



EST. 1952

PETROCHEMICAL INDUSTRY

*Belzona Engineering Composites
and Protective Coatings*



Belzona Solutions for the Petrochemical Industry



The information in this brochure is accurate as of the time of printing. For the most up-to-date details on Belzona products and services, please contact your local Belzona representative.

Belzona provides the answer to a variety of industrial problems, complicated or simple. We specialize in the development of epoxy-based industrial coatings and repair composites for equipment and structures.

Mission Statement Polymeric solutions for a sustainable future.

Company Values

Integrity

We operate from a place of integrity and adopt a “right-first-time” culture, holding ourselves accountable in everything we do.

Investment

We are committed to investing across all business areas - Corporate, Distributors, Consultants, Customers, and Contractors, providing the best service and support for our network.

Innovation

We are committed to being a technology leader striving for continual improvement and constantly adapting to the changing industrial needs.

Product Plus

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

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



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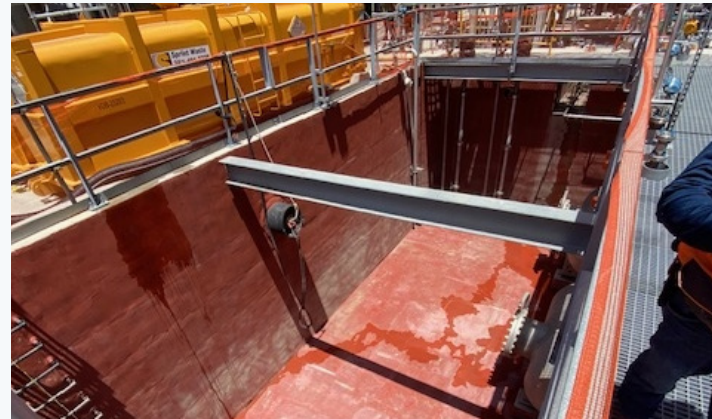


About Belzona Solutions

Petrochemicals are integral to modern life; being used in the production of anything from plastics to fertilizers, and solar panels to clothing. Our mission is to maintain the integrity of your assets allowing you to maximize your productivity.

Corrosive petrochemicals can have severe effects on process equipment as well as count-less safety issues associated with the manufacturing process.

Equipment used in the separation, mixing, blending, heating and/or cooling systems often function at elevated temperatures and in high pressure environments, leaving it vulnerable to corrosion, erosion, and chemical attack.



● Maximize Productivity

● Protect Equipment

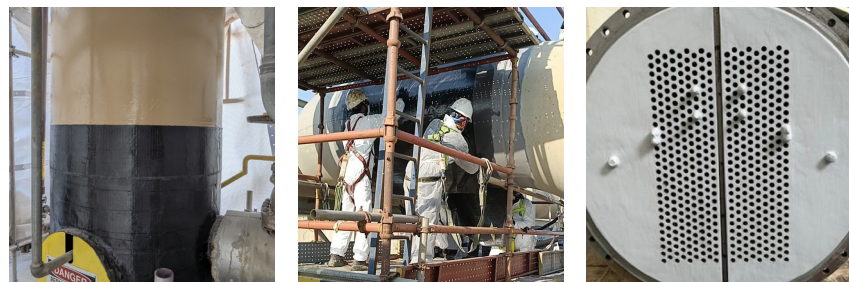
● No Hot Work

Avoid Unplanned Shutdowns

To avoid unplanned shutdowns, equipment must be protected from these processes. By utilizing a proven Belzona solution, asset owners can incorporate suitable protection into the OEM designs and components damaged in service can be effectively refurbished.

Why Belzona

Belzona solutions offer a wide range of benefits, making the applications safe, fast, and effective. We are continually researching and developing our products to stay abreast of the issues industries face and deliver timely solutions.



In-Situ Applications

Ensure maintenance can be carried out with quickly with minimum downtime.

Avoid Replacement

Eliminate the need to replace equipment, saving time and money.

Long-Term Protection

Provide long-lasting erosion and corrosion protection.

