

1 SURFACE PREPARATION

1.1 METALLIC SURFACES

- a) Brush away loose contamination and remove dirt, oil, and grease. Degrease with **Belzona 9111** (Cleaner/Degreaser) or any other effective cleaner which does not leave a residue e.g., methyl ethyl ketone (MEK).
- b) Select an abrasive to give the necessary standard of cleanliness and a minimum depth of profile of 3 mil (75 micron).
- c) Blast-clean the metal surface to achieve any of the following standard of cleanliness:
 - ISO 8501-1 Sa 2½ (very thorough blast cleaning)
 - SSPC SP 10/NACE No. 2 (Near-White Metal Blast Cleaning)
- d) For any other desired surface preparation, contact Belzona.
- e) Maintain the condition of the blasted surface until commencement of the application, typically within four hours of completion of the surface preparation. If not, re-blast the surface.

SALT CONTAMINATED SURFACES

The soluble salt contamination of the prepared substrate, immediately prior to application, shall 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 for best recommendation.

1.2 CONCRETE SURFACES

Note: It is highly recommended that SSPC SP 13 be consulted for adequate surface preparation of concrete surfaces.

- a) Remove all paint, tar, or any other applied coating, loose surface material, grease, oil, dust, and laitance, if any, before application of **Belzona 5811**.
- b) Allow new concrete to cure for a minimum of 28 days before coating with **Belzona 5811**.
- c) If application is on a concrete floor, confirm with the asset owner that the floor has an effective vapor barrier installed.
- d) Identify and quantify the free moisture in concrete by any of these methods:
 - Calcium Chloride Test (ASTM F1869),
 - Relative Humidity Test (ASTM F2170) or
 - Electronic moisture content meters.

Note: Acceptable ranges of moisture prior to application of **Belzona 5811** are displayed in the table below.

Quantitative Method	Acceptable Range
Calcium Chloride	Less than 15 g /m ² /24 hours (3 lb./1,000 ft ² /24 hours)
Relative Humidity	Less than 75%
Moisture Content	Less than 6% by weight

Note: The Plastic Sheet Method (ASTM D4263) can also be used for qualitative determination of moisture in concrete, but upon confirmation, any of the methods above shall be used for actual quantification of free moisture.

- e) Excess free water can be removed by dehumidification, surface air moving, or surface heating.

Note: For rough or porous concrete, the surface can be first treated with **Belzona 4911** before applying **Belzona 5811**. Please refer to **Belzona 4911** IFU for details.

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1.3 AREAS TREATED WITH BELZONA 4000 SERIES MAGMA PRODUCTS

- a) Apply **Belzona 5811** directly to any Belzona 4000 Series Magma products so long as the application takes place within 6 hours and the Belzona 4000 Series Magma product has been kept uncontaminated by foreign matter.
- b) If not, treat the cured surface of the Belzona 4000 Series Magma product in accordance with its respective IFU prior to coating with **Belzona 5811**.

2 APPLICATION PROCEDURE

2.1 MIXING

Transfer the entire contents of the solidifier container into the base container. Mix thoroughly together to achieve a uniform material free of any streakiness.

For mixing small quantities of **Belzona 5811** use:

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

2.2 MIXING AT LOW TEMPERATURES

To ease mixing when the material temperature is below 10 °C (50 °F), warm the base and solidifier containers until the contents attain a temperature of 20 – 25 °C (68 – 77 °F).

2.3 WORKING LIFE

From the commencement of mixing, **Belzona 5811** must be used within the times shown below.

Temperature	10 °C (50 °F)	20 °C (68 °F)	30 °C (86 °F)	40 °C (104 °F)
Use material within	2 ½ hr.	1 ¼ hr.	1 hr.	30 min

FOR BEST RESULTS

Do not apply when:

- I. The temperature is below 10 °C (50 °F) or the relative humidity is above 80%.
- II. Rain, snow, fog, or mist is present.
- III. There is moisture on the metal surface or is likely to be deposited by subsequent condensation.
- IV. The working environment is likely to be contaminated by oil/grease from adjacent equipment or smoke from kerosene heaters or tobacco smoking.

2.4 HAND APPLICATION

- a) **FIRST COAT** - Apply **Belzona 5811** directly on to the prepared surface with a short-bristled brush or rubber squeegee, or a lint-free 6 mm (¼ in.) NAP white woven roller. Refer to coverage rates in section 2.7
- b) **SECOND COAT** - As soon as possible after application of the first coat, apply a further coat of **Belzona 5811**, preferably of contrasting colour, as in (a) above. Refer to section 2.8 for overcoat times.

