surfaces. This multi-purpose material exhibits rapid cure and excellent adhesion to manually prepared substrates, where grit blasting cannot be achieved.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	1:1 by volume	5:6 by weight
Working Life	9 minutes at 20°C (68°F)	
Shelf Life	5 years	
Dry Heat Resistance	200°C (392°F)	
Adhesion (Tensile Shear)	Grit blasted mild steel - clean and dry: 18.0 MPa (2,615 psi)	Grit blasted mild steel - transformer oil: 20.1 MPa (2,920 psi)
	Ground mild steel - clean and dry: 17.8 MPa (2,575 psi)	Ground mild steel - transformer oil: 18.0 MPa (2,615 psi)
Compressive Strength	69.0 MPa (10,010 psi) 7 day cure at 20°C (68°F)	
Volume Capacity	212 cm^3/ 12.9 in^3 per 450g unit	
Heat distortion temperature	44°C (111°F) 24 hours cure at 20°C (68°F)	
Abrasion resistance	H10 - 1,061 mm^3 wet	CS17 - 54 mm^3 dry

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Machinable	2 hours	40 minutes	30 minutes	20 minutes
Light Loading	4 hours	90 minutes	60 minutes	30 minutes
Full Loading	12 hours	8 hours	5 hours	2½ hours

Belzona 1221
(Super E-Metal)

Extra rapid curing repair system

A two-component repair material consisting of a base and solidifier packaged in sealed metallic sachets. This composite system is based on a silicon steel alloy blended with high molecular weight polymers and oligomers, and is designed for high speed emergency repairs.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	1 : 1 by volume	2 : 1 by weight	
Working Life	3 minutes at 25°C (77°F)		
Shelf Life	5 years		
Heat resistance	150°C (302°F) dry	60°C (140°F) wet	
Adhesion (Tensile Shear)	Mild steel: 17.2 MPa (2,500 psi)	Copper: 12.4 MPa (1,800 psi)	Aluminum: 10.3 MPa (1,500 psi)
Compressive Strength	55.8 MPa (8,100 psi)		
Volume Capacity	550 cm^3 (33.5 in^3) / 1 kg		
Heat distortion temperature	51°C (124°F) at 25°C (77°F) cure		
Flexural strength	59.3 MPa (8,600 psi)		

Cure Times

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

Belzona 1251
(HA-Metal)

Heat activated repair system

A single component, paste grade system based on a silicon steel alloy blended with a heat activated resin. Designed to repair and protect metal surfaces suffering from corrosion under insulation (CUI), this material can be applied directly onto hot surfaces with minimal surface preparation.

Colour:

Technical Data

Volume capacity	401 cm³ (24.5 in³) / 1 kg	
Dry heat resistance	210°C (410°F)	
Shelf Life	2 years	
Working life	Unlimited - Cure will not commence until product is heated	
Adhesion (Tensile Shear)	Clean ground steel: 17.1 MPa (2475 psi) at 100°C (212°F) cure	Rusty steel (prepared to ISO 8501-1 St 2): 8.3 MPa (1,200 psi) at 100°C (212°F) cure
Compressive Strength	120.0 MPa (17,400 psi) at 70°C (158°F) cure	
Heat distortion temperature	105°C (221°F) at 70°C (158°F) cure	117°C (243°F) at 100°C (212°F) cure
Corrosion resistance	No visible signs of corrosion after 5,000 hours of exposure in ASTM B117 Salt Spray Cabinet	

Cure Times

Temperature	70°C (158°F)	85°C (185°F)	100°C (212°F)	115°C (239°F)
Light loading	75 min	25 min	15 min	15 min
Full mechanical or thermal loading	5 hours	2 hours	60 min	60 min
Optimum heat resistance	7 days	5 days	3 days	1 day

Belzona 1311
(Ceramic R-Metal)

Repair system for erosion-corrosion damage

A two-component, paste grade material based on a silicon-steel alloy and ceramic particles blended with high molecular weight reactive polymers and oligomers. The system is designed for rebuilding metals and offers protection against the effects of erosion-corrosion.

Colour:

Technical Data

Mixing ratio (base:solidifier)	3 : 1 by volume	5 : 1 by weight
Working life	15 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 20.7 MPa (3,000 psi)	Stainless steel: 19.0 MPa (2,760 psi)
Compressive strength (yield)	56.8 MPa (8,235 psi) at 20°C (68°F) cure	
Volume capacity	415 cm³ (25.3 in³) / 1 kg	830 cm³ (50.6 in³) / 2 kg
Heat distortion temperature	51°C (124°F) at 20°C (68°F) cure	89°C (192°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 194 mm³ wet	CS17 - 25 mm³ dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	3 hours	2½ hours	1 ¾ hours	1 hour
Machining and/or light loading	4 hours	3 hours	2 hours	1½ hours
Full mechanical or thermal loading	2 days	1½ days	1 day	20 hours
Immersion in chemicals	4 days	3 days	2 days	1½ day

Belzona 1321
(Ceramic S-Metal)

Erosion-corrosion resistant ceramic coating

A two-component, ceramic filled coating system offering excellent erosion-corrosion protection and resistant to a broad range of aqueous solutions, hydrocarbons and process chemicals. This coating is designed to operate under continuous immersion at operating temperatures up to 60°C (140°F).

Colour:

Technical Data

Mixing ratio (base:solidifier)	4 : 1 by volume	11 : 1 by weight
Working Life	30 minutes at 25°C (77°F)	
Shelf Life	5 years	
Heat resistance	220°C (428°F) dry	60°C (140°F) wet
Adhesion (Tensile Shear)	Mild steel: 18.68 MPa (2,710 psi)	Stainless steel: 21.92 MPa (3,180 psi)
Compressive Strength	86.18 MPa (12,500 psi) at 20°C (68°F) cure	
Volume Capacity	422 cm^3 (25.7 in^3) / 1 kg	
Heat distortion temperature	48°C (118°F) at 20°C (68°F) cure	87°C (189°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 178 mm^3 wet	CS17 - 14 mm^3 dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	8 hours	5½ hours	4 hours	3½ hours
Machining and/or light loading	12 hours	9 hours	6 hours	4½ hours
Full mechanical or thermal loading	3 days	2 days	1½ day	24 hours
Immersion in chemicals	5 days	3 days	2 days	1½ day

Belzona 1331

Erosion/corrosion resistant coating

A two-component coating system for erosion-corrosion protection of equipment operating under continuous immersion at temperatures up to 50°C (122°F). This next generation coating offers excellent erosion resistance combined with negligible wear to spray equipment. It is suitable for one or two coat application and can be used to achieve high-build films in one coat without sagging.

Colour:

WHITE

Technical Data

Mixing ratio (base:solidifier)	2 : 1 by volume	2.2 : 1 by weight
Working life	40 minutes at 25°C (77°F)	
Shelf life	3 years	
Heat resistance	120°C (248°F) dry	50°C (122°F) wet
Adhesion (tensile shear)	Mild steel: 26.9 MPa (3,900 psi)	
Compressive strength (yield)	39.8 MPa (5,775 psi) at 20°C (68°F) cure	
Coverage rate	1.75 m² (18.8 ft²) 1kg at 500 microns (20 mils)	
Heat distortion temperature	45°C (113°F) at 20°C (68°F) cure	67°C (153°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 46 mm³ wet	CS17 - 13 mm³ dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	24 hours	12 hours	8 hours	7 hours
Machining and/or light loading	48 hours	24 hours	16 hours	14 hours
Full mechanical or thermal loading	14 days	7 days	3 days	2½ days
Immersion in chemicals	21 days	10 days	7 days	6 days

Belzona 1341
(Supermetalglide)

Erosion-corrosion resistant coating for efficiency enhancement

A two-component coating system designed to improve the efficiency of fluid handling equipment and to protect metals from the effects of erosion-corrosion. Through its hydrophobic properties, Belzona 1341 can provide efficiency increases on new and refurbished equipment.

Colour:

WRAS APPROVED MATERIAL

ABS TYPE APPROVED PRODUCT

Technical Data

Mixing ratio (base:solidifier)	1 : 1 by volume	10 : 7 by weight
Working life	40 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	130°C (266°F)	
Adhesion (tensile shear)	Mild steel: 26.2 MPa (3,800 psi)	
Compressive strength	57.2 MPa (8,300 psi) at 20°C (68°F) cure	
Coverage rate	1.76 m² (18.9 ft²) / 1 kg at 400 microns (16 mils)	
Volume capacity	0.71 L (43 in³) / 1 kg	3.52 L (215 in³) / 5 kg
Heat distortion temperature	43°C (109°F) at 20°C (68°F) cure	83°C (181°F) at 60°C (140°F) cure
Abrasion resistance	H10 - 76 mm³ wet	

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	24 hours	12 hours	8 hours	7 hours
Machining and/or light loading	48 hours	24 hours	16 hours	14 hours
Full mechanical or thermal loading	14 days	7 days	3 days	2½ days
Immersion in chemicals	21 days	10 days	7 days	6 days

Belzona 1341N
(Supermetalglide)

Erosion-corrosion resistant coating for efficiency enhancement

A drinking water certified two-component coating system designed to improve the efficiency of fluid handling equipment and to protect metals from the effects of erosion-corrosion. Through its hydrophobic properties, Belzona 1341N can provide efficiency increases on new and refurbished equipment.

Colour:

Tested and certified by WQA against NSF/ANSI 61. For product use restrictions visit www.wqa.org

Technical Data

Mixing ratio (base:solidifier)	3 : 2 by volume	2 : 1 by weight
Working life	25 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 17.2 MPa (2,500 psi)	
Compressive strength	47.6 MPa (6,900 psi) at 20°C (68°F) cure	
Coverage rate	1.76 m² (18.9 ft²) / kg	
Volume capacity	695 cm³ (42.4 in³) / 1 kg	520 cm³ (31.73 in³) / 750 g
Heat distortion temperature	44°C (111°F) at 20°C (68°F) cure	71°C (160°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 52 mm³ wet	CS17 - 6 mm³ dry

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	24 hours	12 hours	8 hours	7 hours
Machining and/or light loading	48 hours	24 hours	16 hours	14 hours
Full mechanical or thermal loading	14 days	7 days	3 days	2½ days
Immersion in chemicals	21 days	10 days	7 days	6 days

Belzona 1381

Erosion-corrosion resistant sprayable coating

A two-component coating system for erosion-corrosion protection of equipment operating under continuous immersion at temperatures up to 95°C (203°F). This next generation coating offers excellent erosion resistance combined with negligible wear to spray equipment. It is suitable for one or two coat application and can be used to achieve high-build films in one coat without sagging.

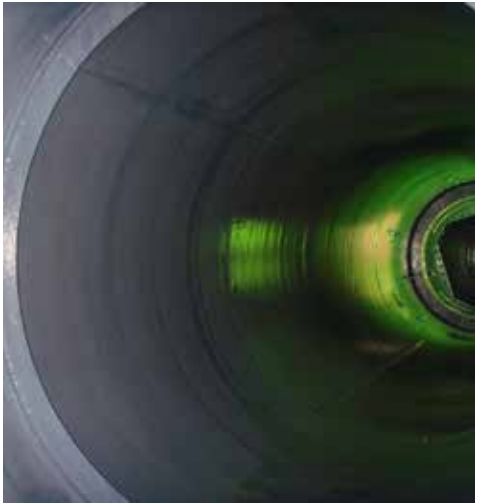
Colour:

Technical Data

Mixing ratio (base:solidifier)	5 : 2 by volume	5 : 2 by weight
Working life	40 minutes at 25°C (77°F)	
Shelf life	3 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 22.8 MPa (3,300 psi)	
Sag Resistance	>1250µm (>50 mils)	
Coverage rate	2 m² (21.5 ft²) / litre at 500 microns (20 mils)	
Heat distortion temperature	45°C (113°F) at 20°C (68°F) cure	122°C (252°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 46 mm³ wet	CS17 - 9 mm³ dry

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Time until full service	96 hours	48 hours	20 hours	14 hours
Dry post cure (if required)	32 hours	10 hours	8 hours	4 hours



Belzona 1391
(Ceramic HT)

High temperature protective coating

A two-component, high temperature coating system designed to operate under continuous immersion at operating temperatures up to 120°C (248°F). This coating exhibits excellent erosion-corrosion protection at elevated temperatures and resists a broad range of aqueous solutions, hydrocarbons and process chemicals.