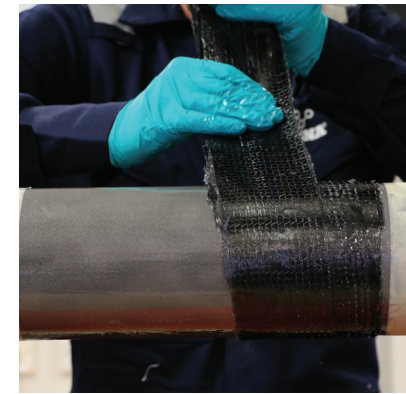
Chemical Resistance

Protect equipment from chemical attack.

No Hot Work

Cold bonding solutions maximize health and safety with no need for hot work.

Global Application Standards



Prequalification

Belzona materials are subject 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 recognized standards, including ASTM, ISO and NACE, as well as by independent organizations. Belzona products are approved by classification societies and companies from all around the world, including Lloyds Register, DNV GL, ABS, CCS, RS, KR, WRAS, Bureau Veritas, NSF and Nato, among others.



Specification

Optimum materials and application procedures are selected to meet the specific design and operating conditions of the asset. 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 and longevity of the repair solution. Belzona recognizes the need to set and monitor global standards for the application of our materials. Applications are carried out by experienced and trained personnel. Belzona runs training programs with theoretical and practical courses, including validated training. Combined with method statements, quality control procedures, and daily inspection reports, we strive to ensure application standards are maintained around the world.



Inspection

Inspection can be carried out by certified inspectors (e.g. NACE) prior to, during, and upon completion of the application to ensure Belzona systems are applied in accordance with our standards and the client's requirements.

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

Internal Surface Protection

Linings and Repair Composites



Reduce the Environmental and Financial Impacts of Replacement

Specialist linings provide internal protection for assets throughout the manufacturing process ensuring their long-term reliability.

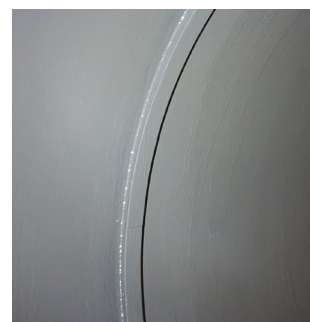
Applied in-situ to reduce unnecessary downtime, Belzona linings form a barrier between the substrate and corrosive media, enabling you to extend corrosion management time scales.

Designed for real-world conditions, these cold-applied systems eliminate the need for hot work and can be applied to complex geometries and surface-tolerant substrates.

As well as resisting erosion-corrosion, Belzona linings are designed to withstand vast pressure and temperature fluctuations, including steam-out and explosive decompression.



A vessel operating at high temperature experiencing corrosion and wall thinning in service.



Before

After

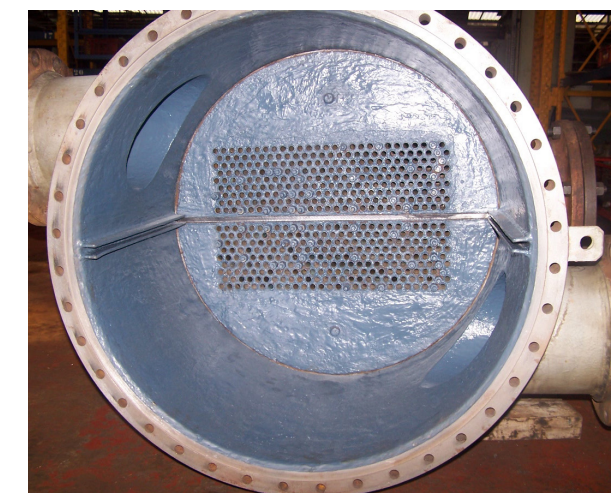
Avoid Replacing Equipment

From slurry thickeners to desalters and gas separators, cooling water systems to heat exchangers, Belzona's internal linings can be applied in both new and damaged assets such as nozzles and complex geometries, providing long-term corrosion and chemical resistance even in aggressive environments.

By restoring and protecting existing equipment in-situ, operators can avoid costly replacement, reduce downtime, and extend service life without major mechanical intervention.



