



BELZONA POLYMERIC SOLUTIONS FOR BUILDINGS AND STRUCTURES

Belzona Protective Coatings and Engineering Composites

OUR HISTORY

Established in 1952, Belzona pioneered innovative polymer technology that revolutionised industrial repair and maintenance procedures. Today, Belzona is the world leader in the manufacture of polymer repair composites and industrial protective coatings and is continuously developing solutions to meet the ever increasing market demand.



Waterproofing systems for buildings and structures



Repair composites and protective coatings



Protection from physical and chemical attack



Hard wearing systems for slip reduction

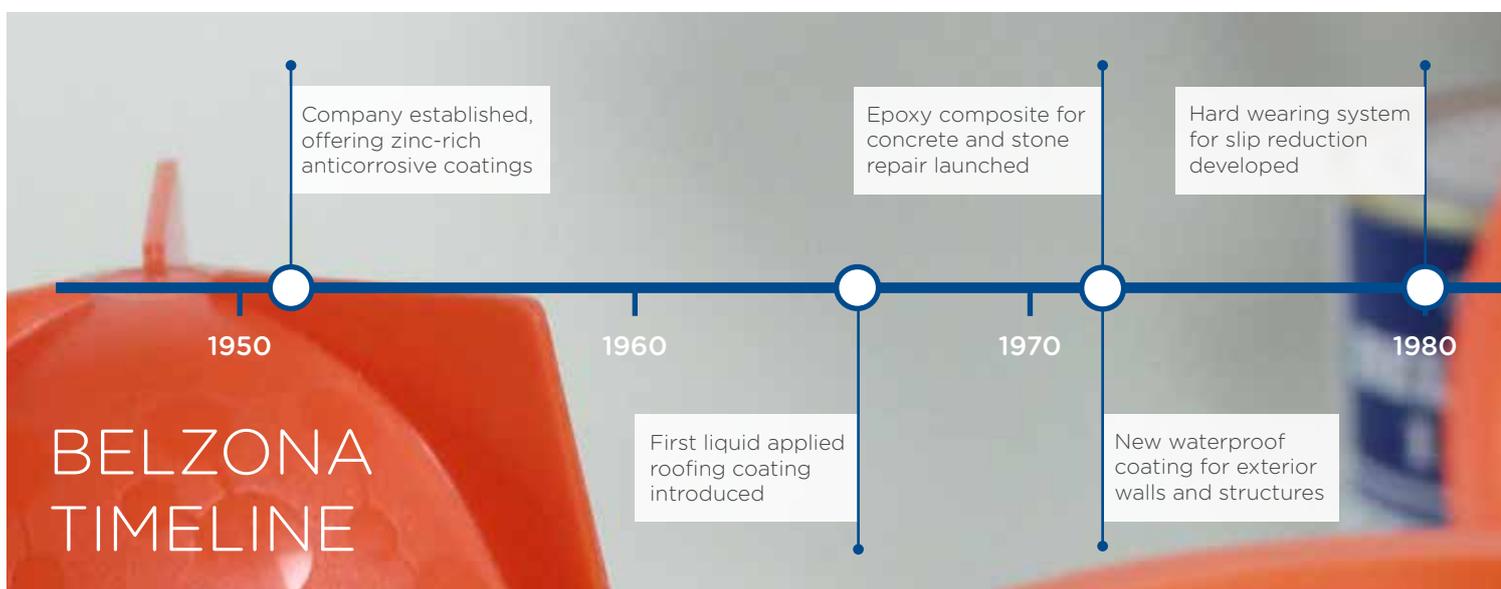
VERSATILE SOLUTIONS TO FIT SPECIFIC NEEDS

Buildings and structures are routinely subjected to a variety of physical and corrosive damage. Harsh environmental impact, use of aggressive chemicals and general day-to-day usage can lead to numerous problems such as water ingress, physical degradation, chemical and bacterial attack. A damaged substrate not only requires a solution that can be installed with minimal downtime and disruption, but the repair must also ensure the substrate will remain protected for the long term.

Belzona's polymeric repair composites and coatings provide durable repair and protection based on years of successful experience with floors, walls and roofs. Our unique solutions are designed to fit each client's specific needs, helping them to:

- Reduce capital expenditure
- Extend buildings and structures life
- Lower maintenance costs
- Improve efficiency and reliability
- Simplify maintenance procedures
- Meet health and safety requirements

Our wide range of repair and protection materials have been carefully formulated to address the various problem areas found within buildings and structures.



