

# Belzona 1381

FN10031



## INSTRUCTIONS FOR USE

### 1. TO ENSURE AN EFFECTIVE MOLECULAR WELD

#### METALLIC SURFACES - APPLY ONLY TO BLAST CLEANED SURFACES

- Brush away loose contamination and degrease with a rag soaked in **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 mils (75 microns). Use only an angular abrasive.
- 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.
- After blasting, metal surfaces should be coated before any oxidation of the surface takes place.

#### SALT CONTAMINATED SURFACES

Metal surfaces that have been immersed for any periods in salt solutions e.g. sea water, should be blasted to the required standard, left 24 hours to allow any ingrained salts to sweat to the surface and then washed prior to a further brush blast to remove these. This process may need to be repeated to ensure complete removal of salts. The soluble salt contamination of the prepared substrate, immediately prior to application, should be less than 20mgs/m<sup>2</sup> (2µg/cm<sup>2</sup>).

#### PIT FILLING & STRIPE COATING

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. that cannot be effectively sprayed should be stripe coated by brush with **Belzona® 1381**.

### 2. COMBINING THE REACTIVE COMPONENTS

*Not applicable when using plural spray.*

- Stir the contents of the Base & Solidifier container thoroughly to reincorporate any settlement.
- Transfer the entire contents of the Solidifier can into the Base container.
- Mix thoroughly together to achieve a uniform material free of any streakiness.

#### NOTES:

##### 1. MIXING

Use a mechanical mixer, ensuring that material on the side and at the corners of the container is fully incorporated. Avoid incorporation of excessive amounts of air into the mixed material.

##### 2. WORKING LIFE

From the commencement of mixing, **Belzona® 1381** must be used within the times shown below.

Temperature	50°F (10°C)	59°F (15°C)	77°F (25°C)	86°F (30°C)	104°F (40°C)
Use all material within	90 min.	55 min.	40 min.	35 min.	25 min.

### 3. MIXING RATIO

5 parts Base to 2 parts Solidifier by volume  
5 parts Base to 2 parts Solidifier by weight.

### 3. APPLYING BELZONA® 1381

#### FOR BEST RESULTS

##### Do not apply when:

- The temperature is below 50°F (10°C) or the relative humidity is above 90%.
- Rain, snow, fog or mist is 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.

#### 3.1 EQUIPMENT REQUIRED

**Belzona® 1381** must be sprayed using heated airless equipment. Either a single airless pump or plural equipment capable of metering accurately and mixing the two components can be used. See "Instructions for spraying Belzona solvent free coatings".

**Mix ratio** 5:2 by volume  
**Tip Temperature** 104-122°F (40-50°C)  
**Tip pressure (minimum)** 2500 psi (172 bar)  
**Tip size 21-25 thou** (0.53-0.63mm)

##### DO NOT THIN

**Cleaning solvent** **Belzona® 9121, MEK or Acetone**

#### 3.2 HAND APPLICATION

**Belzona® 1381** must be applied by stiff bristled brush as a two coat system following the recommended coverage rates. The large units may require splitting into small mixes to ensure product can be applied within its working life.

#### 3.3 COVERAGE RATES

Actual coverage rate obtained will vary according to equipment choice, substrate and application environment. Interruption to application will significantly increase wastage.

Recommended number of coats	2	1
Target thickness 1 <sup>st</sup> coat	15 mils (375 microns)	30 mils (750 microns)
Target thickness 2 <sup>nd</sup> coat	15 mils (375 microns)	N/A
Minimum total DFT	20 mils (500 microns)	20 mils (500 microns)
Maximum DFT per coat	<b>Brush application</b> 20 mils (500 microns) <b>Spray application</b> Only limited by sag resistance	
Theoretical coverage rate 1 <sup>st</sup> coat	28.7sq.ft. (2.67m <sup>2</sup> )/litre	14.35sq.ft. (1.34m <sup>2</sup> )/litre
Theoretical coverage rate 2 <sup>nd</sup> coat	28.7sq.ft. (2.67m <sup>2</sup> )/litre	N/A
Theoretical coverage rate to achieve minimum recommended thickness	21.5sq.ft. (2m <sup>2</sup> )/litre	21.5sq.ft. (2m <sup>2</sup> )/litre

### 3.4 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.

### 3.5 INSPECTION

- Immediately after application of each unit, visually inspect for pinholes and misses. Where detected, these should be immediately brushed out.
- Once the application is complete and the coating is dimensionally stable (approximately 10 hours at 68°F (20°C)), carry out a thorough visual inspection to confirm freedom from pinholes and misses, and to identify any possible mechanical damage.
- Spark testing in accordance with NACE SP0274 can be carried out to confirm coating continuity. A voltage of 5.5kV is recommended to confirm that a minimum coating thickness of 20 mil (500 microns) has been achieved.

### 3.6 REPAIRS

Within the overcoating window any misses, pinholes or mechanical damage can be repaired by application of **Belzona® 1391T** or **1381** direct to the **Belzona® 1381** surface using a stiff bristled brush. Outside of the overcoating window, the surface of the **Belzona® 1381** must be abrasive blasted or abraded to produce a frosted appearance, free of all gloss, before coating. A profile of 1.5 mils (40 microns) should be aimed for.

### 3.7 OVERCOAT TIMES

The **Belzona® 1381** 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 the coating after 6-8 hours, but if access can be gained without walking on the first coat, overcoating can take place after as little as 3-4 hours. The maximum overcoat time is dependent on both temperature and humidity as set out below. After this time the surface must be brush blasted to achieve a frosted appearance free of gloss with a minimum surface profile of 40 microns.

Temperature	<50% Relative Humidity	>50% Relative Humidity
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)	12 hours	8 hours

### 3.8 COLOR

**Belzona® 1381** is available in different colors 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. White is the recommended first coat, and gray as the top coat.

### 3.9 CLEANING

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

## 4. COMPLETION OF THE MOLECULAR REACTION

The coating should be allowed to cure as follows:

Ambient temperature	Time until full service	Time until post-cure (if required)	
		Dry	Wet
50°F (10°C)	96 hrs	32 hrs	60 hrs
68°F (20°C)	48 hrs	10 hrs	24 hrs
86°F (30°C)	20 hrs	8 hrs	14 hrs
104°F (40°C)	14 hrs	4 hrs	8 hrs

Post-cure will generally be unnecessary as the coating will cure sufficiently at ambient temperature with full cure achieved in service. However, post-cure may be desirable to facilitate faster cure and quicker return to service (see below).

### POST-CURE

If post-cure is desirable, the coating should be heated to between 122°F (50°C) and 212°F (100°C) for a minimum of 1 hour.

The coating should be allowed to cure as detailed in the above table prior to a dry (e.g. hot air) or wet (e.g. steam and liquid media) post-cure. Wet post-cure can typically be achieved during return to service, provided that the temperature ramp rate does not exceed 54°F (30°C) per hour.

If immediate exposure to aggressive media is to occur prior to achieving a 'full service' cure, post-cure is recommended. Please contact your Belzona representative to discuss specific requirements.

Coated equipment can be transported after the material has achieved the 'inspection' level of cure.

## HEALTH & SAFETY INFORMATION

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

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