Deterioration of previous linings



Belzona high-temperature lining applied



Why Choose Belzona Linings

- Cold-applied with no hot work permits required
- In-situ application reduces downtime and disruption
- Excellent resistance to corrosion, erosion, and chemical attack
- Withstands thermal cycling, pressure fluctuations, and immersion
- Suitable for complex geometries and difficult access areas
- Suitable for internal and external surfaces, including immersion conditions
- Delivers long-term, predictable performance





Pipe rigs bonded to tank wall



Live leak sealing using a plate bonding method



Simple to apply with no specialist tools

Cold Bonding Solutions

Restoration of Structural Integrity and Bonding of Fittings

Thanks to the high levels of adhesion that can be achieved with no hot work or metal distortion, maintenance engineers from across the world have been using Belzona's cold bonding technology for decades.

This type of fast-curing repair is ideal in situations where welding would be inappropriate.

- **High adhesion - ensures long service life**
- **Ambient cure - rapid achievement of full mechanical properties**
- **Uniform and efficient load transfer**
- **No shrinkage - materials are 100% solids**
- **Durable - the system withstands industrial environments**
- **No chance of water or bacterial ingress**
- **Chemical, pressure, and temperature resistance**
- **Mechanical strength - capable of handling a wide range of loads**

Protection of Storage Tanks

Tank roofs are susceptible to rapid deterioration caused by the corrosive vapor of the storage media and is exacerbated by external forces. Roof damage can be safely repaired in situ and on-line, eliminating the need to degas and drain the tank.

Tank walls can also suffer from corrosion and leaking welds. Belzona repairs can be carried out on-line with the use of cold-bonded doubler plates or a reinforced composite system.

The cold-bonding technique can be utilized, not only for repairs, but also for bonding rails, pipe supports, and other fittings.

Eliminate Hot Work

Cold bonding of fittings eliminates the need for hot work and facilitates rapid installation.

With tensile shear adhesion of up to 2,960 psi (20.4 MPa), pull off adhesion of up to 3,240 psi (22.3 MPa) and flexural strength of up to 14,300 psi (98.6 MPa), fittings, framework, handrails, and supports can be bonded permanently and safely. Belzona fatigue-resistant adhesives offer a safe and high-performance solution for structural bonding applications requiring high mechanical strength, cleavage, and shear resistance.

Looking for a structural adhesive?

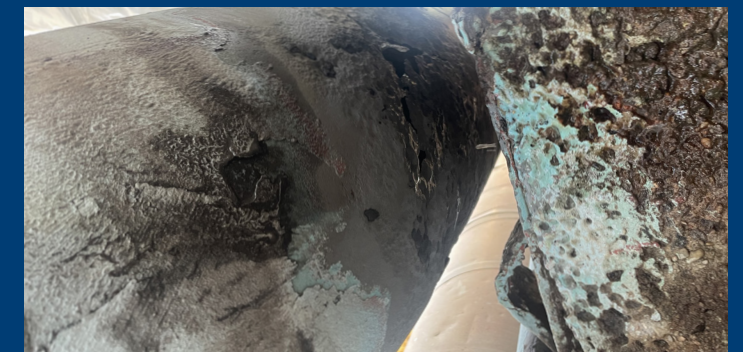


Pipe Repairs

Thin-wall and through-wall defects caused by external corrosion can be repaired using a Belzona wrap system or a simple cold plate bonding technique.

Applied at ambient temperatures, Belzona 1100 Series rebuilding metals strongly adhere to the substrate. Design and maintenance scenarios that would historically involve hot work can be completed with the use of polymeric cold bonding composites that add structural strength to the pipe.

Fast-curing, emergency materials are also available for in-situ repairs on oil-contaminated or wet surfaces, ensuring effective performance in challenging conditions.



Watch our Pipework Metal Loss Video

External Composite Repair and Protection



Belzona SuperWrap II system to prevent future deterioration

Composite Repairs

Thin-wall and through-wall defects caused by external and internal corrosion can be repaired using composite repair systems.