GLOBAL PRESENCE - LOCAL SUPPORT

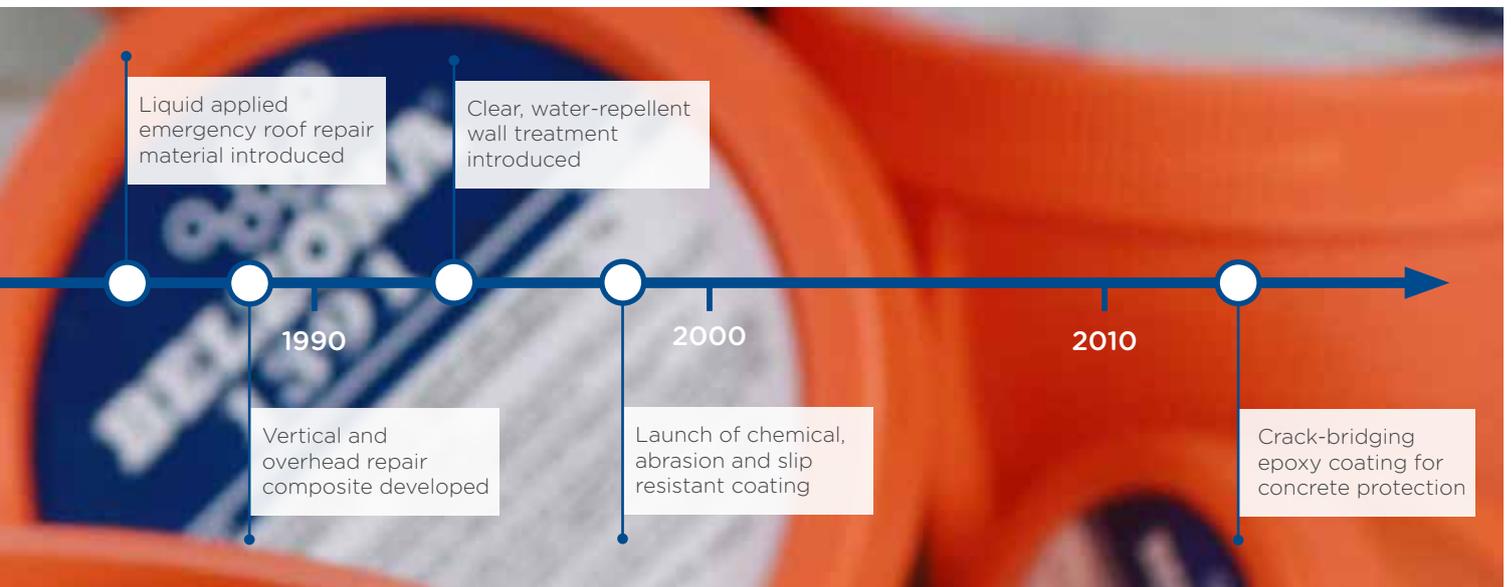
Belzona has over 140 Distributors in more than 120 countries ensuring not only the availability of Belzona materials, but also specification support, project management, application and supervision services. Distributorships and their teams are supported by Belzona Corporate offices in Europe, North America and Asia.

To find your local Belzona representative visit belzona.com/find

CORPORATE OFFICES

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Our expert Technical Consultants with years of field experience and advanced training are available to assist you every step of the way to: diagnose the problem, discuss material selection options, recommend a solution and provide on-site application support.



POLYMERIC MEMBRANES

For weatherproofing buildings, structures and insulation

Roof integrity can often be jeopardised by various factors such as substrate movement during warm and cold cycles, physical damage, rain and adverse weather conditions. These effects can prove highly detrimental and damaging to the roof's waterproofing capabilities. Repairs involving hot work are often hazardous and seldom permitted as they present a significant fire risk to contractors and to the building.

First introduced in 1966, the Belzona liquid applied Polymeric Membrane range is formulated on decades of experience in the repair and protection of all types of roof and insulation problem areas. The outstanding waterproofing and weatherproofing properties of our membranes, together with their excellent flexibility and high adhesion, ensure the roof will remain protected for the long term.

These low odour, cold applied systems incur minimal disruption during the application process, allowing for a rapid and safe installation in many locations such as schools, hospitals and other public buildings.