Colour:

Technical Data

Mixing ratio (base:solidifier)	13 : 1 by weight	5 : 1 by volume
Working life	40 minutes at 20°C (68°F)	
Shelf life	3 years	
Dry heat resistance	230°C (446°F) to -40°C (-40°F)	
Adhesion (tensile shear) mild steel	22.06 MPa (3,200 psi) 20°C (68°F) cure	21.37 MPa (3,100 psi) 100°C (212°F) cure
Compressive strength	78.6 MPa (11,400 psi) 20°C (68°F) cure	99.28 MPa (14,400 psi) 100°C (212°F) cure
Volume capacity	431 cm^3 (26.1in^3) / 1 kg	
Heat distortion temperature	48°C (118°F) at 20°C (68°F) cure	145°C (293°F) at 100°C (212°F) fully post-cured
Abrasion resistance	H10 - 550 mm^3 20°C (68°F) cure, wet	H10 - 39 mm^3 100°C (212°F) cure, wet

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Use involving no loading	8 hours	5½ hours	2 hours	1½ hours
Light loading	16 hours	9 hours	3 hours	2 hours
Cold water immersion	7 days	4 days	2 days	1½ days
Hot water immersion	14 days	7 days	3 days	2 days

Belzona 1391S

Spay applied high temperature coating

A two-component, spray applied, high temperature coating system designed to operate under continuous immersion at operating temperatures up to 110°C (230°F). This coating exhibits excellent erosion-corrosion protection at elevated temperatures and resists a broad range of aqueous solutions, hydrocarbons and process chemicals.

Colour:

Technical Data

Mixing ratio (Base:Solidifier)	4 : 1 by volume	7.5 : 1 by weight
Working life	45 minutes at 20°C (68°F)	
Shelf life	3 years	
Dry heat resistance	250°C (482°F)	
Adhesion (tensile shear) mild steel	17.92 MPa (2,600 psi) at 20°C (68°F) cure	13.79 MPa (2,000 psi) at 100°C (212°F) cure
Compressive strength	77.22 MPa (11,200 psi) at 20°C (68°F) cure	
Coverage rate	2 m² (21.5 ft²) / litre at 20 mils (500 microns)	
Heat distortion temperature	55°C (131°F) at 20°C (68°F) cure	152°C (306°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 940 mm³ 20°C (68°F), wet	CS17 - 24 mm³ 90°C (194°F), dry

Cure Times

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

Belzona 1391T

Hand applied high temperature coating

A two-component, hand applied, high temperature coating system designed to operate under continuous immersion at operating temperatures up to 130°C (266°F). This coating exhibits excellent erosion-corrosion protection at elevated temperatures and resists a broad range of aqueous solutions, hydrocarbons and process chemicals.

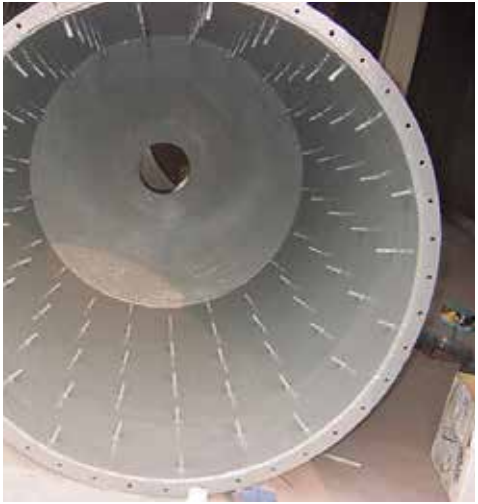
Colour:

Technical Data

Mixing ratio (base:solidifier)	4 : 1 by volume	8.5 : 1 by weight
Working life	45 minutes at 20°C (68°F)	
Shelf Life	3 years	
Dry heat resistance	250°C (482°F)	
Adhesion (tensile shear) mild steel	22.06 MPa (3,200 psi) at 20°C (68°F) cure	19.30 MPa (2,800 psi) at 100°C (212°F) cure
Compressive strength	75.84 MPa (11,000 psi) at 20°C (68°F) cure	
Volume capacity	535 cm^3 (32.6 in^3) / 1 kg	
Heat distortion temperature	53°C (127°F) at 20°C (68°F) cure	
Abrasion resistance	H10 - 320 mm^3 20°C (68°F), wet	

Cure Times

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



Belzona 1392
(Ceramic HT2)

High temperature coating for acid contaminated systems

A two-component, high temperature coating system resistant to water, aqueous solutions and hydrocarbons up to 120°C (248°F). This coating is specially designed to provide erosion-corrosion protection in acid contaminated water/hydrocarbon systems.

Colour:

Technical Data

Mixing ratio (base:solidifier)	20 : 1 by weight
Working life	35 minutes at 20°C (68°F)
Shelf life	2 years
Dry heat resistance	230°C (446°F)
Adhesion (tensile shear)	Mild steel: 18.13 MPa (2,630 psi) at 20°C (68°F) cure
Compressive strength	102.04 MPa (14,800 psi) at 20°C (68°F) cure
Volume capacity	439 cm^3 (26.8 in^3) / 1 kg
Heat distortion temperature	49°C (118°F) at 20°C (68°F) cure
Coverage rate	0.73 m^2 (7.9 ft^2) / 1 kg at 600 microns (24 mils)
Abrasion resistance	H10 - 145 mm^3 100°C (212°F) cure, wet

Cure Times

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

Belzona 1511
(Super HT-Metal)

High temperature repair and rebuilding system

A two-component, high temperature paste grade system for rebuilding metals damaged by erosion-corrosion. When cured, the material is durable yet fully machinable and it has been specifically designed for use with Belzona high temperature coatings.

Colour:

Technical Data

Mixing ratio (base:solidifier)	5 : 1 by weight	
Working life	60 minutes at 20°C (68°F)	
Shelf life	5 years	
Dry heat resistance	230°C (446°F)	
Adhesion (tensile shear) mild steel	20.2 MPa (2,930 psi) at 20°C (68°F) cure	22.0 MPa (3,190 psi) at 100°C (212°F) cure
Compressive strength (yield)	57.4 MPa (8,320 psi) at 20°C (68°F) cure	
Volume capacity	383 cm^3 (23.4 in^3) / 1 kg	
Heat distortion temperature	53°C (127°F) at 20°C (68°F) cure	135°C (275°F) at 100°C (212°F) cure
Abrasion resistance	H10 - 673 mm^3 wet	CS17 - 12.2 mm^3 dry

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (105°F)
Light loading	72 hours	18 hours	5 hours	4 hours
Full mechanical or thermal loading	Post cure required	30 hours	24 hours	6 hours
Immersion in chemicals	Post cure required	Post cure required	60 hours	8 hours

Belzona 1523

Spray applied coating system for high temperature equipment

A two-component high temperature coating suitable for continuous immersion in aqueous/hydrocarbon systems up to 140°C (284°F), offering excellent corrosion protection and resistance to a wide range of chemicals.

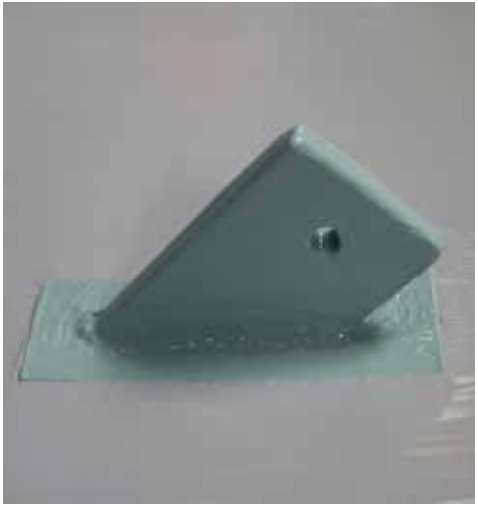
Colour:

Technical Data

Mixing ratio (base:solidifier)	8 : 1 by weight	4.5:1 by volume	
Working life	45 minutes at 20°C (68°F)		
Shelf life	3 years		
Dry heat resistance	220°C (428°F)		
Adhesion (tensile shear) mild steel	20.1 MPa (2,910 psi) at 20°C (68°F) cure	14.1 MPa (2,050 psi) at 100°C (212°F) cure	
Compressive strength (yield)	46.9 MPa (6,800 psi) at 20°C (68°F) cure		
Coverage rate	2 m² (21.5 ft²) / litre at 500 microns (20 mils)		
Heat distortion temperature	46°C (115°F) at 20°C (68°F) cure	155°C (311°F) at 100°C (212°F) cure	196°C (385°F) at 140°C (284°F) cure
Abrasion resistance	H10 - 835 mm³ wet	CS17 - 14.7 mm³ dry	

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (105°F)
Time until inspection	45 hours	11 hours	7 hours	4 hours
Time until full service	7 days	25 hours	14 hours	9 hours
Time until dry post cure (if required)	45 hours	11 hours	7 hours	4 hours
Time until wet post cure (if required)	85 hours	18 hours	10 hours	6 hours



Belzona 1593

Hand applied coating system for high temperature equipment

A two-component high temperature coating suitable for continuous immersion in aqueous/hydrocarbon systems up to 160°C (320°F), offering excellent corrosion protection and resistance to a wide range of chemicals.

Colour:

Technical Data

Mixing ratio (base:solidifier)	11 : 1 by weight	5.6:1 by volume	
Working life	45 minutes at 20°C (68°F)		
Shelf life	3 years		
Dry heat resistance	220°C (428°F)		
Adhesion (tensile shear) mild steel	20 MPa (2,900 psi) at 20°C (68°F) cure	12.3 MPa (1,790 psi) at 160°C (320°F) cure	
Compressive strength	57.1 MPa (8,280 psi) at 20°C (68°F) cure	34.6 MPa (5,010 psi) at 160°C (320°F) cure	
Coverage rate	1.1 m² (11.84 ft²) /kg at 500 microns (20 mils)		
Heat distortion temperature	49°C (120°F) at 20°C (68°F) cure	168°C (334°F) at 100°C (212°F) cure	234°C (453°F) at 160°C (320°F) cure
Abrasion resistance	H10 - 1,042 mm³ wet	CS17 - 17.4 mm³ dry	

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (105°F)
Time until inspection	42 hours	20 hours	8 hours	4 hours
Time until full service	10 days	72 hours	30 hours	9 hours
Time until dry post cure (if required)	42 hours	20 hours	8 hours	4 hours
Time until wet post cure (if required)	4 days	40 hours	14 hours	7 hours

Belzona 1811
(Ceramic Carbide)

Protective lining for sliding abrasion

A two-component lining system for the repair and protection of surfaces suffering from sliding abrasion. This highly abrasion resistant material is based on high molecular weight polymers and oligomers incorporating abrasion resistant ceramic aggregates. It can be applied from 6mm (1/4 inch) to unlimited thickness onto horizontal or vertical surfaces.

Colour:

Technical Data

Mixing ratio (base : solidifer)	4 : 1 by volume	8.5 : 1 by weight
Working life	60 minutes at 20 °C (68 °F)	
Shelf life	5 years	
Dry heat resistance	200 °C (392 °F)	
Adhesion (tensile shear)	Mild steel : 16,55 MPa (2400 psi)	
Compressive strength	77,91 MPa (11 300 psi)	
Volume capacity	459 cm^3 (28 in^3) / kg	
Heat distortion temperature	49 °C (120 °F)	
Coverage rate	0,077 m^2 (0,82 ft^2) / kg at 6 mm (0,25 in)	
Abrasion resistance	H10 - 57 mm^3 wet	CS17 - 7 mm^3 dry

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	16 hours	12 hours	8 hours	6 hours
Machining or light loading	24 hours	18 hours	12 hours	8 hours
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)

Protective lining for fine particle abrasion

A two-component lining system for the repair and protection of surfaces suffering from fine particle abrasive attack. This highly abrasion resistant material is based on high molecular weight polymers and oligomers incorporating abrasion resistant ceramic aggregates. It can be applied from 3mm (1/8 inch) to unlimited thickness onto horizontal or vertical surfaces.

Colour:

Technical Data

Mixing ratio (base : solidifer)	4 : 1 by volume	4.5 : 1 by weight
Working life	20 minutes at 25 °C (77 °F)	
Shelf life	5 years	
Dry heat resistance	200 °C (392 °F)	
Adhesion (tensile shear)	11.66 Mpa (1690 psi)	
Compressive strength	75.5MPa (10950 psi) after 24 hour cure at 20°C (68 °F)	
Volume capacity	440 cm^3 (26.85 in^3) / kg	
Coverage rate	0.149 m^2 (1.60 ft^2) / kg at 3 mm (0.125 in)	
Abrasion resistance	H10 - 87 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 hours	6 hours	4 hours	3 hours
Machining or light loading	12 hours	9 hours	6 hours	4 hours
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

High temperature protective lining for abrasive attack

A two-component lining system for the repair and protection of equipment operating at temperatures up to 200°C (392°F) suffering from abrasion. This highly abrasion resistant material is based on high molecular weight polymers and oligomers incorporating abrasion resistant ceramic aggregates. It can be applied from 3mm (1/8 inch) to unlimited thickness onto horizontal or vertical surfaces.

