Belzona 4311

(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® 4311.**
Allow new concrete to cure for a minimum of 28 days or until the moisture content is below 6% using a Protimeter.
Horizontal concrete surfaces, as well as new concrete, will exhibit the phenomenon of laitance which must be removed prior to application.

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® 4111 (Magma-Quartz)
Belzona® 4311 may be applied directly to **Belzona® 4111** without conditioning so long as the application takes place within 6 hours and the **Belzona® 4111** has been kept uncontaminated by foreign matter. In this case, proceed directly to Section 2 - "Combining the Reactive Components".

Where an existing **Belzona® 4111** application has been in service for longer than 6 hours, thoroughly clean and roughen the surface and then proceed to Section 2 - "Combining the Reactive Components".

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.	25 min.	15 min.	7 min.

* **Belzona 4311** generates a significant 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:
5 parts Base to 1 part Solidifier by weight, or
3.8 parts Base to 1 part Solidifier by volume

3. VOLUME CAPACITY OF MIXED BELZONA® 4311
71 cu.in. (1160 cm³) per 1.5 kg unit.

3. APPLYING BELZONA® 4311

FOR BEST RESULTS
Do not apply when:-
i) The temperature is below 59°F (15°C) or the relative humidity is above 85%.
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.

Belzona® 4311 is best applied when the temperature of the material, substrate and environment is anywhere between 59°F (15°C) and 86°F (30°C). Below 59°F (15°C), the material will be too stiff for easy mixing and application. Above 86°F (30°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.

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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
Practical coverage rate 1st coat	46 sq.ft/1.5kg unit (4.2 m²/1.5kg unit)
Practical coverage rate 2nd coat	46 sq.ft/1.5kg unit (4.2 m²/1.5kg unit)
Theoretical coverage rate to achieve minimum recommended system thickness	31.2 sq.ft/litre (2.9 m²/1.5kg unit)

In practice many factors influence the exact coverage rate achieved. On rough surfaces such as pitted steel and concrete 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 4 hours when working at temperatures between 59°F (15°C) and 86°F (30°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 metal surfaces may be coated by spray.
Belzona® 4311 must be sprayed using heated plural airless equipment capable of metering accurately and mixing the two components.
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. COLOR

Belzona® 4311 is available in gray and red to facilitate application and to prevent misses. These colors are for identification only and there will be some variation between batches. In service the color 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

Spark testing can be carried out on suitable substrates to confirm continuity. A DC voltage of 2,000 volts is recommended to confirm that minimum coating thickness of 16 mils (400 microns) has been achieved.

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	16 hours	48 hours	14 days
68°F/20°C	12 hours	36 hours	7 days
77°F/25°C	8 hours	24 hours	6 days
86°F/30°C	6 hours	20 hours	5 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 12 hours at 68°F (20°C), 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 Material Safety Data Sheets.

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