- WEATHERPROOF**
Prevents water penetration
- MICROPOROUS**
Allows moisture to escape
- COLD APPLIED**
Safe to use
- FLEXIBLE**
Moves in sympathy with the substrate

Product Selection Guide	Belzona 3111	Belzona 3121	Belzona 3131	Belzona 3211
Tear strength – above 2680kg/m (ASTM D624)	●	●	●	
Tensile strength of the reinforced system – above 3 MPa [○]; above 6 MPa [●]	●	○	○	
Elongation of the reinforced system – above 50% [○]; above 100% [●]	●	●	●	○
Water vapour permeability	●	●	●	●
Fire resistance (fire propagation index of 2.8 when tested in accordance with BS 476 Part 6)				●
Water based	●			●
Winter application [○]; summer application [●]	○	●	●	○
BBA, Energy Star, ETA-05/0075 and UL approved/classified	●			

*For further information and advice please contact your local Belzona representative.



FLAT ROOF PROTECTION



Roof protected from water ingress



Deteriorated asphalt roof waterproofed

GUTTERS AND FLASHINGS



Damaged gutter seamlessly sealed



Sealed flashing at roof/wall interface

GLAZING BARS AND SKYLIGHTS



Glazing bars protected



Skylights sealed with waterproofing membrane

INSULATION PROTECTION



HVAC ducting insulation protected



LNG spheres insulation protected

CONSTRUCTION POLYMERS

For the repair of concrete and stonework

When concrete and stonework in walls, floors, equipment bases and other structures become deteriorated by erosion, corrosion, chemical attack or physical damage, the cost of replacement and the disruption involved can often be highly prohibitive. Also, using the same material to replace the damaged substrate leaves the area susceptible to similar damage reoccurring.

Belzona offers a variety of polymeric concrete repair materials which not only repair the existing damage but also protect the substrate against future attack, providing a long-term solution. Belzona's materials adhere strongly to the existing concrete and cure in a matter of hours, achieving full mechanical hardness soon after. Their high compressive strength, chemical and abrasion resistance, together with a simple application method, make them ideal for small patches or repair of large areas.

Belzona's versatile range of concrete and stonework repair materials can be used in a variety of application situations including overhead and vertical repairs without the requirement for shuttering; repair of floor, steps and bunds exposed to chemical attack, and creation of load bearing shims withstanding high compressive forces.



- **NO SHRINKAGE**
Permanent repair
- **IMPACT RESISTANT**
Withstands high impact forces
- **HIGH ADHESION**
Long service life
- **CHEMICAL RESISTANT**
Withstands a wide range of chemicals

Product Selection Guide	Belzona 4111	Belzona 4131	Belzona 4141	Belzona 4154	Belzona 4181	Belzona 4301
High impact strength	●	●			●	●
Compressive strength - above 82 MPa (ASTM D695 ambient cure)	●	●		●		●
Flexural strength - above 34 MPa [○]; above 68 MPa [●] (ASTM D790)	○			●	○	●
Dry heat resistance - above 140°C [○]; above 190°C [●]	●	○	○		○	●
Chemical resistance - moderate [○]; excellent [●]	○	○	○		●	●
Non-shrinking - 100% solids	●	●	●	●	●	●
Lightweight material for application onto vertical/overhead surfaces			●			
Shimming applications	●					

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REPAIR OF FLOORS AND STEPS



Floor area resurfaced



Worn step nosings rebuilt

VERTICAL AND OVERHEAD CONCRETE REPAIR



Spalled concrete window sill repaired



Overhead lintels repaired

SHIMMING AND SECURING OF MACHINERY AND STRUCTURES



Vessel supports reconstructed



Hydraulic paper cutter installed

REBUILDING OF SURFACES SUBJECT TO CHEMICAL ATTACK



Sump rebuilt with chemically resistant material



Chemical handling area resurfaced

ENVIRONMENTAL BARRIER POLYMERS

To protect against and reduce environmental impact

External and internal walls, floors and other concrete and masonry structures such as chemical bunds can suffer from a variety of problems including water ingress, physical, chemical and environmental attack. A barrier coating that protects the substrate against the specific causes of deterioration and exposure conditions can avoid damage to the structural integrity, which would involve expensive repairs and disruptions to the facility's operation.

The Belzona Environmental Barrier Polymers range offers long-term protection against different types of environmental attack, from immersion in aggressive chemicals to extreme weather conditions and costal environments.

With the ability to be applied by brush or airless spray, this wide range of environmental coatings are designed to cover a variety of operational requirements, including resistance to organic and inorganic acids, reduction of dirt retention and resistance to water ingress.



