

Belzona Know-How

FOR SEALING CRACKS, POROUS WELDS, BOLTED AND RIVETED JOINTS ON TANKS

TCC-1

Common Problems

- Leaks caused by movement of tank substrates (fatigue cracking).
- Leaks caused by corrosion.

Set-up

All work should be carried out in strict accordance with the relevant Belzona® Instructions For Use.

Belzona® Product selection should be made based upon tank design, the amount of expected movement, the nature and cause of the damage and the tank contents.

Preparation

Where possible, all cracks should be terminated by drilling small holes and then vee'd out using grinding equipment.

Where liquids are flowing from damaged areas, efforts must be made to stem the flow by caulking or peening joints, seams and porous welds. Where there is a definite hole, then wooden or metallic bungs should be used.

An alternative method of temporarily staunching the flow of liquid is to mix an appropriate fast curing grade of Belzona® product and, when semi-cured, force it into the damaged area and hold until the product becomes dimensionally stable.

Having stopped the flow of any liquid, it is now possible to prepare the substrate surrounding the damage.

Firstly, wash down the area with **Belzona® 9111** in order to remove all dirt, grease and surface contaminants.

Roughen the area in the best manner possible, bearing in mind the tank contents and any restrictions with regard to the use of mechanical tools. As a general rule, the less effective the preparation the larger the prepared area should be, thus extending the bond area in order to compensate for lack of prepared surface profile.

In all circumstances, the prepared area should be clean (grease free), dry and as rough as possible under the prevailing conditions. Preparation must also extend to any rigid patches used.

Application

a) To Joints, Seams and Small Cracks

Apply a **Belzona® 1000 Series** paste grade product to fair off the joint profile, pushing the

Belzona® material well into the roughened surface.

Immediately apply a fluid grade **Belzona® 1000 Series** product over the whole joint area, keeping within the prepared surface, and bed into this **Belzona® 9341** ensuring a minimum overlap of 1 inch (25.4 mm) between lengths.

Finally, apply a further coat of **Belzona® 1000 Series** fluid grade product, ensuring complete coverage of the bedded in **Belzona® 9341** (fig.1).

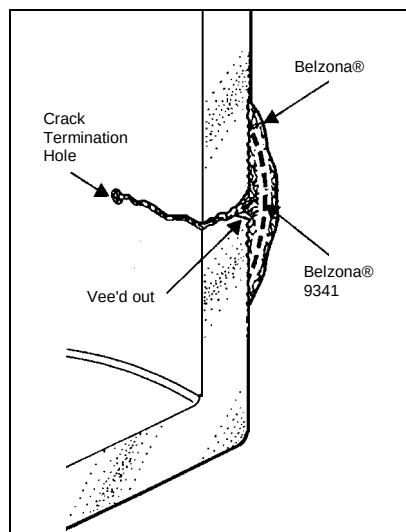


Fig. 1

Where possible, the application should be carried out to both the inside and outside faces of the tank (fig. 2).

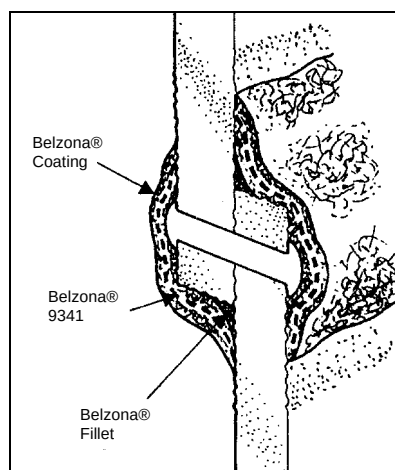
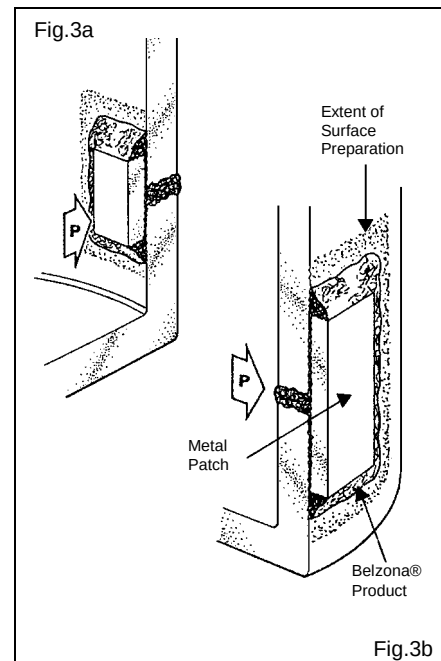


Fig. 2

b) To Holes and Large Cracks

It is always preferred, where possible, to make a repair on the inside of the tank (fig.3a).

Where this is not possible, however, and a patch is bonded on the outside of the tank, the overall bond area of the patch should be increased to compensate for the additional force acting on it (fig.3b).



In this instance, a patch of rigid material should be used. Patches should normally be made from the same material as the tank substrate.

Mix the selected Belzona® material and apply a thin film to all prepared areas pushing this material well into the prepared profile.

Apply further material to the patch forming a peak of material at the centre.

Push the patch into place allowing the excess material to exude from beneath ensuring minimal air entrapment. Remove excess material immediately.

Allow all repairs to cure before returning the tank to service.

Belzona® Technical Comparison:

Product	Consistency	Adhesion to Steel	Heat Resistance	Working Life at 60°F (15°C)	Full Mechanical Cure at 60°F (15°C)
Belzona® 1111	Paste	High	High	25 minutes	36 hours
Belzona® 1121	Paste	High	Medium	60 minutes	72 hours
Belzona® 1221	Paste	Very High	Medium	4 minutes	90 minutes
Belzona® 1321	Fluid	High	High	60 minutes	48 hours
Belzona® 1831	Paste	High	Medium	25 minutes	36 hours
Belzona® 4301	Paste	High	High	35 minutes	14 days

Belzona® System Selector:

Main System Requirement	Belzona® 1111	Belzona® 1121	Belzona® 1221	Belzona® 1321	Belzona® 1831	Belzona® 4301
General repairs	•					
Emergency Repairs			•			
Repairs to long seams/porous weld	•			•		
General repairs where ambient temperatures are high or longer working life is required		•				
Repairs requiring maximum chemical resistance						•
Surface tolerant repairs					•	

Recommended Equipment:

Mixing and application tools are included in each pack of Belzona®. Prior to carrying out the repair, however, it is important that all other necessary tools and equipment are available on site. Every situation will be somewhat different, but the basic requirements could include those shown to the right.	• Bungs / Plugs • Caulking Materials • Peening Tools • Hammers • Drills • Emery Paper	• Rigid Patches • Suitable Protective Clothing/ Equipment • Belzona® 9111 • Belzona® 9341 • Files • Grinding Equipment
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For more complete technical information, please refer to the appropriate Belzona Product Specification Sheet.

For detailed instructions on surface preparation, mixing and curing, please refer to the appropriate Belzona Instructions For Use.

Comprehensive Health and Safety information is provided with the product. For more information, please contact your local Belzona representative.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

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ISO 9001:2008
Q 09335
ISO 14001:2004
EMS 509612

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