

## 1 SURFACE PREPARATION

### 1.1 METALLIC SURFACES

- 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).
- Select an abrasive to give the necessary standard of cleanliness and a minimum depth of profile of 3 mil (75 µm).
- 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)
- For any other desired surface preparation, contact Belzona.
- 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, should be less than 20 mg/m<sup>2</sup> (2 µg/cm<sup>2</sup>). 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.

- Remove all paint, tar, or any other applied coating, loose surface material, grease, oil, dust, and laitance, if any, before application of **Belzona 5892**.
- Allow new concrete to cure for a minimum of 28 days before coating with **Belzona 5892**.
- If application is on a concrete floor, confirm with the asset owner that the floor has an effective vapor barrier installed.
- 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 5892** are displayed in the table below.

Quantitative Method	Acceptable Range
Calcium Chloride	Less than 3 lb./1,000 ft <sup>2</sup> /24 hr. (15 g /m <sup>2</sup> /24 h)
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.

- Excess free water can be removed by dehumidification, surface air moving, or surface heating.
- Should the concrete surface be found to be rough, weak, or friable, condition with **Belzona 4981** prior to application of **Belzona 5892**. Follow **Belzona 4981** IFU for application details.

### 1.3 PIT FILLING & STRIPE COATING

**Note:** All welds should be prepared to NACE SP0178 Grade C or better. Deep pitting and rough welds should be smoothed out with **Belzona 1511**, mixed, applied, and overcoated in accordance with the relevant IFU. All detail areas such as welds, brackets, baffles, deflectors, etc., which cannot be effectively sprayed, should be stripe-coated by brush with **Belzona 5892**, as in 2.4 below.

## 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 5892** use:

Mixing Ratio	By Volume	By Weight
Base: Solidifier	3.5: 1	5.8: 1

### 2.2 MIXING AT LOW TEMPERATURES

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

### 2.3 WORKING LIFE

From the commencement of mixing, **Belzona 5892** must be used within the times shown below.

Temperature	50 °F (10 °C)	68 °F (20 °C)	86 °F (30 °C)	104 °F (40 °C)	122 °F (50 °C)
Use material within	60 min	40 min	35 min	25 min	15 min

### FOR BEST RESULTS

#### Do not apply when:

- The temperature is below 50 °F (10 °C) or the relative humidity is above 80%.
- 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 HAND APPLICATION

- FIRST COAT** - Apply **Belzona 5892** directly on to the prepared surface with a short-bristled brush or rubber squeegee. Refer to coverage rates in section 2.6.
- SECOND COAT** - As soon as possible after application of the first coat, apply a further coat of **Belzona 5892**, preferably of contrasting color, as in (a) above. Refer to section 2.7 for overcoat times.

### 2.5 SPRAY APPLICATION

Suitable metal 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

Tip Temperature

Tip pressure (minimum)

Tip size

Cleaning solvent

3.5: 1 by volume

104 - 122 °F (40 - 50 °C)

2,500 psi (172 bar)

17 - 23 thou (0.43 - 0.58 mm)

Belzona 9121, MEK, or acetone

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



## 2.6 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 <sup>st</sup> coat	10 mil (250 µm)
Target thickness 2 <sup>nd</sup> coat	10 mil (250 µm)
Minimum total DFT	16 mil (400 µm)
Maximum total DFT	Only limited by sag resistance
Practical coverage rate 1 <sup>st</sup> coat	43.0 ft <sup>2</sup> /L (4.0 m <sup>2</sup> /L)
Practical coverage rate 2 <sup>nd</sup> coat	43.0 ft <sup>2</sup> /L (4.0 m <sup>2</sup> /L)
Theoretical coverage rate to achieve minimum recommended system DFT	27.0 ft <sup>2</sup> /L (2.5 m <sup>2</sup> /L)

## 2.7 OVERCOAT TIMES

**Belzona 5892** can be overcoated as soon as it is firm enough to do so. At 68 °F (20 °C), it will be possible to walk on or touch the coating without disturbing it after 6 – 8 hours. If access can be gained without walking on the first coat, overcoating can take place after as little as 3-4 hours depending on temperature.

The maximum overcoat time is dependent on both temperature and relative humidity (RH), as set out below. If these times are exceeded, the surface of the coating must be brush blasted to achieve a frosted appearance free of gloss with a minimum surface profile of 1.5 mil (40 µm).

Temperature	< 50% RH	> 50% RH
Up to 68 °F (20 °C)	24 hours	24 hours
Up to 86 °F (30 °C)	24 hours	18 hours
Up to 104 °F (40 °C)	18 hours	8 hours

## 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, misses, or mechanical damage.
- Measure the total film thickness of the coating using a non-destructive dry film thickness gauge in accordance with SSPC PA 2.
- Spark test **Belzona 5892** in accordance with NACE SP0188 to confirm coating continuity (holiday-free). A voltage of 2.5 kV is recommended for minimum coating thickness of 16 mil (400 µm).

### 3.2 REPAIRS

Within the overcoating window, any misses, pinholes, or mechanical damage can be repaired by application of a further coat of **Belzona 5892**. Outside the overcoating window, the surface of **Belzona 5892** must be abrasive blasted or abraded to produce a frosted appearance, free of all gloss, before re-coating. A profile of 1.5 mil (40 µm) should be aimed for.

### 3.3 DIFFERENTIATION BETWEEN LAYERS

**Belzona 5892** is available in two different colors, white and grey, to facilitate application and prevent misses. In service, the final color of the applied product may change.

## 4 CURING AND CLEANING

### 4.1 CURING

**Belzona 5892** should be allowed to cure as follows.

Ambient temperature	Time until inspection	Time until full service	Time until post-cure (If required)	
			DRY	WET
50 °F (10 °C)	42 hr.	Post-Cure	42 hr.	15 days
68 °F (20 °C)	18 hr.	Required	18 hr.	6 days
86 °F (30 °C)	5 hr.	24 hr.	5 hr.	12 hr.
104 °F (40 °C)	4 ½ hr.	20 hr.	4 ½ hr.	10 hr.

Coated equipment can be transported after the coating has achieved the "inspection" level of cure.

### 4.2 POST-CURING

Post-cure will generally be unnecessary as the coating will cure sufficiently at ambient temperatures with "full cure" achieved in service. However, post-cure may be necessary or desirable to facilitate faster cure and quicker return to service. Refer to below recommendations.

- Allow the coating to ambient cure until post-cure (as per table above) depending on whether dry heat (e.g., hot air) or wet heat (e.g., steam or liquid media) is used for post-curing. Wet post-cure can typically be achieved during return to service provided that the thermal ramp does not exceed 54 °F/hr. (30 °C/hr.).
- Heat the coating up to any temperature between 140 °F (60 °C) and 212 °F (100 °C) for a minimum of 1 hour or to 122 °F (50 °C) for a minimum of 2 hours.
- Ensure the thermal ramp does not exceed 54 °F/hr. (30 °C/hr.) and that heat is not directed toward specific coated areas but rather to the entire coating.

Post-cure requirements for optimal chemical resistance will vary depending on service conditions. For general guidance, please refer to the Chemical Resistance Chart (CRC). Consult Belzona for specific applications or inquiries.

### 4.3 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. 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.

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