Belzona 3412

FN10210

BELZONA®
Repair • Protect • Improve

INSTRUCTIONS FOR USE

1. TO ENSURE AN EFFECTIVE MOLECULAR WELD

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). Where necessary, use a flame to sweat out oil from deeply impregnated surfaces.

The areas where **Belzona® 3412** will be bonded require additional surface preparation to ensure good adhesion:

i) Metallic Surfaces
Wire brush exposed/corroded steel to achieve a minimum SSPC-SP-2 or ISO 8501-1 St 2 hand-tool cleaned surface.

ii) Painted Surfaces
Thoroughly abrade painted surfaces with abrasive paper to remove all gloss and provide a good key for coating.

FOR BEST RESULTS
Do not apply Belzona 8411 or 3412 when:
(i) Rain, snow, fog or mist is present.
(ii) Surface temperature is below 5°C (41°F).
(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. APPLYING BELZONA® 8411

Belzona® 8411 is designed to be used in conjunction with **Belzona® 3412** to provide flanges and fastening with an optimum level of corrosion protection. **Belzona® 8411** can also be used alone to provide protection to metal substrates exposed to low-level corrosion (e.g. in workshop environments).

Belzona® 8411 is supplied in 0.5 liter containers with a non-pressurized spray pump. The top of the container is first removed and the seal punctured. The spray pump is screwed on and the **Belzona® 8411** can then be sprayed by pumping the trigger. The jet can be adjusted using the nozzle regulator.

Shake the **Belzona® 8411** container before use and spray apply directly onto the prepared surface taking care that the material penetrates any irregularities in the surface.

Touch dry times will depend on the substrate temperature, as indicated in the table below:

Temperature	5°C (41°F)	20°C (68°F)	40°C (104°F)
Touch dry time	2 hours	1 hour	30 min

COVERAGE RATE
Apply **Belzona® 8411** to give a coverage rate of approximately 4.0 m^2 (43 sq.ft) per 0.5 liter unit at 125 microns (5 mil) wet film thickness.

REMOVAL OF BELZONA® 8411
If necessary, e.g. where a clean surface is required, the film of **Belzona® 8411** is easily removed with a suitable solvent such as **Belzona® 9111, Belzona® 9121**, white spirit, MEK or acetone.

3. COMBINING THE REACTIVE COMPONENTS

Belzona® 3412 is a moisture cured system, therefore to ensure cure is not retarded and the correct overcoat times are observed, the temperature and relative humidity must be measured before application of **Belzona® 3412** begins ensuring the relative humidity is above 30% and the substrate temperature is above 5°C (41°F).

Both **Belzona® 3412** Base and Solidifier components must remain sealed until the application stage.

Empty the entire contents of the **Belzona® 3412** Base container and Solidifier container into the mixing bowl provided. Immediately mix together for at least 3 minutes and use all material within the times shown in the table below.
Note: Due to the low viscosity of the Solidifier, start by slowly mixing the Base and Solidifier together until incorporated.

	Relative humidity	Temperature			
		5°C (41°F)	10°C (50°F)	20°C (68°F)	40°C (104°F)
Use all material within:	30%	160 min.	120 min.	60 min.	20 min.
	50%	80 min.	60 min.	40 min.	15 min.
	80%	40 min.	30 min.	20 min.	10 min.

4. APPLYING BELZONA® 3412

Belzona® 3412 is specifically designed to protect flanges and fastenings from corrosion, and a brief overview of the encapsulation procedure is described below. For more detailed instructions see Belzona Know-How System Leaflet GSS-11.

a) ENCAPSULATING FLANGES AND FASTENINGS

1. After the bond area has been prepared as described previously seal the gap between the flanges with **Belzona® 9431 (Instant Bridging Tape)** or an equivalent plastic backed adhesive tape.

   NOTE: Belzona® 9431 (Instant Bridging Tape) must be applied within the boundary of the outer edge of the flanges and **MUST NOT** impinge onto the bolting faces of the flanges.

