

1 SURFACE PREPARATION

1.1 METALLIC SURFACES

APPLY ONLY TO CLEAN, FIRM, DRY, AND ROUGHENED SURFACES

- Brush away loose contamination and dirt.
- Use a flame to sweat out oil from deeply impregnated surfaces.
- Degrease with **Belzona 9111** (Cleaner/Degreaser) or any other effective cleaner which does not leave a residue e.g., methyl ethyl ketone (MEK).
- Roughen surfaces by blast cleaning, deeply scoring, or grinding.
- Stabilize cracks by drilling the extremities. Long cracks should be drilled, tapped, and bolted every 3 – 4 in. (77 – 103 mm).
- Vee-out all cracks using a rotary file.
- Finally, degrease again as in c) above.
- Use clean lint-free rags to avoid spreading contamination.

SALT CONTAMINATED SURFACES

The soluble salt contamination of the prepared substrate, immediately prior to application, should be less than 30 mg/m² (3 µg/cm²). Metal surfaces that have been immersed for any periods in salt solutions e.g., sea water, should be blasted to the required standard, left for 24 hours to allow the ingrained salts to sweat to the surface, then washed prior to a further brush blast to remove these. This process may need to be repeated several times to ensure complete removal of the salts. Salt removal aids are commercially available that will assist and speed salt removal. Contact Belzona Distributor Support for best recommendations.

1.2 AREAS WHERE BELZONA 1111 SHOULD NOT ADHERE

- Apply a thin layer of **Belzona 9411 (Release Agent)** using a brush.
- Allow it to dry for 15 – 20 minutes before commencement of the application.

2 APPLICATION PROCEDURE

2.1 MIXING

- Stir the contents of the solidifier container thoroughly to reincorporate any separation.
- Transfer the entire contents of the base and solidifier modules onto a Belzona working board.
- Mix both components thoroughly to achieve a uniform material free of any streakiness.

For mixing small quantities of **Belzona 1111**, use:

Mixing Ratio	By Volume	By Weight
Base: Solidifier	3: 1	5: 1

2.2 MIXING AT LOW TEMPERATURES

To ease mixing when the temperature of either component is below 41 °F (5 °C), warm the base and solidifier modules until the contents attain a temperature of 68 – 77 °F (20 – 25 °C).

2.3 WORKING LIFE

From the commencement of mixing, **Belzona 1111** must be used within the times shown below.

Temperature	41 °F (5 °C)	59 °F (15 °C)	77 °F (25 °C)	86 °F (30 °C)
Use material within	35 min.	25 min.	15 min.	10 min.

FOR BEST RESULTS

Do not apply when:

- The temperature is below 41 °F (5 °C) or the relative humidity is above 90%.
- Rain, snow, fog, or mist are present.
- There is moisture on the metal surface or is likely to be deposited by subsequent condensation.
- The working environment is likely to be contaminated by oil/grease from adjacent equipment or smoke from kerosene heaters or tobacco smoking.

2.4 VOLUME CAPACITY OF MIXED BELZONA 1111

22.4 in³/kg (400 cm³/kg)

2.5 HAND APPLICATION

- Apply **Belzona 1111** directly onto the prepared surface using the plastic applicator or spatula provided.
- Press the repair material down firmly to fill all cracks, remove entrapped air, and ensure maximum contact with the surface.
- Over cracks, gaps, and holes, stipple in **Belzona 9341 (Reinforcement Tape)**.
- Contour **Belzona 1111** to the correct profile with the plastic applicator. Alternatively, allow to cure and then, machine down by grinding.
- When **Belzona 1111** is being used as an irregular shim, bring the two mating surfaces together as soon as **Belzona 1111** has been applied. Apply tension and create a chamfer around the perimeter with the exuded material. Consult with Belzona Distributor Support for instructions.

2.6 OVERCOAT TIMES

Whenever possible, **Belzona 1111** should be applied in a single layer to achieve the required thickness.

Best recommendation when overcoating with suitable Belzona products is to allow **Belzona 1111** to reach the "Machining and/or light loading" level of cure. If this time is exceeded, the surface must be roughened by abrading or grit-blasting to achieve a frosted appearance with a minimum surface profile of 1.5 mil (40 µm) before applying more material.

Alternatively, for service not involving immersion with a cold wall*, **Belzona 1111** can directly be overcoated within the following times.

Temperature	50 °F (10 °C)	68 °F (20 °C)	86 °F (30 °C)
Overcoat within	90 min.	60 min.	30 min.

*Please contact Belzona Distributor Support for clarification, if necessary.

3 INSPECTION AND REPAIRS

3.1 INSPECTION

- Visually inspect the area to ensure the repair is smooth with no misses and that **Belzona 9341**, if used, is fully encapsulated.
- Apply more **Belzona 1111** if needed. Follow overcoat times as in 2.6 above.

3.2 COLOR

Belzona 1111 is available in one color, grey. In service, the final color of the applied product may change.

4 CURING AND CLEANING

4.1 CURING

Belzona 1111 should be allowed to ambient cure as follows. Bear in mind that these curing times are for a repair thickness of approximately ¼ in. (6 mm). They will be reduced for thicker sections and extended for thinner sections.

Ambient temperature	Curing Time			
	Movement or use involving no loading or immersion	Machining and/or light loading	Full mechanical or thermal loading	Immersion in chemicals
41 °F (5 °C)	4 hours	6 hours	4 days	5 days
50 °F (10 °C)	3 hours	4 hours	2 days	4 days
59 °F (15 °C)	2¼ hours	3 hours	1½ days	3 days
68 °F (20 °C)	1¾ hours	2 hours	1 day	2 days
77 °F (25 °C)	1 hour	1½ hours	20 hours	1½ days
86 °F (30 °C)	¾ hour	1 hour	16 hours	1 day

4.2 POST CURING

The mechanical properties, heat resistance, and chemical resistance of **Belzona 1111** will improve by post curing. If post curing is desired,

- After 2 – 4 hours of applying **Belzona 1111**, heat the material using forced air heaters or heat lamps for a minimum of 4 hours at 140 – 212 °F (60 – 100 °C).
Note: In general, the more elevated temperature adopted, the higher the properties attained.
- Consult with Belzona Distributor Support should a different heat source be considered.
- Ensure that heat is not directed toward specific areas but rather to the entire repair material.
- Allow the repair material to cool down to ambient temperature.

HEALTH & SAFETY INFORMATION

Please read and make sure you understand the relevant Safety Data Sheets.

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. Nothing in the foregoing statement shall exclude or limit any liability of Belzona to the extent such liability cannot by law be excluded or limited.

Copyright © 2024 Belzona International Limited. Belzona® is a registered trademark.

Belzona products are manufactured under an ISO 9001 registered Quality Management System.