A wrap system is composed of a reinforcement sheet and a Belzona material. The system is tailored to the asset's performance criteria, such as presence of contaminants, operating temperatures, and pressures amongst other criteria. The system can also be applied in conjunction with a bonded plate where additional structural reinforcement is required.

Alternatively, Belzona Composite Pads are specially designed to facilitate the fast and simple, in-situ repair of through-wall and thin-wall defects on pipes and tank walls.

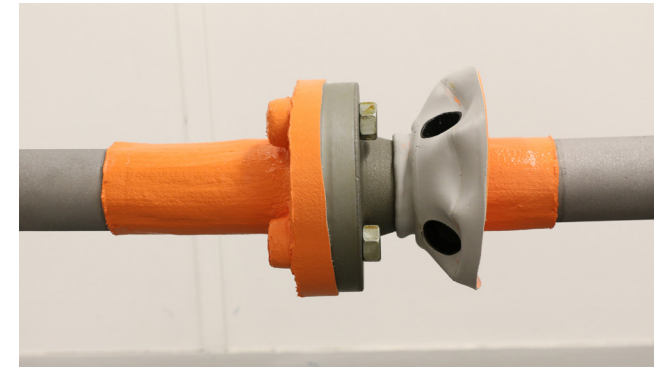
- Cold-applied
- No Hot Work
- Online Repair Possible
- Minimal Disruption
- Rapid Return to Service



Watch our High Pressure Leak Repair Video

Flange Face Forming

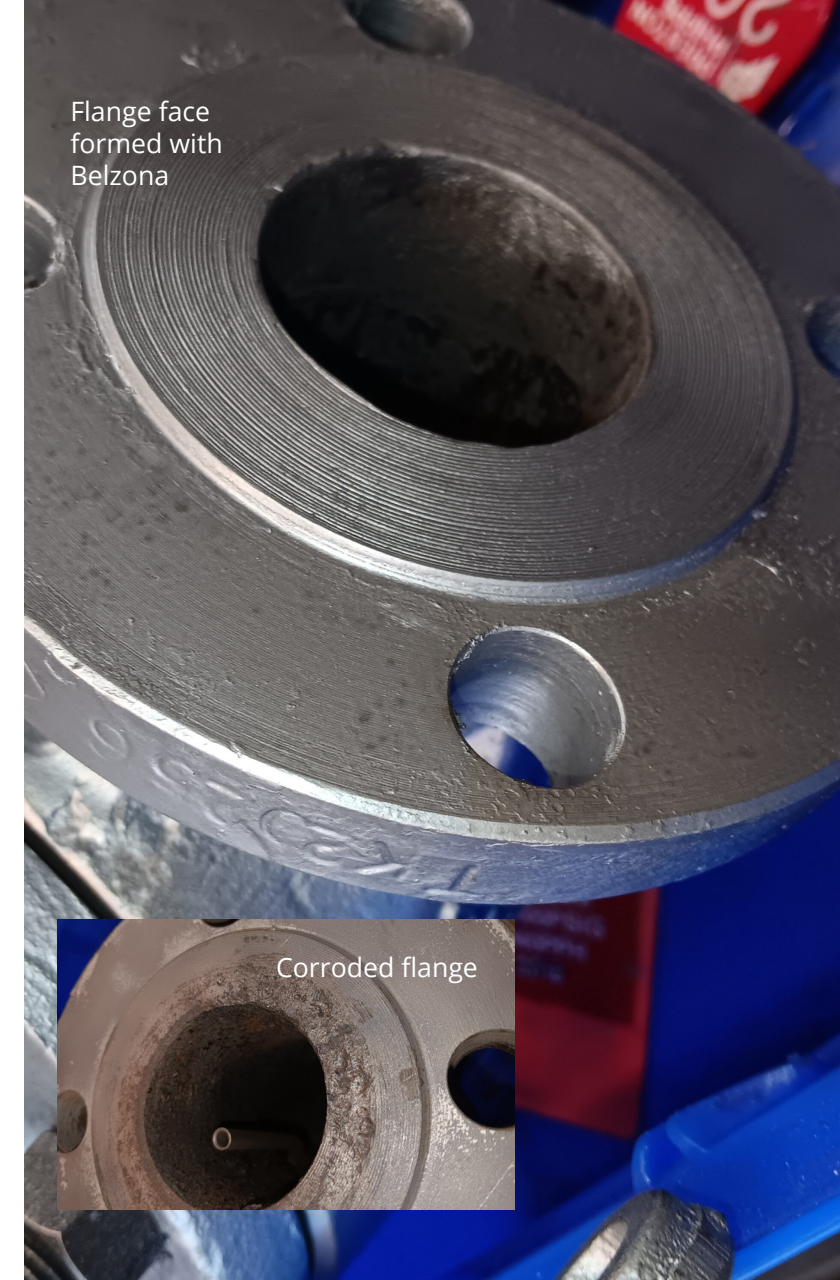
Crevice and galvanic corrosion can be prevented or repaired with a unique Belzona composite forming technology. Prefabricated formers are used to shape the specified Belzona material that bonds strongly to the flange face. The sealing face is then effectively isolated from corrosive media while maintaining its shape and profile.



