Belzona 4311

FN10195 **(MAGMA CR1)**

BELZONA®
Repair • Protect • Improve

INSTRUCTIONS FOR USE

1. TO ENSURE AN EFFECTIVE MOLECULAR WELD

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

a) SURFACE PREPARATION

(i) Concrete Surfaces
Remove all paint, tar and other coatings, as well as any loose surface material, before application of **Belzona® 4911.**
Horizontal concrete surfaces, as well as new concrete, will exhibit the phenomenon of laitance which must be removed prior to application. Allow new concrete to cure for a minimum of 28 days
Floors should have an effective vapor barrier installed.

Test for presence of moisture either
a) In accordance with ASTM D4263 – plastic sheet method, or
b) Measure moisture content using Electronic Moisture Meter <6% moisture (<15%WME)

If test is positive for presence of moisture, test further by either
a) Measure Moisture Vapor Emission Rate in accordance with ASTM F 1869 - Anhydrous Calcium Chloride test. Acceptable if <3lbs/1000ft²/24 hours (15g/m²/24 hours), or
b) Measure Relative Humidity of concrete in accordance with ASTM F2170. Acceptable if <75%

Once existing concrete surfaces have been prepared in accordance with these recommendations, proceed to Section **1 (b) - "Conditioning".**

NOTE:
All porous surfaces such as concrete require to be Conditioned with **Belzona® 4911** (Magma TX Conditioner).

(ii) Metallic Surfaces
Remove any rust, paint and other surface coatings or contaminants. Blast clean the metal surface to achieve the following standard of cleanliness:
ISO 8501-1 Sa 2½ very thorough blast cleaning
American Standard near white finish SSPC SP 10
Swedish Standard Sa 2½ SIS 05 5900.
Minimum depth profile should be 3 mils (75 microns). Now proceed to Section 2 - "Combining the Reactive Components".

(iii) Areas Already Treated with Belzona® Products
Belzona® 4311 may be applied directly to other suitable **Belzona®** products without further preparation when within the overcoat window of the underlying product. Please refer to the relevant IFU for specific overcoating times.

b) CONDITIONING
Add the entire contents of **Belzona® 4911** (Magma TX Conditioner) Solidifier to **Belzona® 4911** Base and stir thoroughly until completely mixed. Immediately brush the Conditioner onto the surface to be treated with **Belzona® 4311** not exceeding an area of 12 sq.ft. (1.1 m²) per 450g unit. Brush the **Belzona® 4911** well into the surface using a stiff bristled brush. Conditioning and overcoating must be completed within the times shown below.

Ambient Temperature	Usable life after mixing	Minimum overcoating time	Maximum overcoating time*
59°F/15°C	55 mins	Application can commence as soon as conditioning has been completed.	6 hours
68°F/20°C	45 mins		6 hours
77°F/25°C	32 mins		6 hours
86°F/30°C	20 mins		6 hours

* If the maximum overcoating time for the **Belzona® 4911** is exceeded, then the cured surface should be abraded and fresh **Belzona® 4911** applied.

2. COMBINING THE REACTIVE COMPONENTS

Add the entire contents of the **Belzona® 4311** Solidifier component to the Base unit.
Mix thoroughly until a completely homogeneous liquid, free of any streaks, is achieved.

NOTES:
1. WORKING LIFE
From the commencement of mixing, **Belzona® 4311** must be used within the following times.

Temperature	59°F(15°C)	68°F(20°C)	86°F(30°C)	104°F(40°C)
Use all material within	35 min.	20 min.	15 min.	10 min.

* **Belzona 4311** generates a moderate exotherm and mixed product should not be kept in bulk beyond the times set out above.

2. MIXING RATIO
For mixing small quantities of **Belzona® 4311,** use:
6 parts Base to 1 part Solidifier by weight, or
3 parts Base to 1 part Solidifier by volume

3. APPLYING BELZONA® 4311

FOR BEST RESULTS
Do not apply when:-
i) The temperature is below 41°F (5°C) or the relative humidity is above 85%.
ii) The substrate temperature is less than 5°F (3°C) above dewpoint.
iii) Rain, snow, fog or mist is present.
iv) There is moisture on the metal surface or is likely to be deposited by subsequent condensation.
v) The working environment is likely to be contaminated by oil/grease from adjacent equipment or smoke from kerosene heaters or tobacco smoking.