Colour:

Technical Data

Mixing ratio (base : solidifer)	3 : 1 by volume	3.84 : 1 by weight
Working life	40 minutes at 20 °C (68 °F)	
Shelf life	5 years	
Dry heat resistance	240 °C (464 °F)	
Adhesion (tensile shear)	Mild steel: 15.1 MPa (2190 psi) at 20 °C (68 °F) cure	
Compressive strength	74.7 MPa (10 840 psi) at 20 °C (68 °F) cure	
Volume capacity	450 cm^3 (27.5 in^3) / kg	
Heat distortion temperature	54 °C (129 °F) at 20 °C (68 °F) cure	
Coverage rate	0.15 m^2 (1.61 ft^2) / kg at 3 mm (0.125 in)	

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	16 hours	12 hours	8 hours	6 hours
Machining or light loading	24 hours	18 hours	12 hours	8 hours
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

Belzona 1814 is a cost-effective three-component repair system for the protection of surfaces subject to abrasive attack. This material is designed to provide protection in highly abrasive environments and is specifically formulated for application over large areas.

Colour:

Technical Data

Mixing ratio (base : solidifier : aggregate)	2 : 1 : 5 by volume	
Working life	60 minutes at 20°C (68°F)	
Coverage rate	4.27 m² (46 ft²) at 3mm (0.12 in) per 30 kg unit	
Shelf life	5 years	
Taber Dry (CS17) 1kg 1000 cycles	7 mm³ loss	
Taber Wet (H10) 1kg 1000 cycles	51 mm³ loss	
Grit Impact 2kg 90° 80 psi	10 mm³ loss	
Heat distortion temperature (HDT)	43°C (109°F) after 20°C (68°F) cure	80°C (176°F) after 90°C (194°F) cure
Adhesion (Tensile Shear)	Mild Steel: 9.5 MPa (1370 psi)	

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 hours	12 hours	10 hours	6 hours
Light loading	5 days	24 hours	16 hours	12 hours
Full mechanical or thermal loading	14 days	7 days	4 days	2 days

Belzona 1818

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

Belzona 1818 is 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 results in minimal downtime for damaged equipment, and the product can experience full mechanical loading in as little as two hours after application

Colour:

TECHNICAL DATA

Mixing ratio (base : solidifier)	3 : 2 by volume		4 : 3 by weight	
Working life	16 minutes at 20°C (68°F)			
Coverage rate	0.14 m² (1.55 ft²) at 3 mm (0.12 in) per 1 kg unit			
Shelf life	3 years			
Taber Dry (CS17) 1kg 1000 cycles	4 mm³ loss			
Taber Wet (H10) 1kg 1000 cycles	83 mm³ loss			
Compressive Strength	76.2 MPa (11,050 psi) 24 hour cure at 20°C (68°F)		78.5 MPa (11,380 psi) 7 day cure at 20°C (68°F)	
Heat distortion temperature (HDT)	44°C (111°F) after 24 hours cure at 20°C (68°F)		51°C (124°F) after 7 day cure at 20°C (68°F)	
Adhesion (Pull Off) on grit blasted mild steel	Clean and dry: 16.3 MPa (2,370 psi)	Transformer oil contaminated : 14.1 MPa (2,040 psi)	Wet: 15.9 MPa (2,300 psi)	Underwater: 15.3 MPa (2,220 psi)

CURE

Temperature	5°C (48°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Movement or use involving no loading	4 hours	3 hours	1.5 hours	1 hour	20 minutes
Light loading	6 hours	4.5 hours	2 hours	1.5 hours	30 minutes
Full mechanical or thermal loading	24 hours	18 hours	8 hours	6 hours	2 hours

Belzona 1821
(Fluid Metal)

Fluid grade repair system for creating grip surfaces

A two-component, fluid grade material designed to create positive grip surfaces on machinery and equipment when used to bond a Belzona Supergrip or Surefoot aggregate to the surface. This material is also used for casting components where machining is required.

Colour:

Technical Data

Mixing ratio (base : solidifer)	2.7 : 1 by volume	6.7 : 1 by weight
Working life	20 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel : 20,6 MPa (3000 psi)	Aluminium : 10,3 MPa (1500 psi)
Compressive strength	77,9 MPa (11 300 psi)	
Volume capacity	478 cm^3 (29,2 in^3) / kg	
Heat distortion temperature	47°C (117°F) at 20°C (68°F) cure	
Coverage rate	0.86 m^2 (9,25 ft^2) / kg at a thickness of 500 microns (20 mil)	
Abrasion resistance	CS17 - 40 mm^3 dry	

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
Movement or use involving no loading	16 hours	6 hours	3 hours
Machining or light loading	16 hours	6 hours	3 hours
Full mechanical or thermal loading	1 ½ days	1 ½ days	1 day
Contact with chemicals	14 days	10 days	5 days

Belzona 1981
(SuperWrap II)

Fast curing composite wrap or patch repair system

A fast curing resin for use with Belzona 9381 reinforcing fabric to perform a composite repair which can be compliant to ISO 24817 and ASME PCC2 Article 4.1. The system can be applied at a minimum temperature of 5°C (41°F) and has a maximum service temperature of up to 60°C (140°F). It is suitable for thin-wall and through-wall defects on Class 1 water systems, Class 2 safety critical systems, Class 3 hydrocarbon systems and storage tank walls.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	2.5 : 1 by volume	2.9 : 1 by weight
Working Life	18 minutes at 20°C (68°F)	
Shelf Life	3 years	
Glass Transition Temperature	53°C (127°F) at 20°C (68°F) cure	
Adhesion (Tensile Shear)	Mild steel: 15.5 MPa (2,246 psi) at 40°C (104°F) cure	
Flexural Strength	0° axis: 658 MPa (95.48x10³ psi)	90° axis: 166 MPa (24.05x10³ psi)
Tensile Strength	0° axis: 524 MPa (75.98x10³ psi)	90° axis: 126 MPa (18.27x10³ psi)
Shore D Hardness	90 at 20°C (68°F) cure and test	
Adhesion (pull-off)	Mild steel: 38.1 MPa (5,520 psi)	
Coverage rate	0.75 litres (0.86 kg) per m² of Belzona 9381 fabric	

Cure Times

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

Belzona 1982
(SuperWrap II)

Long working life, composite wrap repair system

A long working life resin for use with Belzona 9381 reinforcing fabric to perform a composite repair which can be compliant to ISO 24817 and ASME PCC2 Article 4.1. The system can be applied at a minimum temperature of 20°C (68°F) and has a maximum service temperature of up to 80°C (176°F). It is suitable for thin-wall and through-wall defects on Class 1 water systems, Class 2 safety critical systems, Class 3 hydrocarbon systems and storage tank walls.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	2.5 : 1 by volume	2.7 : 1 by weight
Working Life	25 minutes at 40°C (104°F)	
Shelf Life	3 years	
Glass Transition Temperature	82°C (180°F) at 40°C (104°F) cure	
Adhesion (Tensile Shear)	Mild steel: 12.3 MPa (1,784 psi) at 20°C (68°F) cure	
Flexural Strength	0° axis: 578 MPa (83.82x10³ psi)	90° axis: 202 MPa (29.3x10³ psi)
Tensile Strength	0° axis: 505 MPa (73.23x10³ psi)	90° axis: 121 MPa (17.55x10³ psi)
Shore D Hardness	91 at 20°C (68°F) cure and test	
Adhesion (pull-off)	Mild steel: 35.3 MPa (5,120 psi)	
Coverage rate	0.75 litres (0.87 kg) per m² of Belzona 9381 fabric	

Cure Times

Temperature	20°C (68°F)	30°C (86°F)	40°C (104°F)
Touch dry	3 hours	2½ hours	2 hours
Full service	24 hours	24 hours	24 hours
Contact with chemicals	7 days	4 days	2 days

Belzona 1983
(SuperWrap II)

High temperature, composite wrap repair system

High temperature resin for use with Belzona 9381 reinforcing fabric to perform a composite repair compliant to ISO 24817 and ASME PCC2 Article 4.1. The system can be applied at a minimum temperature of 20°C (68°F) and has a maximum service temperature of up to 150°C (302°F). It is suitable for thin-wall and through-wall defects on Class 1 water systems, Class 2 safety critical systems, Class 3 hydrocarbon systems and storage tank walls.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	2.5 : 1 by volume	2.9 : 1 by weight
Working Life	30 minutes at 20°C (68°F)	
Shelf Life	3 years	
Glass Transition Temperature	56°C (133°F) at 20°C (68°F) cure	188°C (370°F) at 150°C (302°F) cure
Adhesion (Tensile Shear)	Mild steel: 17.6 MPa (2550 psi) at 20°C (68°F) cure	
Flexural Strength	0° axis: 528 MPa (76.58x10³ psi)	90° axis: 232 MPa (33.65x10³ psi)
Tensile Strength	0° axis: 453 MPa (65.70x10³ psi)	90° axis: 109 MPa (15.81x10³ psi)
Shore D Hardness	91 at 20°C (68°F) cure and test	
Adhesion (pull-off)	Mild steel: 29.6 MPa (4,290 psi) at 20°C (68°F) cure	
Coverage rate	0.75 litres (0.83 kg) per m² of Belzona 9381 fabric	

Cure Times

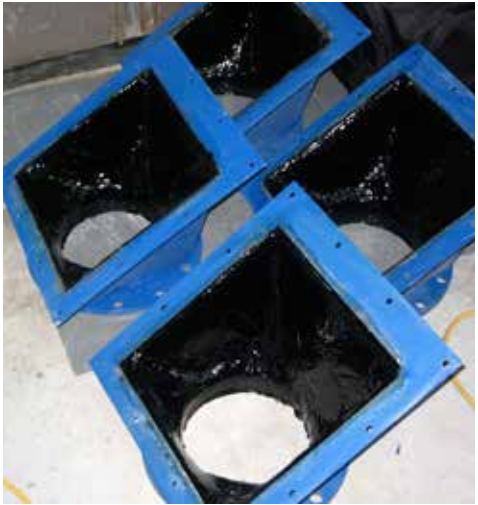
Temperature	20°C (68°F)	30°C (86°F)	40°C (104°F)
Touch dry	3½ hours	1½ hours	70 minutes
Full service	48 hours	30 hours	30 hours
Contact with chemicals	7 days	4 days	2 days

2000 Series

ELASTOMERIC POLYMERS

Repair and Protection of Flexible Components

2100 SERIES	High strength, abrasion and impact resistant elastomeric materials
2200 SERIES	Multi-purpose elastomeric rebuilding, coating and casting materials
2300 SERIES	Rapid curing elastomeric products for emergency repairs



Belzona 2111
(D & A Hi-Build Elastomer)

High build, abrasion resistant flexible repair system

A two-component, high build, elastomeric material designed for the repair, rebuilding and resurfacing of rubber or metal components. This flexible paste grade material is appropriate for applications where significant thickness, durability, elasticity, high abrasion and tear resistance are required.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	3.2 : 1 by volume		3.4 : 1 by weight	
Working Life	12 minutes at 20°C (68°F)			
Shelf Life	3 years			
Adhesion (90° Peel)	Grit blasted mild steel: 3,065 kg/m (172 pli)			
Adhesion (180° Peel) *cohesive failure of substrate	Nitrile: 690 kg/m (39 pli)*	EPDM: 425 kg/m (24 pli)*	Neoprene: 365 kg/m (20 pli)*	Natural rubber: 385 kg/m (22 pli)*
Elongation	450-550 % after 24 hour cure at 20°C (68°F)		350-450 % after 7 day cure at 20°C (68°F)	
Heat Resistance	-40°C to 90°C (-40°F to 194°F) dry			
Shore A Hardness	91 after 24 hour cure at 20°C (68°F)			
Abrasion Resistance – loss per 1000 cycles	H18 - 16 mm^3 (wet)		H18 - 41 mm^3 (dry)	

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
No Loading	4 hours	2 hours	1½ hours	1 hr
Light Loading	16 hours	8 hours	6 hours	4 hours
Full Mechanical Loading	48 hours	24 hours	20 hours	16 hours
Immersion in Chemicals	96 hours	60 hours	48 hours	36 hours

Belzona 2121

(D & A Hi-Coat Elastomer)

Abrasion resistant flexible repair system for resurfacing applications

A two-component, thixotropic consistency, elastomeric material designed for resurfacing applications involving cavitation and erosion. This flexible material can be applied to metal or rubber substrates where durability, elasticity, high abrasion and tear resistance are required.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	3 : 1 by volume		3.1 : 1 by weight	
Working Life	12 minutes at 20°C (68°F)			
Shelf Life	3 years			
Coverage Rate	0.87 m² (9.4 ft²) / 500 g at 500 microns (20 mils)			
Adhesion (90° Peel)	Mild steel: 3,020 kg/m (169 pli)			
Adhesion (180° Peel) *cohesive failure of substrate	Nitrile : 790 kg/m (44 pli)*	Neoprene : 450 kg/m (25 pli)*	EPDM : 540 kg/m (30 pli)*	Natural rubber: 220 kg/m (12 pli)*
Elongation	500-600 % after 24 hour cure at 20°C (68°F)		400-500 % after 7 day cure at 20°C (68°F)	
Heat Resistance	-40°C to 90°C (-40°F to 194°F) dry			
Shore A Hardness	89 after 24 hour cure at 20°C (68°F)			
Abrasion Resistance – loss per 1000 cycles	H10 - 31 mm³ (dry)		H10 - 27 mm³ (wet)	