- CHEMICAL RESISTANT**
Withstands a wide range of chemicals
- BARRIER PROTECTION**
Prevents environmental damage
- EASY TO USE**
No specialist tools required
- HIGH ADHESION**
Long service life

Product Selection Guide	Belzona 4311	Belzona 4331	Belzona 4341	Belzona 4351	Belzona 4361	Belzona 5111	Belzona 5122	Belzona 5151	Belzona 5811
Designed for immersion protection against aggressive chemicals	●	●	●	●	●				●
Designed for protection against aggressive weather conditions and costal environments - moderate [○]; excellent [●]						●	○	●	●
Water based [○]; solvent free [●]	●	●	●	●	●		○	○	●
Suitable for spray application	●	●	●	●		●	●	●	●
Self-cleaning properties							●	●	
Resistance to hot acids - organic [○]; inorganic [●]			○	●					
High flexibility when in service					●			●	
Microporous							●	●	

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EXTERNAL WALL WEATHERPROOFING AND WATERPROOFING



Clear water repellent treatment applied to masonry wall



Deteriorated wall protected from water ingress

INTERNAL HYGIENIC WALL AND FLOOR PROTECTION



Newly installed kitchen wall protected with hygienic coating



Floor protected against damage and aggressive substances

PROTECTION OF STRUCTURES AGAINST ENVIRONMENTAL ATTACK



Robust long-term coating of sugar silos



Storage tank protected from external corrosion

PROTECTION AGAINST CHEMICAL ATTACK



Chlorine tank protected against chemical attack



Containment area protected against chemical attack

SAFETY SURFACING POLYMERS

To reduce slips and to provide positive grip

Slip and fall injuries are one of the biggest causes of injury related leave and industrial compensation. An effective safety grip system plays a critical role in ensuring the potential for any slip and fall injuries is minimised. Conventional anti-slip systems such as adhesive tapes and sand paints can be used; however these methods often struggle to withstand the challenges found within busy industrial and commercial environments.

Belzona’s range of hard wearing liquid applied Safety Surfacing Polymers are specially designed to minimise the risk of slippage in potentially dangerous areas such as ladder rungs, stair treads, ramps, walkways and areas around machinery. These epoxy resin materials incorporate a hard wearing grip aggregate and will not peel or wear away due to their high adhesion to metals, concrete, quarry tiles, wood and many other surfaces.

Available in a range of bright colours for safety enhancement, Belzona’s Safety Surfacing Polymers provide a robust grip system with excellent wear and chemical resistance. These solvent free materials are easy to mix and can be applied manually without the need for specialist tools. They will cure at room temperature, being suitable for both industrial and commercial facilities.



- **POSITIVE GRIP**
Improved safety
- **HIGH ADHESION**
Long service life
- **WEAR RESISTANT**
Long-term performance
- **CHEMICAL RESISTANT**
Withstands a wide range of chemicals

Product Selection Guide	Belzona 1821	Belzona 4411	Belzona 5231	Belzona 5811
Tensile shear adhesion (grit blasted mild steel) - above 20 MPa (ASTM D1002)	●	●		●
Abrasion resistance - good [○]; excellent [●]	●	○	●	○
Flexural strength - above 50 MPa (ASTM D790)	●	●	N/A	
High impact strength	●	●		●
Dry heat resistance - up to 180°C [○]; up to 200°C [●]	●	●		○
Bonds to non-metallic surfaces (concrete, brick, tile, etc.)		●	●	●
Available in bright colours to aid visibility		●	●	
Excellent chemical resistance	●	●	●	●

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CONCRETE AND MORTAR STEPS



Safety grip system applied on concrete steps



Safety improved at school entrance

LOADING BAYS AND STAIRCASES



Safety grip system applied on loading bay



Safety grip system applied on tile staircase

METAL SURFACES



Safety restored with positive grip system



Bright colours for safety enhancement

WOODEN DECKING



Safety grip system applied on decking



Safety grip system applied on wooden bridge

FLEXIBLE POLYMERS

For the creation and repair of seals and expansion joints

Expansion joints, building joints and seals can incur a range of problems, causing disruptions and health and safety issues. Traditional sealants can shrink on cure and degrade overtime due to exposure to the environment, allowing ingress of liquids into the joint and leading to contamination of the spaces or ground beneath. Once the joint has broken down, conventional repairs would require complete replacement and occasionally redesign of the joint area, which can be highly time-consuming, disruptive and expensive.