2. Apply masking tape over the two bond areas to protect these sections of pipe from accidental overspray of **Belzona® 8411** and impairing adhesion.

3. Spray **Belzona® 8411** onto the flange, pipe and fastenings and allow to become touch dry as indicated in the table in Section 2.
4. Once **Belzona® 8411** is touch dry, remove the masking tape and fit plastic bolt caps.
5. Apply **Belzona® 3412** directly onto the prepared surface with a brush at target thickness of 600 microns (24 mils), extending the **Belzona® 3412** onto the bond area.
6. For optimum application properties apply **Belzona® 3412** between 10°C – 30°C (50°F – 86°F) and relative humidity between 30 – 80%.
7. While the first layer of **Belzona® 3412** is still wet, bed strips of **Belzona® 9311 (Reinforcing sheet)** into the **Belzona® 3412** around the flange circumference and at both ends of the repair where it will bond to the pipe.

   NOTE: The strip of **Belzona® 9311** applied around the flange circumference must be applied within the boundary of the outer edge of the flanges and **MUST NOT** impinge onto the bolting faces of the flanges.

8. As soon as the first coat is touch dry, apply a further coat of **Belzona® 3412** as in 5. above. The minimum overcoating time will be dependent on the temperature of the substrate and relative humidity, as indicated in the table below:

	Relative humidity	Substrate temperature			
		5°C (41°F)	10°C (50°F)	20°C (68°F)	40°C (104°F)
Touch dry time	30%	6 hours	5 hours	3 hours	70 min.
	50%	4 hours	150 min.	90 min.	50 min.
	80%	3 hours	2 hours	60 min.	30 min.

These times are for a thickness of approximately 600 microns (24 mils). They will be extended for thicker sections and reduced for thinner sections.

NOTE: In warm climates or on hot surfaces (above 40°C/104°F) it may be necessary to apply the system in multiple coats in order to achieve the recommended target thickness.
The surface temperature **MUST NOT** exceed 60°C (140°F).

COVERAGE RATES
Appropriate loss factors must be applied to the following 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.

Recommended number of coats	2
Target thickness 1st coat	600 microns (24 mils)
Target thickness 2nd coat	600 microns (24 mils)
Minimum total DFT	1000 microns (40 mils)
Maximum total DFT	Only limited by sag resistance
Theoretical coverage rate 1st coat	1.3m² (14 sq.ft.)/kg
Theoretical coverage rate 2nd coat	1.3m² (14 sq.ft.)/kg
Theoretical coverage rate to achieve minimum recommended system thickness	0.8 m² (8.6 sq.ft.)/kg

b) ACCESSING FLANGES AND FASTENINGS DURING REQUIRED MAINTENANCE

1. Using a sharp knife, cut through the **Belzona® 3412** in the gap between the flanges, continuing around the circumference of the flange.
2. Carefully peel back the **Belzona® 3412** and bolt caps to expose the bolts and flanges.
3. Once the required maintenance has been completed fold the **Belzona® 3412** back to its original position.
4. Clean the surface of the **Belzona® 3412** around the flange circumference with **Belzona® 9111** or similar to remove all dirt, grease and surface contaminants.
5. To re-seal the repair, mix a further quantity of **Belzona® 3412** and brush apply this onto the cut area around the circumference of the flange.

NOTES:
CLEANING
Brushes or any other application tools should be cleaned using a suitable solvent such as **Belzona® 9121,** MEK, acetone or cellulose thinners.

DIFFERENTIATION BETWEEN LAYERS
Belzona® 3412 is available in two different colours, grey and orange, to facilitate application and to prevent misses. In service the colour of the applied product may change.

5. COMPLETION OF THE MOLECULAR REACTION

Cure times will depend on the substrate temperature and relative humidity, as indicated in the table below:

	Relative humidity	Substrate temperature			
		5°C (41°F)	10°C (50°F)	20°C (68°F)	40°C (104°F)
Full Cure	30%	7 days	6 days	5 days	4 days
	50%	6 days	5 days	4 days	3 days
	80%	5 days	4 days	3 days	2 days

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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