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	4 hours	2 hours	1½ hours	1 hour
Light Loading	16 hours	8 hours	6 hours	4 hours
Full Mechanical or Thermal Loading	2 days	1 day	20 hours	16 hours
Immersion in Chemicals	96 hours	60 hours	2 days	36 hours

Belzona 2131
(D & A Fluid Elastomer)

Coating and casting grade flexible system

A two-component, fluid grade elastomeric material designed for coating and resurfacing applications, and for use as a casting material in the fabrication of flexible, durable components. This flexible material is appropriate for applications where durability, elasticity, high abrasion and tear resistance are required.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier)	3.2 : 1 by volume		3.4 : 1 by weight	
Working Life	12 minutes at 20°C (68°F)			
Shelf Life	3 years			
Coverage Rate	1.77m² (19.05 ft²) per 500g unit at 10 mil (0.25mm) thickness			
Adhesion (90° Peel)	Mild steel: 3,320 kg/m (186 pli)			
Adhesion (180° Peel) *cohesive failure of substrate	Nitrile : 655 kg/m (37 pli)*	EPDM : 350 kg/m (20 pli)*	Neoprene : 510 kg/m (28 pli)*	Natural rubber: 250 kg/m (14 pli)*
Elongation	500-600% after 24 hour cure at 20°C (68°F)		400-500% after 7 day cure at 20°C (68°F)	
Heat Resistance	-40°C to 90°C (-40°F to 194°F) dry			
Shore A Hardness	90 after 24 hour cure at 20°C (68°F)			
Abrasion Resistance – loss per 1000 cycles	H18 wheels 30 mm³ (dry)		H18 wheels 30 mm³ (wet)	

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
No Loading	4 hours	2 hours	1½ hours	1 hour
Light Loading	16 hours	8 hours	6 hours	4 hours
Full Mechanical Loading	48 hours	24 hours	20 hours	16 hours
Immersion in Chemicals	96 hours	60 hours	48 hours	36 hours

Belzona 2141
(ACR-Fluid Elastomer)

Cavitation resistant flexible coating grade system

A two-component elastomeric material designed for coating applications requiring cavitation and erosion resistance. This flexible rubber material is appropriate for coating extremely high localised pressure areas, offering outstanding protection against cavitation at ultra-high velocities.

Colour:

Technical Data

Working Life	13 minutes at 25°C (77°F)	
Shelf Life	3 years	
Coverage Rate	1 coat: 0.68 m² (7.3 ft²) / 750 g	2 coats: 1.36 m² (14.6 ft²) / 750 g
Adhesion (90° Peel)	Mild steel: 3,214 kg/m (180 pli)	
Elongation	530% after 24 hour cure at 20°C (68°F)	
Heat Resistance	Anti-cavitation applications up to 40°C (104°F)	Other dry applications up to 100°C (212°F)
Shore A Hardness	87	
Abrasion Resistance – loss per 1000 cycles	H18 - 50 mm³ dry	H18 - 39 mm³ wet

Cure Times

Temperature	5°C (41°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)
Movement or Use Involving No Loading or Immersion	12 hours	8 hours	4 hours	2 hours
Full Mechanical or Thermal Loading	5 days	4 days	2 days	2 days
Immersion	10 days	7 days	5 days	3 days

Belzona 2211
(MP Hi-Build Elastomer)

Multi-purpose rebuilding grade flexible system

A two-component, thixotropic, non-slumping, elastomeric material based on blends of low, medium and high molecular weight reactive polymers. This multi-purpose, flexible repair material is appropriate for applications where high build, durability and elasticity are required, providing a cost-effective repair of rubber components.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	3 : 1 by volume		2.3 : 1 by weight	
Working life	15 minutes at 20°C (68°F)			
Shelf life	3 years			
Adhesion (90° Peel)	Grit blasted mild steel: 3,053 kg/m (171 pli)			
Adhesion (180° Peel) *cohesive failure of substrate	Natural rubber: 214 kg/m (12 pli)	Neoprene: 671 kg/m (38 pli)	Nitrile: 897 kg/m (50 pli)	EPDM: 488 kg/m (27 pli)
Elongation	1000% after 24 hour cure at 20°C (68°F)		1000% after 7 day cure at 20°C (68°F)	
Tear strength	4,106 kg/m (230 pli) after 7 day cure at 20°C (68°F)			
Tensile strength	10.34 MPa (1,500 psi) after 7 day cure at 20°C (68°F)			
Shore A hardness	73 after 7 day cure at 20°C (68°F)			
Abrasion resistance – loss per 1000 cycles	H18 - 400 mm³ dry		H18 - 180 mm³ wet	

Cure Times

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

Belzona 2221
(MP Fluid Elastomer)

Multi-purpose casting grade flexible system

A two-component, fluid consistency, elastomeric material based on blends of low, medium and high molecular weight reactive polymers. This multi-purpose, flexible coating is appropriate for applications where high build, durability and elasticity are required, providing a cost-effective repair and coating of rubber and metallic components.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	3 : 1 by volume		2.3 : 1 by weight	
Working life	15 minutes at 20°C (68°F)			
Shelf life	3 years			
Adhesion (90° Peel)	Grit blasted mild steel: 2,839 kg/m (159 pli)			
Adhesion (180° Peel) *cohesive failure of substrate	Natural rubber: 163 kg/m (9 pli)	Neoprene: 723 kg/m (40 pli)	Nitrile: 697 kg/m (39 pli)	EPDM: 584 kg/m (33 pli)
Elongation	1000% after 24 hour cure at 20°C (68°F)		1000% after 7 day cure at 20°C (68°F)	
Tear strength	4,106 kg/m (230 pli) after 7 day cure at 20°C (68°F)			
Tensile strength	10.34 MPa (1,500 psi) after 7 day cure at 20°C (68°F)			
Shore A hardness	73 after 7 day cure at 20°C (68°F)			
Abrasion resistance – loss per 1000 cycles	H18 - 313 mm³ dry		H18 - 88 mm³ wet	

Cure Times

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

Belzona 2311
(SR Elastomer)

Rapid curing, emergency repair flexible system

A two-component rapid curing elastomeric material consisting of a base and solidifier packaged in sealed, foil laminated sachets. This flexible rubber repair material is designed for fast emergency and permanent applications where high build, durability, elasticity, abrasion and tear resistance are required.

Colour:

WHITE

Technical Data

Mixing ratio (base:solidifier)	1 : 1 by volume	
Working life	2 minutes at 25°C (77°F)	
Shelf life	3 years	
Adhesion (90° peel)	Mild steel: 2,137 kg/m (119 pli)	
Adhesion (180° peel) *cohesive failure of substrate	Natural rubber: 250 kg/m (14 pli)	Styrene-butadiene: 250 kg/m (14 pli)
Volume capacity	66.5 cm^3 (4.1 in^3) / 75 g	
Elongation	450% after 24 hour cure at 20°C (68°F)	
Shore A hardness	75	
Tensile strength	9.65 MPa (1,400 psi)	
Tear strength	4,643kg/m (260 pli)	
Abrasion resistance – loss per 1000 cycles	H18 - 109 mm^3 dry	H18 - 45 mm^3 wet

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)
No loading or immersion	40 minutes	30 minutes	25 minutes	20 minutes
Full mechanical or thermal loading	2 hours	1 ½ hours	1 hour	50 minutes
Immersion in chemicals	1 ½ days	1 day	18 hours	15 hours


ECHNOSOL
TION- SERVICES

3000 Series

POLYMERIC MEMBRANES

Waterproofing and Protection of Buildings and Structures

3100 SERIES	Liquid-applied, flexible membranes for waterproofing and weatherproofing
3200 SERIES	Liquid-applied, flexible membranes for insulation and cladding protection
3400 SERIES	Flexible, peelable membranes for flange and bolt fastening protection

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Belzona 3111
(Flexible Membrane)

Liquid applied waterproofing membrane

A single component formulated acrylic ester copolymer emulsion used in conjunction with Belzona 9311 (Reinforcement Sheet) to create durable weatherproofing and waterproofing membrane for almost all types of roof substrates and other structures. The liquid base binds to the reinforcement sheet to form a tough, flexible and elastic polymer film which can tightly follow all roof contours.

Colour:

WHITE

Technical Data

Drying Time	30 minutes for water resistance under good drying conditions	
Working Life	Indefinite at temperatures between 5°C (41°F) and 30°C (86°F)	
Shelf Life	5 years	
Water Vapor Permeability after 7 days cure at 20°C (68°F)	30 g/m² per 24 hours at 20°C (68°F) Permeance: 2.16 US perms	
Elongation after 7 days cure at 20°C (68°F)	20% lengthwise	100% crosswise
Tear Strength after 7 days cure at 20°C (68°F)	33.0 N/mm (188 pli) lengthwise	33.0 N/mm (188 pli) crosswise
Tensile Strength after 7 days cure at 20°C (68°F)	10.0 N/mm² (1,450 psi) lengthwise	4.0 N/mm² (580 psi) crosswise

Coverage Rates

Coats/layers	First layer (per litre)	Second layer (per litre)
Concrete/brick	1.3 m² (14 ft²)	3.0 m² (33 ft²)
Asphalt	1.9 m² (21 ft²)	3.0 m² (33 ft²)
Galvanized steel	1.9 m² (21 ft²)	3.0 m² (33 ft²)
Recoating Belzona 3111	1.9 m² (21 ft²)	3.0 m² (33 ft²)

Belzona 3121
(MR7)

Liquid applied emergency repair and waterproofing system

A two-component, emergency repair and waterproofing system for sealing almost all types of roof surfaces and structures even during adverse weather conditions. This liquid applied material is designed for instant waterproofing and can be applied all times of the year. It is used in conjunction with Belzona 9331, a synthetic reinforcing sheet used to bridge roof contours and control film thickness.

Colour:

Technical Data

Mixing Ratio (Base : Solidifier)	2.2 : 1 by volume	3.6 : 1 by weight
Working Life	2 hours at 20°C (68°F)	
Shelf Life	5 years	
Shore A Hardness	35 after 24 hours cure at 20°C (68°F)	
Tensile Strength	7.9 MPa (1,140 psi) unreinforced	5.5 MPa (800 psi) reinforced
Tear Strength	2,512 kg/m (140 pli) unreinforced	3,229 kg/m (180 pli) reinforced
Water Vapor Permeability	17 g/m² per 24 hours for the standard reinforced system	
Elongation	400% unreinforced	150% reinforced

Coverage Rates

Coats/layers	First layer (per litre)	Second layer (per litre)
Metals / Plastic	1.9 m² (20 ft²)	2.0 m² (21 ft²)
Asphalt	1.9 m² (20 ft²)	2.0 m² (21 ft²)
Smooth Concrete	1.7 m² (17.5 ft²)	2.0 m² (21 ft²)
Rough Concrete	1.2 m² (12.5 ft²)	1.9 m² (20 ft²)

Belzona 3131
(WG Membrane)

Waterproofing membrane for all weather conditions

A single component formulated moisture active urethane used in conjunction with a Belzona reinforcement sheet to create durable weatherproofing and waterproofing membrane for almost all types of roof substrates and other structures, even for application in inclement weather and at low temperatures. This flexible, liquid applied membrane will cure down to 0°C (32°F) and is resistant to rain "wash-out".

Colour:

Technical Data

Shelf life	12 months
Drying time	Touch dry and overcoat between 4 and 6 hours under good drying conditions. Resistant to "wash-out" immediately.
Tensile strength after 7 days cure at 20°C (68°F)	6.4 N/mm² (925 psi)
Tear strength after 7 days cure at 20°C (68°F)	34.3 N/mm (195 pli)
Water vapor permeability after 7 days cure at 20°C (68°F)	25 g/m² per 24 hours at 20°C (68°F)
Elongation after 7 days cure at 20°C (68°F)	190%

Coverage Rates

Coats/layers	First layer (per litre)	Second layer (per litre)
Metals / plastics	1.5 m² (16.1 ft²)	3.0 m² (33 ft²)
Asphalt	1.5 m² (16.1 ft²)	3.0 m² (33 ft²)
Concrete	0.96 m² (10.3 ft²)	3.0 m² (33 ft²)

Belzona 3211
(Lagseal)

Liquid applied membrane for insulation and cladding protection

A formulated water based styrene acrylic emulsion used in conjunction with a polymer bonded glass reinforcement sheet to create a seamless waterproofing and weatherproofing membrane for all types of insulation and cladding materials. The system is flexible, water and weather resistant but also micro-porous, allowing moisture from within the substrate to evaporate.