2.5 SPRAY APPLICATION

Suitable areas may be coated by spray using heated airless equipment. Use either a single airless pump or plural equipment capable of metering accurately and mixing the two components.

Mix ratio	3: 1 by volume
Tip Temperature	40 - 50 °C (104 - 122 °F)
Tip pressure (minimum)	172 bar (2,500 psi)

Tip size	0.43 - 0.58 mm (17-23 thou)
Cleaning solvent	Belzona 9121, MEK, or acetone

Only commence mixing once the spray equipment has been assembled and tested – Scan or click the QR code to access **Airlessly Spraying Belzona Products – Instructions & Recommendations**.



2.6 INJECTION

Belzona 5811 may be applied using pneumatic injection equipment for load bearing irregular shims or cold-plate bonding applications.

2.7 COVERAGE RATES

In practice, many factors influence the exact coverage rate achieved. On rough surfaces such as pitted steel or concrete, the practical coverage rate will be reduced. Application at low temperatures will also reduce practical coverage rates further.

Recommended number of coats	2
Target thickness 1 st coat	250 µm (10 mil)
Target thickness 2 nd coat	250 µm (10 mil)
Minimum total DFT	400 µm (16 mil)
Maximum total DFT	Limited by sag resistance
Practical coverage rate 1 st coat	4 m ² /L (43.0 ft ² /L)
Practical coverage rate 2 nd coat	4 m ² /L (43.0 ft ² /L)
Theoretical coverage rate to achieve minimum recommended system thickness	2.5 m ² /L (27.0 ft ² /L)

2.8 OVERCOAT TIMES

Belzona 5811 can be overcoated as soon as it is firm enough to do so. This time will be 5 – 7 hours at 20 °C (68 °F) and 8 – 10 hours at 10 °C (50 °F). The maximum overcoat time is 72 hours irrespective of temperature. If the maximum overcoat time is exceeded, the surface of the coating must be brush blasted to achieve a frosted appearance free of gloss with a minimum surface profile of 40 µm (1.5 mil).

2.9 NON-SLIP SURFACES

Belzona 5811 will solidify to a smooth, hard finish. As such for pedestrian traffic areas, it is strongly recommended that Belzona Grip Systems Aggregate be broadcast into the **Belzona 5811** immediately after application. The choice and amount of aggregate will vary with the degree of non-slip desired.

3 INSPECTION AND REPAIRS

3.1 INSPECTION

- Immediately after application of each coat, visually inspect for pinholes and misses. Where detected, these should be immediately brushed out or sprayed.
- Once the application is complete and the coating has hardened, carry out a thorough visual inspection to confirm freedom from pinholes and misses, and to identify any possible mechanical damage.
- Spark test **Belzona 5811** in accordance with NACE SP0188 to confirm coating continuity (holiday-free). A voltage of 2.5 kV is recommended for minimum coating thickness of 400 µm (16 mil).

3.2 REPAIRS

Within the overcoating window, any misses, pinholes, or mechanical damage can be repaired by application of a further coat of **Belzona 5811**. Outside the overcoating window, the surface of **Belzona 5811** must be abrasive blasted or abraded to produce a frosted appearance, free of all gloss, before re-coating. A profile of 40 µm (1.5 mil) should be aimed for.

3.3 DIFFERENTIATION BETWEEN LAYERS

Belzona 5811 is available in different colours to facilitate application and to prevent misses. These colours are for identification only and there will be some variation between batches. In service the colour of the applied product may change.

4 CURING AND CLEANING

4.1 CURING

Belzona 5811 should be allowed to ambient cure as follows.

Ambient temperature	Curing Time		
	For light loading	For mechanical and/or thermal loading or water contact	For chemical contact
10 °C (50 °F)	36 hr.	8 days	12 days
20 °C (68 °F)	18 hr.	5 days	7 days
30 °C (86 °F)	9 hr.	2 days	5 days
40 °C (104 °F)	5 hr.	1 day	2 days

4.2 CLEANING

Mixing tools should be cleaned immediately after use with **Belzona 9111** or any other effective solvent e.g., methyl ethyl ketone (MEK). Brushes and any other application tools should be cleaned using a suitable solvent such as **Belzona 9121**, MEK, acetone, or cellulose thinners.

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.

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