Flange Protection

Repairing flange crevice corrosion can be a very costly exercise. Belzona encapsulating membrane system seals bolted flange connections, preventing corrosion. The liquid applied system is designed for periodic inspection, where the flexible protection can be cut, peeled back, and then easily resealed.

Flange face formed with Belzona



Corroded flange

Tank Sealing and Protection

Sealant failure, adverse weather conditions, or condensation can lead to corrosion of the tank base, leakage, and ultimately tank failure.

To combat these problems, Belzona formulated a tank base sealing system which is liquid applied in conjunction with a reinforcement sheet.

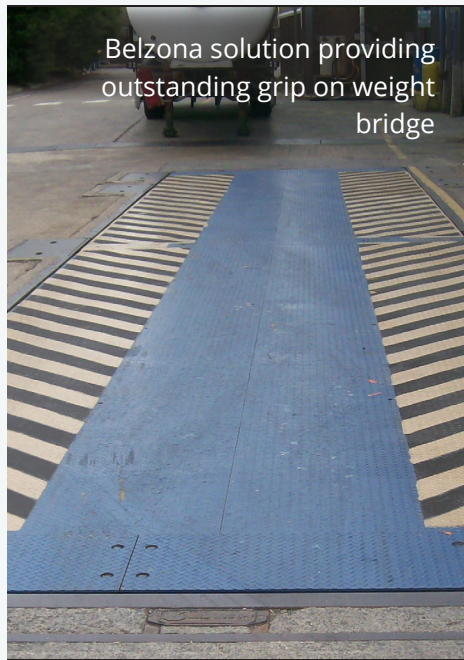




Maintenance of Buildings and Structures



Fully protected roof with Belzonalized



Belzonalized solution providing outstanding grip on weight bridge



Wall rebuilt and protected with Belzonalized

Wall and Floor Repair

Seamless roofing membranes offer outstanding waterproofing and weatherproofing capabilities, ensuring long-term repair, reducing the need for expensive replacement and disruptive structural work.

Safety Systems

Slip and fall injuries are one of the biggest causes of injury related absence and industrial compensation. Belzonalized's hard wearing safety surfacing polymers are specially designed to minimize the risk of slippage in potentially dangerous areas such as ladder rungs, stair treads, ramps, walkways, and areas around machinery.

High Performance Polymeric Solutions

Belzonalized provides a portfolio of solutions to those responsible for the maintenance of petrochemical refineries. This can range from the roofs, floors, and walls structures themselves, to the equipment within.



Newly fabricated chemical containment area

Chemical Containment Areas

Containment areas and supporting wall structures can be rebuilt and resurfaced using light-weight, chemically resistant materials designed to provide long-term protection against a wide range of substances, including acids and alkalis, even at high temperatures and concentrations.



Area protected from impact, abrasion, heat and chemical attack



Sealing of Containment Area



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*Belzona Is a Global Manufacturer of Repair
Composite Materials & Industrial Coatings.*

US • UK • Canada • China • Thailand

belzona.com

Belzona products are manufactured
under an ISO 9001 Registered Quality
Management System

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