Belzona® 4311 is best applied when the temperature of the material, substrate and environment is anywhere between 59°F (15°C) and 86°F (40°C). Below 59°F (15°C), the material may be too stiff for easy mixing and application. Above 86°F (40°C), the material may be somewhat fluid and will have a short usable life.

Reference must also be made to the cure times. Below 59°F (15°C), the rate of cure is drastically reduced and some external heat source must be used to affect full cure. For application and cure at below 59°F (15°C), please contact your Belzona representative to discuss specific requirements.

COVERAGE RATES

Recommended number of coats	2
Target thickness 1st coat	10 mils (250 microns)
Target thickness 2nd coat	10 mils (250 microns)
Minimum total DFT	16 mils (400 microns)
Maximum total DFT	Only limited by sag resistance
Theoretical coverage rate 1st coat	43 sq.ft (4 m²) / litre
Theoretical coverage rate 2nd coat	43 sq.ft (4 m²) / litre
Theoretical coverage rate to achieve minimum recommended system thickness	27 sq.ft (2.5 m²) / litre

PRACTICAL COVERAGE RATES
Appropriate loss factors must be applied to the above coverage rates. In practice, many factors influence the actual coverage rate achieved. On rough surfaces such as pitted steel the practical coverage rate will be reduced. Application at low temperatures will also reduce practical coverage rates further.

a) Apply the mixed material using a short bristled brush or squeegee to the prepared surface.

b) Apply a further coat of **Belzona® 4311** as in (a). Apply the second layer as soon as it is possible to do so without disturbing the first layer. The maximum overcoat time is 24 hours when working at temperatures between 59°F (15°C) and 104°F (40°C).

c) If the maximum overcoating time for the **Belzona® 4311** is exceeded, then the cured surface should be abraded and fresh **Belzona® 4311** applied.

SPRAY APPLICATION
Suitable surfaces may be coated by spray.
Belzona® 4311 can be sprayed using heated airless equipment. Either a single airless pump or plural system capable of metering accurately and mixing the two components, can be used.
See **"Instructions for spraying Belzona® solvent free coatings".**

Tip Temperature	**104-122°F (40-50°C)**
Tip pressure (minimum)	**2500 psi (172 bar)**
Tip size	**17-21 thou (0.43-0.53mm)**
	DO NOT THIN
Cleaning solvent	**Belzona® 9121, MEK or Acetone**

NOTES:
1. COLOUR
Belzona® 4311 is available in grey and red 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.

2. CLEANING
Mixing and application tools should be cleaned immediately after use with **Belzona® 9111** (Cleaner/Degreaser) or any other effective solvent e.g. MEK. Brushes, injection guns, spray equipment and other application tools should be cleaned using a suitable solvent such as **Belzona® 9121,** MEK, acetone or cellulose thinners.

3. INSPECTION
a) Immediately after application of each unit, visually inspect for pinholes and misses. Where detected, these should be immediately brushed out.
b) Once the application is complete and the coating is dimensionally stable, carry out a thorough visual inspection to confirm freedom from pinholes and misses, and to identify any possible mechanical damage.
c) Where wet sponge testing is being used as an aid to confirm continuity of the coating, care should be taken to ensure that the surface is thoroughly wetted out. The addition of a wetting agent such as detergent to the water used on the sponge will also assist. Under no circumstances should high voltage spark testing be used.

4. COMPLETION OF THE MOLECULAR REACTION

Allow **Belzona® 4311** to solidify as below before subjecting it to the conditions indicated:

	Light pedestrian traffic	Vehicular traffic	Full chemical resistance
59°F/15°C	8 hours	24 hours	14 days
68°F/20°C	6 hours	18 hours	7 days
86°F/30°C	4 hours	12 hours	3 days
104°F/40°C	3 hours	10 hours	2 days

NOTE: Below 59°F (15°C) solidification times will be significantly extended and the resultant chemical resistance capability of the **Belzona® 4311** will be reduced.

5. FORCE CURING

Allow **Belzona® 4311** to solidify for 'light pedestrian traffic' time, then force cure the product at 180°F (80°C) for 4 hours, to attain maximum chemical resistance properties.

6. NON-SLIP SURFACES

Belzona® 4311 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® 4311** immediately after application. The choice and amount of Aggregate will vary with the degree of non-slip desired. While personal safety will be enhanced, the ultimate chemical resistance of **Belzona® 4311** may be slightly reduced.

HEALTH & SAFETY INFORMATION
Please read and make sure you understand the relevant Safety Data Sheets.

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

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