Colour:

WHITE

Technical Data

Shelf life	5 years	
Fire resistance	EN 13501-1 Classification - Euroclass – C – s2 d0	
Water vapor permeability after 7 days cure at 20°C (68°F)	Unreinforced: 10.5 Perms	Reinforced: 8.6 Perms
Elongation after 7 days cure at 20°C (68°F)	40%	
Tensile strength after 7 days cure at 20°C (68°F)	2.3 N/mm² (328 psi)	

Drying Times

Coats/layers	Priming Coat	First Layer	Second Layer
Touch dry	30 minutes	2 hours	1 hour
Hard dry for overcoating	1 hour	4 hours	2 hours
Maximum overcoating time	3 days	3 days	3 days
Full hardness, anticipated chemical contact	7 days	7 days	7 days

Belzona 3412

Spray or brush applied corrosion-protection membrane

Belzona 3412 is a flexible encapsulating membrane, protecting various joints and equipment from moisture ingress, dust and the environment. It can be applied by brush or spray gun (including the Belzona Spray Gun) to new or corroded assets eliminating corrosion. When used in conjuction with Belzona 8411, Belzona 3412 can be cut and peeled for inspection during maintenance, then resealed for continued protection.

Colour:

Technical Data

Mixing Ratio (Base : Solidifier)	13 : 1 by weight	
Working Life	40 minutes at 20°C (68°F) and 50% relative humidity	
Shelf Life	2 years	
Coverage Rate	0.63 m² (6.7 ft²) / 1 kg at 1,270 microns (50 mils)	
Tear Strength	820 kg/m (46 pli) unreinforced	1960 kg/m (110 pli) reinforced
Adhesion (90° Peel)	Carbon steel: >390 kg/m (>22 pli)	Epoxy paint: >290 kg/m (>16 pli)
Elongation	270% unreinforced	85% reinforced
Tensile Strength	1.8 MPa (260 psi) unreinforced	2.9 MPa (420 psi) reinforced

Cure Times

Substrate Temperature	5°C (41°F)	10°C (50°F)	20°C (68°F)	40°C (104°F)
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

4000 Series

MAGMA POLYMERS

Repair and Protection of Concrete and Stonework

4100 SERIES	High performance polymeric concrete rebuilding and resurfacing materials
4300 SERIES	Chemical and acid resistant polymeric coatings and rebuilding materials
4400 SERIES	Hard-wearing safety grip systems
4500 SERIES	High performance elastomeric sealing systems

Belzona 4111
(Magma-Quartz)

Concrete repair and grouting system

A three-component polymeric material for the repair and rebuilding of concrete and stonework damaged by impact, wear, chemical and environmental attack, as well as for grouting and bonding applications. This non-shrinkage material offers outstanding abrasion and chemical resistance, high mechanical and impact strength, simple application procedures and quick curing times.

Colour:

Technical Data

Mixing ratio (base:solidifier:aggregate)	2 : 1 : 30 by weight	2 : 1 by volume - aggregate may be added to desired consistency
Working life	30 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	18.0 MPa (2,620 psi)	
Compressive strength	92.7 MPa (13,450 psi)	
Volume capacity	6,465 cm³ (394 in³) / 15 kg	
Heat distortion temperature	43°C (109°F)	
Abrasion resistance	H10 - 650 mm³ wet	CS17 - 7.5 mm³ dry
Coverage rate	1.1 m² (12 ft²) / 15 kg at 6 mm (0.25 in)	

Cure Times

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

Belzona 4131
(Magma-Screed)

Concrete resurfacing system

A two-component polymeric material for resurfacing and protecting large areas of concrete, stone and other surfaces. This non-shrinkage material provides excellent protection to concrete from the effects of impact, abrasion and chemical attack. It can be feather-edged and allows for a simple application procedure and quick curing times.

Colour:

Technical Data

Mixing ratio (base:solidifier)	35 : 1 by weight	
Working life	45 minutes at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	150°C (300°F) dry	60°C (140°F) wet
Adhesion (pull-off) * cohesive failure of substrate	Dry concrete: 9.65 MPa (1,400 psi)*	Wet concrete: 5.58 MPa (810 psi)*
Compressive strength	89.6 MPa (13,000 psi)	
Volume capacity	8,590 cm^3 (524 in^3) / 20 kg	
Heat distortion temperature	42°C (108°F)	
Abrasion resistance	H10 - 635 mm^3 wet	CS17 - 13 mm^3 dry
Coverage rate	1.4 m^2 (15 ft^2) / 20 kg at 6 mm (0.25 in)	

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
To resist pedestrian traffic	16 hours	9 hours	6 hours
Full load bearing capability	5 days	3 days	1 day
Full chemical resistance	18 days	12 days	7 days

Belzona 4141
(Magma-Build)

Lightweight vertical/overhead concrete repair system

A two-component, lightweight, polymeric material specifically designed for rebuilding severely damaged or worn overhead or vertical concrete and stonework surfaces. This non-porous system can be applied up to 127mm (5 inches) thick on a vertical surface and up to 76mm (3 inches) thick on an overhead surface with minimal support during application.

Colour:

Technical Data

Mixing ratio (Base:Solidifier)	13 : 1 by volume	8 : 1 by weight
Working life	20 minutes at 25°C (77°F)	
Shelf life	5 years	
Heat resistance	150°C (300°F) dry	60°C (140°F) wet
Adhesion (pull-off) * cohesive failure of substrate	Dry concrete: 4.69 MPa (680 psi)*	Wet concrete: 4.48 MPa (650 psi)*
Compressive strength	37.2 MPa (5,400 psi)	
Volume capacity	11,000 cm^3 (671 in^3) / 8 kg	
Heat distortion temperature	45°C (113°F)	
Abrasion resistance	CS17 - 530 mm^3 (0.03 in^3) dry	

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
Dimensionally stable	10 hours	4 hours	2 hours
Full mechanical strength	3 days	1 day	12 hours
Full chemical resistance	12 days	6 days	3 days

Belzona 4141FR

Fire-resistant concrete repair system

A fire-resistant, lightweight repair composite for the rebuilding and protection of damaged vertical and overhead concrete surfaces. This high-build system simplifies application whilst providing durable results, both thanks to its mechanical properties and the fact that it is fire resistant. It will not propagate flames and releases little to no smoke.

Colour:

Technical Data

Mixing ratio (Base:Solidifier:Aggregate)	2.84 : 1: 30 by weight
Working life	50 minutes at 20°C (68°F)
Heat resistance	During fire testing the product was exposed to greater than 1,900°C (3,450°F) for periods of 30 minutes, with no damage or loss of material from the surface
Fire resistance	When tested in accordance with ISO 11925-2 (SFI) and EN 13823 (SBI) and certified in accordance with EN 13501-1, the system achieved a classification of B – s1 d0
Volume capacity	5,000 cm^3 (305 in^3) / 3 kg
Shelf life	3 years

Cure Times

Temperature	5°C (41°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Dimensionally stable	12 hours	10 hours	8 hours	7 hours	6 hours
Full mechanical strength and fire resistance	3 days	2 days	1 day	18 hours	12 hours

Belzona 4151
(Magma-Quartz Resin)

Concrete protection system

A two-component clear amber resin system for protection of masonry and metallic surfaces. This non-porous system provides a tough, seamless layer suitable for heavy duty dust proofing and protection against moisture ingress. It can also be used for bonding and grouting applications.

Colour:

Technical Data

Mixing ratio (Base:Solidifier)	2 : 1 by volume	2.3 : 1 by weight
Working life	12 minutes at 25°C (77°F)	
Shelf life	5 years	
Heat resistance	200°C (392°F) dry	
Adhesion (pull-off) * cohesive failure of substrate	Dry concrete: 6.21 MPa (900 psi)*	Damp concrete: 6.21 MPa (900 psi)*
Compressive strength	70.8 MPa (10,270 psi)	
Volume capacity	4,455 cm^3 (272 in^3) / 4.95 kg	
Heat distortion temperature	41°C (106°F)	
Abrasion resistance	H10 - 890 mm^3 wet	CS17 - 18 mm^3 dry
Coverage rate	15.5 m^2 (167 ft^2) / 4.95 kg	

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)
To resist pedestrian traffic	16 hours	6 hours	4 hours
Full mechanical hardness	2 days	1 day	16 hours
Full chemical resistance	14 days	10 days	5 days

Belzona 4154
(Bulkfill Resin)

Resin for repairing large, uneven surfaces, deep holes and cracks

A two-component, clear amber resin system designed to be used with various aggregates to repair and fill deep holes and cracks in concrete and stonework damaged by impact, vibration, chemical and environmental attack. This resin system provides a cost-effective solution for large volume repairs.

Colour:

Technical Data

Mixing Ratio (Base:Solidifier:Aggregate)	6.7 : 1 : 53 by weight
Working Life	30 minutes at 25°C (72°F)
Shelf Life	5 years
Adhesion (pull-off) * cohesive failure of substrate	Dry concrete: > 3.45 MPa (> 500 psi)*
Compressive Strength	89.63 MPa (13,000 psi) after 7 day cure at 22°C (72°F)
Volume Capacity	14,000 cm^3 (854 in^3) / 3.65kg of Belzona 4154 mixed with 25 kg of aggregate
Coverage Rate	1.1 m^2 (11.8 ft^2) / 3.65 kg of Belzona 4154 mixed with 25 kg of aggregate at 12 mm (0.5 in)

Cure Times

Temperature	10°C (50°F)	15°C (59°F)	22°C (72°F)	25°C (77°F)
Overcoating	12 hours	8 hours	6 hours	5 hours
Full Mechanical Hardness	3 days	2 days	1 day	16 hours

Belzona 4181
(AHR Magma-Quartz)

Heat/acid resistant concrete repair system

A three-component, trowelable material for the repair and protection of concrete, stone and other rigid surfaces subject to impact and abrasion. This repair system is designed for resistance to inorganic acids and heat, providing outstanding adhesion, strength and hardness. The material may be applied on vertical surfaces up to 6mm (1/4 inch) thickness.

Colour:

Technical Data

Mixing ratio (base:solidifier:aggregate)	100 : 30 : 1000 by weight	
Working life	30 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	150°C (300°F)	
Adhesion (tensile shear)	16.5 MPa (2,400 psi)	
Compressive strength	63.1 MPa (9,150 psi)	
Volume capacity	6,300 cm^3 (384 in^3) / 15 kg	
Heat distortion temperature	54°C (129°F) at ambient cure	186°C (365°F) post cure at 100°C (212°F)
Abrasion resistance	H10 - 395 mm^3 wet	
Coverage rate	1.05 m^2 (10.67 ft^2) / 15 kg at 6 mm (0.25 in)	

Cure Times

Temperature	15°C (59°F)	25°C (77°F)
To resist pedestrian traffic	12 hours	8 hours
Machine hard	16 hours	12 hours
Full mechanical hardness	2 days	1 day
Full chemical resistance	10 days	5 days

Belzona 4301
(Magma CR1 Hi-Build)

Chemical resistant rebuilding system

A two-component paste grade material with outstanding resistance to a broad range of chemicals, especially concentrated inorganic acids and alkalis. This material is ideally suited for rebuilding surfaces damaged as a result of chemical attack and for repairing and rebuilding damaged chemical resistant linings. It can also be used for profiling and fairing rough surfaces prior to the application of a suitable Belzona coating.

Colour:

Technical Data

Mixing ratio (base:solidifier)	2:1 by volume	2:1 by weight	
Working life	40 minutes at 20°C (68°F)		
Shelf life	3 years		
Adhesion (pull-off) *cohesive failure of substrate	Mild Steel: 35.1 MPa (5,090 psi)	Concrete (dry) with Belzona 4911: 8.1 MPa (1,170 psi)*	Concrete (damp) with Belzona 4911: 7.4 MPa (1,080 psi)*
Compressive strength	81 MPa (11,750 psi)		
Volume capacity	667 cm³ (40.7in³) /1 kg		
Heat resistance	210°C (410°F) dry	60°C (140°F) wet	
Heat distortion temperature	48°C (118°F) at 20°C (68°F) cure	78°C (172°F) at 100°C (212°F) cure	

Cure Times

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

Belzona 4311
(Magma CR1)

Barrier coating system for acids and alkalis

A high performance, two-component barrier coating with outstanding resistance to a broad range of chemicals, especially acids and alkalis. The system isolates concrete and metal substrates from deteriorating chemical environments.

Colour:

Technical Data

Mixing ratio (base:solidifier)	3:1 by volume	6:1 by weight
Working life	20 minutes at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	217°C (423°F) dry	60°C (140°F) wet
Adhesion (tensile shear)	Steel: 20.6 MPa (2990 psi)	
Compressive strength	59.1 MPa (8,570 psi)	
Heat distortion temperature	48°C (118°F) at 20°C (68°F) cure	78°C (172°F) at 100°C (212°F) cure
Coverage rate	4m² (43ft²) / 1L at 250 microns (10 mils)	

Cure Times

Temperature	15°C (59°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Light pedestrian traffic	8 hours	6 hours	4 hours	3 hours
Vehicular traffic	1 day	18 hours	12 hours	10 hours
Full chemical resistance	14 days	7 days	3 days	2 days

Belzona 4331
(Magma CR3)

Barrier coating system for hot organic acids

A high performance, two-component barrier coating optimised for resistance to hot organic acids, such as acetic acid, but also providing excellent resistance to a broad range of chemicals. The system isolates concrete and metal substrates from deteriorating chemical environments.