Belzona’s range of cold applied flexible sealants provide effective sealing of expansion joints and seals on to a wide variety of substrates such as concrete, natural rubber, nitrile, neoprene, SBR, polyurethane, PVC and steel surfaces without the problem of shrinkage.

These flexible materials are ideal for applications where high build, durability, elasticity, high abrasion and tear resistance are required. Horizontal and vertical surfaces can be repaired in almost any location such as bridges, roadways, industrial utilities and manufacturing sites. No hot work is required during the repair procedure, ensuring a safe and easy application.



- FLEXIBLE**
Moves in sympathy with the substrate
- IMPACT RESISTANT**
Minimal remedial repairs
- HIGH ADHESION**
Long service life
- COLD APPLIED**
Safe to use

Product Selection Guide	Belzona 2111	Belzona 2131	Belzona 2211	Belzona 2221	Belzona 2311	Belzona 4521
Hardness (Shore A) – above 70 [○]; above 85 [●] (ASTM D2240)	●	●	○	○	○	
Tensile strength – above 9 MPa [○]; above 15 MPa [●]	●	●	○	○	○	
Elongation – above 500% [○]; above 1,000% [●]	○	○	●	●	○	○
Tear strength – above 4,000 kg/m [○]; above 6,500 kg/m [●] (ASTM D624)	●	●	○	○	○	
Abrasion resistance – moderate [○]; high [●]	●	●	○	○	○	
Fluid grade [○]; paste grade [●]	●	○	●	○	●	○
Creation/rebuilding of horizontal expansion joints [○]; vertical expansion joints [●]	○	○	●	○		○
Rapid cure					●	

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HORIZONTAL EXPANSION JOINTS



Expansion joint sealed



Failed expansion joint in hospital repaired

VERTICAL EXPANSION JOINTS



Joints sealed on underground concrete pipes



Leaking expansion joint repaired

FLEXIBLE SEALS



Joint between deck and vessel sealed



Sealed condenser expansion joint

HVAC DUCTING AND FLANGES



Deteriorated HVAC joints sealed



Fully encapsulated flange

GLOBAL APPLICATION STANDARDS



PREQUALIFICATION

Belzona materials are subjected to stringent independent and in-house testing, documented in the product specification sheets and chemical resistance charts. Testing is performed in our ISO 9001 audited laboratory to recognised standards as well as by external partners.

Belzona materials have received recognition from societies and companies from all around the world including General Motors, Ford, Energy Star, European Technical Approval and Underwriters Laboratories Certification Mark. In addition, our products have received acknowledgements from the U.S Navy and the U.K Ministry of Defence.



SPECIFICATION

Optimum materials and application procedures are selected to meet specific design parameters and operational conditions of the structure. Dedicated Belzona trained specialists coupled with round the clock head office technical support allow for the correct material and application procedure to be specified.

We also maintain a comprehensive database accessible by the Global Belzona Distributor network, which facilitates sharing of information and experience, improving specification and application standards.



APPLICATION

Application standards, including surface preparation, are integral to the success of solution implementation. Belzona recognises the need to set and monitor global application standards.

Applications are carried out by experienced and trained personnel. Belzona runs training programmes with theoretical and practical courses, including on-site training programs. Combined with specific application specifications, method statements, quality control procedures and daily inspection reports, we strive to ensure application standards are maintained.



INSPECTION

Inspection is carried out by certified inspectors prior to, during and upon completion of the application to ensure Belzona systems are applied in accordance with our standards and client's requirements.

Upon nearing the end of the system's expected service life, the application area is inspected again and appropriate action recommended, which may involve minor repair work or no action, as Belzona systems tend to outlast projected service life.

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POLYMERIC MEMBRANES

for weatherproofing buildings and structures



CONSTRUCTION POLYMERS

for the repair of concrete and stonework



ENVIRONMENTAL BARRIERS

for protection against environmental impact



CHEMICAL RESISTANT COATINGS

for protection against aggressive chemical attack



SAFETY SURFACING POLYMERS

for the prevention of slips and to provide positive grip



FLEXIBLE POLYMERS

for the repair of seals and expansion joints



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Q 09335
ISO 14001:2004
EMS 509612

Belzona products are manufactured
under an ISO 9000 Registered Quality
Management System


BELZONA[®]
Repair • Protect • Improve