Colour:

Technical Data

Mixing ratio (base:solidifier)	7.16:1 by volume		10.75:1 by weight	
Working life	20 minutes at 20°C (68°F)			
Shelf life	3 years			
Heat resistance	210°C (410°F) dry		60°C (140°F) wet	
Adhesion (tensile shear)	Steel: 15.9 MPa (2300 psi)			
Coverage rate	1.95m² (21.0ft²) / 1.5kg at 500 microns (20 mils)			
Volume capacity	975cm³ (59.5in³) / 1.5kg			
Compressive strength	71.7 MPa (10,400 psi)			
Heat distortion temperature	61°C (142°F) at 20°C (68°F)	86°C (187°F) at 50°C (122°F)	103°C (217°F) at 100°C (212°F)	124°C (225°F) at 150°C (302°F)

Cure Times

Temperature	15°C (59°F)	20°C (68°F)	30°C (86°F)
Pedestrian traffic	12 hours	8 hours	4 hours
Chemical resistance	7 days	5 days	3 days

Belzona 4341
(Magma CR4)

Barrier coating system for hot inorganic acids

A high performance, two-component barrier coating optimised for resistance to hot inorganic acids, such as sulphuric and hydrochloric acid. The system isolates concrete and metal substrates from deteriorating chemical environments.

Colour:

Technical Data

Mixing ratio (base:solidifier)	6.26:1 by volume		8.82:1 by weight	
Working life	15 minutes at 20°C (68°F)			
Shelf life	5 years			
Heat resistance	190°C (374°F) dry		90°C (194°F) wet	
Adhesion (tensile shear)	Steel: 10.3 MPa (1500 psi) at 20°C (68°F) cure		Steel: 11.0 MPa (1600 psi) at 100°C (212°F) post cure	
Coverage rate	2.48m² (26.7ft²) / 1.5kg at 400 microns (16 mils)			
Compressive strength	50.3 MPa (7300 psi)			
Volume capacity	994cm³ (60.7in³) / 1.5kg			
Heat distortion temperature	61°C (142°F) at 20°C (68°F)	80°C (176°F) at 50°C (122°F)	85°C (185°F) at 100°C (212°F)	96°C (205°F) at 150°C (302°F)

Cure Times

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

Belzona 4351
(Magma CR5)

Chemical resistant coating system with static dissipation properties

A two-component static dissipative barrier coating with outstanding resistance to a broad range of chemicals, especially acids and alkalis. This coating system is designed to transfer surface build-up of electrostatic charge away from hazardous areas.

Colour:

Technical Data

Mixing ratio (base:solidifier)	6:1 by weight	
Working life	20 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Compressive strength	95.9 MPa (13910 psi) at 20°C (68°F)	(116.4 MPa) 16880 psi at 100°C (212°F)
Volume capacity	730 cm^3 (44.5in^3) / kg	
Heat distortion temperature	45°C (113°F) at 20°C (68°F)	85°C (185°F) at 100°C (212°F)
Adhesion (tensile shear) mild steel	16.5 MPa (2400 psi) at 20°C (68°F)	18.8 MPa (2730 psi) at 100°C (212°F)
Adhesion (pull-off) mild steel	>21.2 MPa (>3070 psi) at 20°C (68°F)	>33.7 MPa (>4890 psi) at 100°C (212°F)
Surface resistivity (concrete)	10^6 – 10^7 Ω/square	

Cure Times

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

Belzona 4361

Chemical resistant, flexible barrier coating system

A two-component, flexible barrier coating offering outstanding resistance to a broad range of chemicals, especially acids and alkalis. This coating system is ideally suited to protect chemical containment areas, remaining intact in the event of concrete cracking underneath due to its superior flexibility.

Colour:

Technical Data

Mixing ratio (base:solidifier)	2.8:1 by volume	3:1 by weight
Working life	30 minutes at 20°C (68°F)	
Shelf life	2 years	
Dry heat resistance	130°C (266°F)	
Adhesion (pull off)	Dry Concrete: 5.6 MPa (810 psi) at 20°C (68°F) cure	Damp Concrete: 5.4 MPa (780 psi) at 20°C (68°F) cure
Coverage rate	3.1 m² (33.4 ft²) / 1.5 kg at 400µm (16 mils)	
Compressive strength	70.0 MPa (10,150 psi) at 20°C (68°F) cure	
Volume capacity	1,240 cm³ (76 in³) / 1.5 kg	
Abrasion resistance	CS17 - 62.9 mm³ dry	

Cure Times

Temperature	15°C (59°F)	20°C (68°F)	25°C (77°F)	30°C (86°F)
Light pedestrian traffic	7 hours	5 hours	4 hours	3 hours
Vehicular traffic	48 hours	36 hours	24 hours	20 hours
Full chemical resistance	14 days	7 days	6 days	5 days

Belzona 4411
(Granogrip)

Safety grip system for non-slip surfaces

A three-component system consisting of a coloured thixotropic base, liquid solidifier and aluminum oxide aggregate, designed for the creation of durable non-slip surfaces on concrete, steel, quarry tile or wood. The system is provided in grey and safety yellow and offers excellent adhesion, wear and chemical resistance.

Colour:

Technical Data

Mixing ratio (base:solidifier)	2 : 1 by volume	2.5 : 1 by weight
Working life	30 minutes at 25°C (77°F)	
Shelf life	5 years	
Dry heat resistance	200°C (392°F)	
Adhesion (tensile shear)	Mild steel: 24.1 MPa (3,500 psi)	
Coverage rate	1.25-2.3 m² (13.7-25 ft²) / 800 g	
Volume capacity	713 cm³ (43 in³) / 800 g	
Compressive strength	52.4 MPa (7,600 psi)	
Adhesion (pull off) *substrate failure	Dry concrete: 6.41 MPa (930 psi)*	Damp concrete: 7.17 MPa (1,040 psi)*
Heat distortion temperature	43°C (109°F)	

Cure Times

Temperature	5°C (41°F)	15°C (59°F)	25°C (77°F)	30°C (86°F)
Light pedestrian loading	1 day	9 hours	4 hours	3 hours
Vehicular traffic	4 days	2 days	1 day	12 hours
Chemical contact	10 days	6 days	3 days	2 days

Belzona 4511

Elastomeric sealant for vertical and horizontal 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.

Colour:

Technical Data

Mixing ratio (base:solidifier)	6.4 : 1 by weight		5.1 : 1 by Volume	
Working life	90 minutes at 22°C (72°F)			
Shelf life	5 years			
Volume capacity	3254 cm³ (204.8 in³) / 4.2 kg			
Expansion joint applications	Class 25, Type M, Grade N Sealant (± 25% movement) under modified ASTM C-719			
Shore A hardness	63			
Adhesion (90° peel)	Blasted steel: 805.4 kg/m (45.1 pli)	Aluminium: 914.3 kg/m (51.2 pli)	Concrete: 708.8 kg/m (39.7 pli)	Belzona 4111: 771.5 kg/m (43.2 pli)
Tear strength	1,384 kg/m (77.5 pli)			

Cure Times

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

Belzona 4521
(Magma-Flex Fluid)

Elastomeric sealing system for building and expansion joints

A two-component fluid elastomeric system designed for sealing horizontal building and expansion joints. This high-performance material accommodates up to +/- 25% movement and provides excellent weather resistance, adhering strongly to most surfaces, including concrete, stone and steel.

Colour:

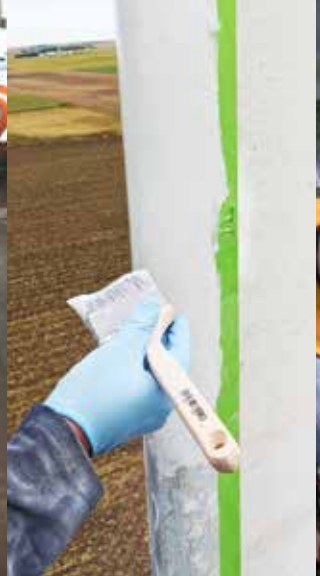
Technical Data

Mixing ratio (base:solidifier)	6 : 1 by weight		4.7 : 1 by Volume	
Working life	120 minutes at 22°C (72°F)			
Shelf life	5 years			
Volume capacity	3224 cm³ (196.8 in³) / 4 kg			
Expansion joint applications	Class 25, Type M, Grade N Sealant (± 25% movement) under modified ASTM C-719			
Shore A hardness	46			
Adhesion (90° peel)	Blasted steel: 805.4 kg/m (45.1 pli)	Aluminium: 914.3 kg/m (51.2 pli)	Concrete: 708.8 kg/m (39.7 pli)	Belzona 4111: 771.5 kg/m (43.2 pli)
Tear strength	1,384 kg/m (77.5 pli)			

Cure Times

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


ARIZONA



5000 Series

ENVIRONMENTAL POLYMERS

Protection from Environmental, Physical, Chemical and Bacterial Attack

5100 SERIES	Protective coatings for internal and external walls and structures
5200 SERIES	Slip resistant, heavy duty flooring coatings
5800 SERIES	Barrier coatings for protection of equipment and structures operating under immersion

www.belzona.com/5000

Belzona 5111
(Ceramic Cladding)

Protective coating with aesthetic properties

A two-part modified urethane system for protecting metallic and masonry surfaces against chemical, abrasive and corrosive attack. The system produces a coating of extreme hardness, durability and chemical resistance, yet giving a highly decorative, non-toxic surface which is easy to clean by commonly used cleaning agents.

Colour:

WHITE

Technical Data

Mixing Ratio (Base:Solidifier)	2.25 : 1 by volume	2.5 : 1 by weight
Working Life	8 hours at 25°C (77°F)	
Shelf Life	5 years	
Coverage Rate	Depends on roughness, porosity, profile and nature of the substrate. Refer to IFU for specific substrates.	
Abrasion Resistance	CS17 - 30 mm³ dry	
Heat Resistance	200°C (392°F) dry heat	Not recommended for permanent immersion but satisfactory in splashing and spillage situations up to 60°C (140°F)

Cure Times

Product	Belzona 5911	Belzona 5111
Touch Dry	2 hours	6 hours
Minimal overcoating time	8 hours	8 hours
Maximum overcoating time	2 days	2 days
Full cure	7 days	7 days

Belzona 5122
(Clear Cladding Concentrate)

Clear water repellent treatment for masonry surfaces

A masonry treatment in the form of an aqueous penetrating liquid which, when applied to porous surfaces, forms an invisible, micro-porous and water repellent barrier with the substrate. The system is supplied as a concentrate for dilution with water prior to use. It maintains the natural appearance of the substrate, while preventing spalling and cracking of surfaces such as concrete, stone and brick, and reducing dirt retention.

Colour:

CLEAR

Technical Data			
	Working life	Once diluted 24 hours	
	Shelf life	3 years	
	Water absorption *values obtained after 24 hours	Limestone untreated: 5.26 kg/m² (1.08 lb/ft²)*	Limestone treated: 0.36 kg/m² (0.07 lb/ft²)
		Sandstone untreated: 51.60 kg/m² (10.57 lb/ft²)*	Sandstone treated: 0.43 kg/m² (0.09 lb/ft²)*
		Brick untreated: 1.70 kg/m² (0.35 lb/ft²)*	Brick treated: 0.01 kg/m² (0.002 lb/ft²)*
	Coverage rate *after dilution	Rough concrete: 1.3 m² (14.0 ft²) / litre*	
		Soft brick: 1.3 m² (14.0 ft²) / litre*	
		Natural stone: 1.5 m²-2.1 m² (16.2 ft²-22.6 ft²) / litre*	
		Smooth brick: 2.6 m² (28.0 ft²) / litre*	
		Smooth concrete: 2.6 m² (28.0 ft²) / litre*	
		Asbestos cement: 2.6 m² (28.0 ft²) / litre*	

Belzona 5151
(Hi-Build Cladding)

Weatherproofing and waterproofing protective coating

A single component waterproofing coating designed to protect external and internal walls and structures from damage caused by aggressive industrial, marine and natural pollutants, whilst reducing dirt retention. This flexible material offers outstanding elasticity, weather resistance and ultraviolet radiation protection, and its self-cleaning properties ensure that the appearance of the treated surfaces is maintained.

Colour:

Technical Data

Drying time	90 minutes to water resistance at 22°C (75°F) and 50% RH, 250 microns (10 mils) thickness
Shelf life	5 years
Adhesion (tensile shear)	Glass: > 1.75 N/mm (> 10 pli)
	Concrete: > 1.75 N/mm (> 10 pli)
	Coated steel: > 1.75 N/mm (> 10 pli)
Tear strength	26.25 N/mm (150 pli) after 7 days cure at 20°C (68°F)
Water vapour permeability	3.5 mg/cm²/mm/day
Tensile strength	2.83 MPa (410 psi) after 7 days cure at 20°C (68°F)
Elongation	250% after 7 days cure at 20°C (68°F)
Coverage rate per coat	Concrete: 4 m² (43 ft²) / litre approx.
	Breeze block: 3 m² (32 ft²) to 4 m² (43 ft²) / litre approx.
	New asbestos sheeting: 4 m² (43 ft²) to 6 m² (64 ft²) / litre approx.
	Old asbestos sheeting: 3 m² (32 ft²) to 4 m² (43 ft²) / litre approx
	Rough brick: 3 m² (32 ft²) to 4 m² (43 ft²) / litre approx.
	Smooth brick: 4 m² (43 ft²) to 5 m² (54 ft²) / litre approx.
	Cement rendering: 4m² (43 ft²) to 5 m² (54 ft²) / litre approx.
	Stone: 4 m² (43 ft²) / litre approx.
	Belzona 5151: 5 m² (54 ft²) to 6 m² (64 ft²) / litre approx.

Belzona 5231
(SG Laminate)

Heavy duty protective coating for flooring areas

A two-component coating, incorporating a non-slip aggregate, for the protection of flooring areas where chemical and abrasion resistance are required. This durable coating reduces health and safety risks due to its positive grip properties and is available in a range of colours including dark grey, light grey and bright yellow for improved visibility.

Colour:

Technical Data

Mixing ratio (base:solidifier)	3 : 1 by volume	
Working life	30 minutes at 20°C (68°F)	
Shelf life	5 years	
Coverage rate	13.3 m² (144 ft²) / 4 litre at 300 microns (12 mils)	
Heat distortion temperature	32°C (90°F) at 20°C (68°F)	
Abrasion resistance	CS17 - 21 mm³ dry	
Adhesion (pull-off) * Cohesive failure of substrate ** Cohesive failure of Belzona 5231	Blasted steel: 22.55 MPa (3,270 psi)**	Dry concrete: 7.24 MPa (1,050 psi)*

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)
Light pedestrian traffic or loading	8 hours	4 hours	3 hours
Full traffic or loading	1 day	8 hours	5 hours
Chemical contact	7 days	5 days	3 days

Belzona 5233

UV-Stable & Slip Resistant Protective Floor Coating

A waterborne, solvent-free and UV-stable floor coating. It is designed to offer long-term protection and durability for internal and external flooring applications. This system provides outstanding mechanical strength and resistance to abrasion, ideal for areas with high levels of vehicular and pedestrian traffic.

CLEAR

Technical Data

Mixing ratio (base:solidifier)	3.3 : 1 by weight	3.7 : 1 by volume
Working life	1 hour between 10-40°C (59-104°F)	
Shelf life	2 years	
Coverage rate	8 m² (86.1 ft²) / 1 litre at a thickness of 125 microns (5 mils)	
Abrasion resistance	CS17 - 13 mm³ dry (1000 cycles)	
Adhesion (pull-off) cohesive failure of substrate	Concrete: 2.76 MPa (400 psi)	

Cure Times

Temperature	10°C (50°F)	20°C (68°F)	30°C (86°F)
Light pedestrian traffic	16 hours	8 hours	4 hours
Light vehicle traffic	3 days	1 day	16 hours
Full traffic or loading	7 days	5 days	3 days

Belzona 5721

High performance & UV-stable coating for leading edge protection

A 2-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 maximise available maintenance opportunities and ensure the turbine's fast return to service.

WHITE

Technical Data

Mixing ratio (Base : Solidifier)	1.75 : 1 by volume	2.66 : 1 by weight
Coverage rate	1.3 m² (14 ft²) / kg at 500 microns (20 mils)	
Shelf life	3 years	
Working life	30 minutes at 5-40°C (41-104°F), 65% RH	
Rain erosion	No significant damage following 3 hours of continuous testing, tip velocity of 160m/s (ASTM G73)	
Solid Particle Impingement	8.8mm³ loss following direct impact of 50g dry silica sand at a velocity of 70 m/s (ASTM G76)	
Adhesion (pull-off)	GRP composite: 10.5 MPa (1520 psi) at 20°C (68°F), cohesive failure of GRP composite	
Adhesion (tensile shear)	Grit blasted mild steel: 25.2 MPa (3,650 psi) at 20°C (68°F)	
UV resistance	No chalking or colour change following >4000 hours exposure, ISO 11341 (Xenon Arc)	

Cure Times

Temperature	5°C (41°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Time until touch dry (overcoatable)	30 - 45 mins				
Hard Dry (Movement and light loading)	3 hours	3 hours	2 ½ hours	2 ½ hours	2 hours
Time until full service	6 hours	6 hours	5 hours	5 hours	4 hours

Belzona 5811
(Immersion Grade)

Barrier coating for operation under immersion

A two-component coating applied by brush or spray for protection of metallic and non-metallic surfaces operating under immersion conditions in contact with aqueous solutions up to 50°C (122°F). This coating offers excellent corrosion resistance and protection against a wide range of chemicals as well as sea water and crude oil.

Colour:

Technical Data

Mixing ratio (Base:Solidifier)	3 : 1 by volume	5 : 1 by weight
Working life	105 minutes at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	160°C (320°F) dry	50°C (122°F) wet
Adhesion (tensile shear) mild steel	Mild steel - 7 days cure at 22°C (72°F): 19.9 MPa (2,840 psi)	Mild steel - 28 days cure at 22°C (72°F): 24.7 MPa (3,590 psi)
	Aluminum - 7 days cure at 22°C (72°F): 17.0 MPa (2,470 psi)	Aluminum - 28 days cure at 22°C (72°F): 17.4 MPa (2,530 psi)
Compressive strength	42.7 MPa (6,200 psi) after 7 days cure at 22°C (72°F)	
Coverage rate	2.5 m² (27ft²) / litre at 400 microns (16 mils)	

Cure Times

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

Belzona 5811DW2

(DW Immersion Grade)

Barrier coating approved for contact with potable water

A two-component coating applied by brush or spray for protection of metallic and non-metallic surfaces operating under immersion conditions in contact with water and aqueous solution up to 40°C (105°F), when potable water approval is required.

Colour:

WRAS APPROVED MATERIAL

Technical Data

Mixing ratio (Base:Solidifier)	2.5:1 by volume	4:1 by weight
Working life	30 minutes at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	120°C (248°F) dry	40°C (105°F) wet
Adhesion (tensile shear)	Aluminium: 11.9 MPa (1,730 psi) ambient cure, 14.1 MPa (2,040 psi) post cure	
	Mild steel: 13.9 MPa (2,020 psi) ambient cure, 22.4 MPa (3,250 psi) post cure	
Electrical properties	Tested with ASTM D149 method A with voltage rise of 2kV/s: Dielectric strength of 42.7 kV/mm	
Compressive strength	14.2 MPa (2,060 psi) ambient cure	29.1 MPa (4,220 psi) post cure
Atlas cell testing (NACE TM01-74)	No blistering observed after 6 month immersion at 40°C (104°F)	
Coverage rate	2.5 m² (27 ft²) / litre at 400 microns (16 mils)	

Cure Times

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

Belzona 5812DW

Barrier coating approved for contact with potable water

A two-component coating applied by brush or spray for protection of metallic and non-metallic surfaces operating under immersion conditions in contact with water and aqueous solutions up to 50°C (122°F), when potable water approval is required. This system can be used in combination with Belzona 9241 aggregate to create a drinking water approved concrete rebuilding system for heavily damaged vertical and horizontal surfaces.

Only available in Asia Pacific regions.

Colour:

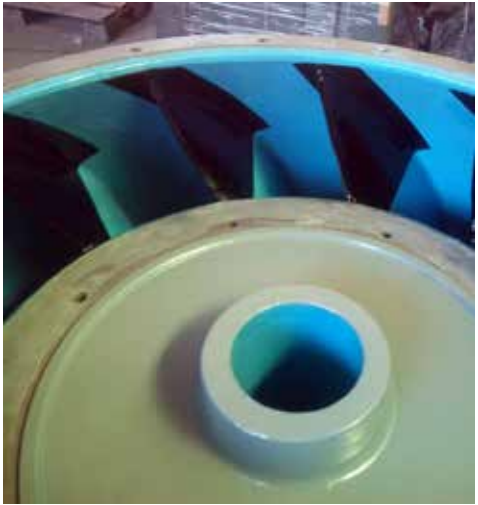
Tested and certified by WQA against NSF/ANSI 61. For product use restrictions visit www.wqa.org

Technical Data

Mixing ratio (Base:Solidifier)	2.6:1 by volume	4:1 by weight
Working life	1 hour at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	50°C (122°F) in continuous immersion in aqueous solutions	
Atlas cell testing (NACE TM01-74)	No blistering or rusting is observed after 6 month immersion at 40°C (104°F)	
Compressive strength	7,310 psi (50.4 MPa) after 7 day cure at 22°C (72°F)	
Adhesion (tensile shear)	Aluminium: 13.4 MPa (1,940 psi)	Mild steel: 21.6 MPa (3,130 psi)
Coverage rate	4m² (43ft²) / liter at 250 microns (10 mils)	

Cure Times

Temperature	5°C (40°F)	10°C (50°F)	22°C (72°F)	30°C (86°F)
Light loading	29 hours	1 day	6 hours	3 hours
Full mechanical/thermal loading or water immersion	5 days	3 days	2 days	1 day



Belzona 5821

Erosion-corrosion resistant barrier coating

A two-component ceramic filled coating designed to provide erosion-corrosion protection and chemical resistance for equipment operating under immersion in aqueous solutions up to 50°C (122°F). This high performance material can be easily applied by brush or spray to virtually any metallic and non-metallic surface.

Colour:

Technical Data

Mixing ratio (Base:Solidifier)	3:1 by volume	5:1 by weight
Working life	105 minutes at 20°C (68°F)	
Shelf life	5 years	
Heat resistance	160°C (320°F) dry	50°C (122°F) wet
Adhesion (tensile shear)	Mild steel: 20.8 MPa (3,020 psi) after 7 days cure at 22°C (72°F)	Aluminum: 19.1 MPa (2,770 psi) after 7 days cure at 22°C (72°F)
Shore D hardness	81	
Compressive strength	39.9 MPa (5,780 psi) after 7 days at 22°C (72°F)	
Coverage rate	2.5 m² (27 ft²) / litre at 400 microns (16 mils)	
Abrasion resistance	H10 - 402 mm³ wet	CS17 - 86 mm³ dry

Cure Times

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

Belzona 5831
(ST-Barrier)

Moisture tolerant barrier coating system

A two-component coating applied by brush for protection of metallic and non-metallic surfaces operating under immersed conditions in contact with aqueous solutions. This moisture tolerant material is specifically designed for application to wet and oil contaminated surfaces that cannot be dry for application, as well as for underwater applications. The coating displaces water from the surface, ensuring maximum adhesion to damp or wet surfaces, even underwater.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	1:1 by volume	1.75:1 by weight
Working life	45 minutes at 20°C (68°F)	
Shelf life	5 years	
Adhesion (tensile shear)	Mild steel (clean and dry) - ground: 12.2 MPa (1,770 psi)	Mild steel (clean and dry) - grit blasted: 13.2 MPa (1,920 psi)
	Mild steel (underwater) - ground: 10.6 MPa (1,540 psi)	Mild steel (underwater) - grit blasted: 7.5 MPa (1,090 psi)
	Mild steel (oil contaminated) - ground: 12.5 MPa (1,810 psi)	Mild steel (oil contaminated) - grit blasted: 13.8 MPa (2,010 psi)
Coverage rate	2.5 m² (27 ft²) / litre at 400 microns (16 mils)	
Shore D hardness	72	
Compressive strength	21.2 MPa (3,070 psi)	

Cure Times

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

Belzona 5831LT

Moisture-tolerant protective coating for low temperature application

Belzona 5831LT is an environmental moisture-tolerant barrier coating, specially formulated for the protection of metallic and non-metallic surfaces at lower temperatures. This solvent-free material can be applied to virtually any surface and will cure even in low-temperature environments, as well as underwater. Belzona 5831LT will provide long-term protection against corrosion, erosion, as well as chemical and environmental attack.

Colour:

WHITE

Technical Data

Mixing ratio (Base : Solidifier)	1:1 by volume	1.75:1 by weight
Working life	45 minutes at 20°C (68°F)	
Shelf life	5 years	
Adhesion (dolly pull-off)	Mild steel (clean and dry) - ground: 14.1 MPa (2,050 psi)	Mild steel (clean and dry) - grit blasted: 15.7 MPa (2,280 psi)
	Mild steel (underwater) - ground: 8.1 MPa (1,170 psi)	Mild steel (underwater) - grit blasted: 12.3 MPa (1,780 psi)
	Mild steel (oil contaminated) - ground: 9.9 MPa (1,440 psi)	Mild steel (oil contaminated) - grit blasted: 10.9 MPa (1,580 psi)
Coverage rate	3.3 m² (35.5 ft²) / litre at 300 microns (16 mils)	
Shore D hardness	66 at 20°C (68°F)	
Salt spray resistance	The coating shows no blistering or corrosion after >2000 hours exposure (ASTM B117)	

Cure Times

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

Belzona 5841

Heat activated coating system for CUI prevention

A two-component coating for protection of steelwork subject to Corrosion under Insulation (CUI). This heat activated material can be brush applied directly onto hot surfaces from 30°C (86°F) to 80°C (176°F) with minimal surface preparation required, avoiding production downtime.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	4 : 1 by volume	8.5 : 1 by weight
Working life	60 minutes at 20°C (68°F)	
Shelf life	5 years	
Adhesion (Tensile shear)	Grit blasted / ground steel: 24.1 MPa (3,500 psi)	
Adhesion (pull-off)	Grit blasted / ground steel: 12.4 MPa (1,800 psi)	Rusty steel prepared to ISO 8501-1 St 3: 9.65 MPa (1,400 psi)
Heat distortion temperature	95°C (203°F) after 7 days cure at 80°C (176°F)	51°C (123°F) after 7 days cure at 20°C (68°F)

Cure Times

Temperature	30°C (86°F)	50°C (122°F)	80°C (176°F)
Touch dry/light loading	2½ hours	1 hour	20 mins
Full cure	24 hours	16 hours	8 hours

Belzona 5851
(HA-Barrier)

Moisture-tolerant barrier coating for application onto hot surfaces

A single component coating for protection of steelwork subject to Corrosion under Insulation (CUI). This heat activated material can be brush applied directly onto hot surfaces from 70°C (158°F) to 150°C (302°F) with minimal surface preparation required, avoiding production downtime.

Colour:

Technical Data

Mixing ratio (Base : Solidifier)	Single component coating			
Working life	Unlimited - cure will not commence until product is heated			
Shelf life	2 years			
Adhesion (Tensile shear)	19.3MPa (2800 psi) after cure at 100°C (212°F) onto clean, ground steel	19.3MPa (2800 psi) after cure at 100°C (212°F) onto grit-blasted steel	17.9MPa (2600 psi) after cure at 100°C (212°F) onto rusty steel (manually abraded)	11.7MPa (1700 psi) after cure at 100°C (212°F) onto rusty steel (wire brushed)
Heat distortion temperature	127°C (260°F) after 7 days cure at 100°C (212°F)			
Heat resistance	150°C (302°F)			

Cure Times

Temperature	80°C (176°F)	90°C (194°F)	120°C (248°F)	150°C (302°F)
Touch dry/Light loading	16 hours	4 hours	30 mins	10 mins
Full cure	5 days	3 days	1 day	16 hours

Belzona 5871

Thermal insulation barrier providing corrosion protection with “cool-to-touch” properties

Belzona 5871 is a novel, two-component, polymeric, solvent free 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 onto areas including metal pipework, ducting and other industrial equipment. Belzona 5871 provides protection against contact-burn injuries, eliminates corrosion (CUI), condensation and anti-icing, whilst also providing thermal insulation.

Colour:

Technical Data

Mixing Ratio (Base : Solidifier)	2 : 1 by volume	2.3 : 1 by weight
Working Life	20 minutes at 20°C (68°F)	
Cool-To-Touch Surface (ASTM C1055)	Belzona 5871 can be used to prevent contact-burn injuries by reducing the surface temperature of metallic substrates to below 60°C (140°F)	
Thermal Conductivity (Lee's Disc)	0.1 W/m.k	
Corrosion Under Insulation (CUI)	Belzona 5871 will show no signs of failure after 1000 hours simulated CUI, cycled between 60°C (140°F) and 120°C (248°F), with alternating, hourly dry and wet periods.	
Salt Spray (ASTM B117)	Belzona 5871 tested as one-coat system (at 3mm cured thickness), cured at 20°C/68°F and post cured at 120°C/248°F respectively, will show no signs of failure after 3000 hours continuous exposure.	
Water Immersion (ISO 2812-2)	Belzona 5871 tested as a one-coat system (3mm cured thickness) will show no signs of failure after 4500 hours (20°C/68°F cure)	
UV Stable + Fire Resistance	When used in conjunction with Belzona 3211	

Cure Times

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

Belzona 5892

Elevated temperature barrier coating

A two-component high temperature coating applied by brush or heated airless spray for protection of metallic surfaces operating under immersion in aqueous/hydrocarbon systems up to 95°C (203°F). This high performance material provides excellent corrosion protection at elevated temperatures and is resistant to a wide range of chemicals. It exhibits low surface bloom and excellent inter-coat adhesion, enabling two-coat application without the need for frost blasting between coats.

Colour:

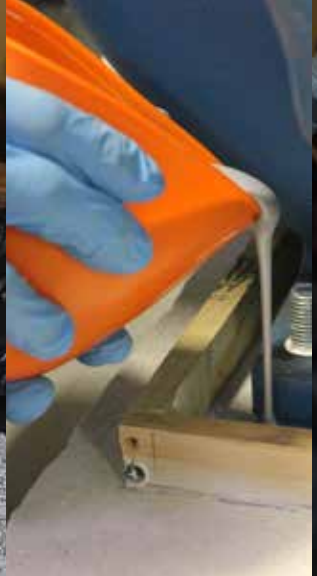
WHITE

Technical Data

Mixing ratio (Base : Solidifier)	3.5 : 1 by volume	5.74 : 1 by weight
Coverage rate	2.5 m² (27 ft²) / litre at 400 microns (16 mils)	
Shelf life	5 years	
Working life	40 minutes at 20°C (68°F)	
Heat resistance	Steam out resistance: 210°C (410°F)	Dry heat resistance: 230°C (446°F)
Adhesion (tensile shear)	Mild steel: 19.2 MPa (2,790 psi) at 20°C (68°F)	Mild steel: 21.2 MPa (3,070 psi) at 60°C (140°F) cure
Compressive strength	73.8 MPa (10,710 psi) at 20°C (68°F) cure	
Heat distortion temperature	50°C (122°F) at 20°C (68°F) cure	95°C (203°F) at 60°C (140°F) cure 128°C (262°F) at 100°C (212°F) cure
Adhesion (pull-off)	Mild steel: > 37.9 MPa (> 5,500 psi)	

Cure Times

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



Other Products

Other Belzona Materials and Accessories

6000 SERIES	Environmental corrosion protection systems
7000 SERIES	High performance, pourable chocking and grouting compounds
8000 SERIES	Anti-seize treatments and lubrication systems
9000 SERIES	Accessories

Belzona 6111
(Liquid Anode)

Steel protection system for environmental corrosive attack

A two-part zinc rich epoxy system providing long-term cathodic protection of blast cleaned steelwork. The material is solvent based and can be brush or spray applied. It is ideal in marine and industrial environments where long-term corrosion resistance is required.

Colour:

Technical Data				
	Mixing ratio (base:solidifier)	3.5 : 1 by volume		
	Working life	72 hours at 10°C (50°F)	48 hours at 20°C (68°F)	24 hours at 30°C (86°F)
	Shelf life	3 years		
	Coverage rate	1.8 m² (19.4 ft²) / 1 kg at 38 microns (1.5 mils)		
	Heat resistance	200°C (392°F) dry	60°C (140°F) wet	

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

Belzona 7111

High performance, pourable chocking compound

A two-component, 100% solids compound designed to be used as a chocking material to endure the physical and thermal shock common to marine environments. This pourable compound exhibits excellent non-shrinking properties, as well as high impact and compressive strength.

Colour:

Technical Data

Mixing ratio (base:solidifier)	14.5 : 1 by weight* *Refer to IFU for thickness greater than 38 mm (1 1/2 inch)	
Working life	30 minutes at 25°C (77°F)	
Shelf life	4 years	
Compressive Strength	213.1 MPa (30,908 psi) 16 hour cure at 70°C (158°F)	
Hardness	Shore D: 89.5	Barcol: 40
Adhesion (pull-off)	Mild steel: 26.8 MPa (3,880 psi)	Concrete: 6.8 MPa (980 psi)*
Shear Strength	45.4 MPa (6,590 psi) at 20°C (68°F) cure and test	
Volume Capacity	4360 cm^3 (266 in^3) / 6.95 kg	
Tensile Strength	44.2 MPa (6,410 psi) at 20°C (68°F) cure and test	
Adhesion (tensile shear)	Mild steel: 24.6 MPa (3,570 psi)	Stainless steel: 20.0 MPa (2,900 psi)

Cure Times

Temperature	15°C (60°F)	20°C (68°F)	30°C (86°F)
Cure Times	48 hours	24 hours	12 hours

Belzona 8211 (HP Anti-Seize)

A high performance anti-seize treatment for prevention of seizure and galling of mating surfaces of nuts, bolts, couplings, sprockets, pulleys and other components, in areas subject to high temperatures, corrosion, chemicals and mechanical interlocking on both similar and dissimilar metal substrates before assembly. This pre-assembly material resists vibration, contraction, expansion, corrosion, chemicals and temperatures up to 1100°C (2000°F).

Belzona 8311 (Nato Fluid)

A multi-purpose lubrication system for penetrating and releasing seized components caused through lack of lubrication at assembly or corrosion in service. This versatile lubricant consists of a blend of ionic and non-ionic molecules with both water repellent (hydrophobic) and water seeking (hydrophilic) properties, providing an easily applied solution for long-term protection in aggressive environments. Belzona 8311 (Nato Fluid) is supplied with a spraying pump for easy application by spray, brush or dripping.

Belzona 9111 (Cleaner/Degreaser)

A non-flammable surface cleaner to ensure removal of oil and grease from surfaces prior to the application of other Belzona material. It can also be used for cleaning Belzona mixing and application tools.

Belzona 9121 (Universal Thinner)

Universal thinner for addition to solvent based Belzona material to facilitate spray application. This material is also used as a general cleaner for brushes, trowels, floats and other application equipment.

Belzona 9200 Series (Aggregates)

Hard angular aggregates for incorporation into or application on top of Belzona coatings to create safety grip systems. Two different grades are available: Belzona 9211 (Supergrip Aggregate) Belzona 9221 (Surefoot Aggregate White)/Belzona 9231 (Surefoot Aggregate). Belzona 9241DW is a NSF/ANSI 61 certified aggregate for incorporation into Belzona NSF approved coatings to create a concrete rebuilding system suitable for contact with potable water.

Belzona 9300 Series (Reinforcing Fabrics)

Belzona 9311 (Flexible Membrane Reinforcing Sheet), Belzona 9321 (Lagseal Reinforcing Sheet), Belzona 9331 (MR7 Reinforcing Sheet), Belzona 9351 or Belzona 9361 (WG Membrane Reinforcing Sheets) 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 9381 (Belzona SuperWrap II Reinforcing Sheet) and Belzona 9382 (Belzona SuperWrap II Release Film) are used to reinforce and consolidate the application of Belzona SuperWrap II.

Belzona 9411 (Release Agent)

A single component brush applied release agent. This material can be applied to any surface where the Belzona material is not required to adhere. It can be used on moulds and formers to allow for an easy release.

Belzona 9611 (ES-Metal)

A rapid curing putty grade system supplied in stick form. Ideally suited for sealing low pressure live leaks prior to application of additional Belzona systems to create more permanent repairs.

Belzona 9621 (3D-Printed Mesh for Live Leak Sealing)

Used in conjuction with Belzona 1212, the 3D-printed mesh facilitates live leak sealing of small holes on straight pipes operating at presurres of up -10bar.

Belzona 9631 (Water-Activated Leak Sealing Kit)

A leak-sealing kit containing a 5cm x 150cm / 2in x 60in fiberglass pre-impregnated wrap which is activated by water. Packaged in a hermetically sealed foil pouch, it is ready to use and does not require any measuring or mixing.

Belzona 9811

An alumina tile sheet that is easily installed to create a hard-wearing, abrasion resistant lining capable of forming many different contours. Belzona offer a wide range of materials that can be used for bonding and grouting the tiles, depending on the operating conditions and substrate geometry.

QUALITY PRODUCTS – TECHNICAL SUPPORT
Belzona products are manufactured through stringent quality and environmental control guidelines complying with the internationally recognised requirements of **ISO 9001** and **ISO 14001**.

Belzona has a global distribution network of over 140 Distributors operating in 120 countries. Local support is provided by trained Technical Consultants who will diagnose the problem, recommend the solution and provide 24-hour on-site application supervision and advice.

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This catalogue is intended to be used as a guide. Due to a continual development programme, product specifications and testing results are subject to change. To check that you have the latest version of this guide, please consult your local Belzona corporate office. Availability of some products may be geographically limited. Data correct as of 22/11/2019.

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