Belzona 1391

FN10032 **(CERAMIC HT)**

BELZONA®
Repair • Protect • Improve

INSTRUCTIONS FOR USE

1. TO ENSURE AN EFFECTIVE MOLECULAR WELD

METALLIC SURFACES - APPLY ONLY TO BLAST CLEANED SURFACES

a) 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).
b) 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.
c) 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.
d) 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/m².

PIT FILLING

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.

2. COMBINING THE REACTIVE COMPONENTS

a) If product has been stored below 10°C (50°F), warm the sealed Solidifier unit carefully to 60°C (140°F), shake and allow to cool before use.
b) Transfer the entire contents of the Solidifier can into the Base module. Mix thoroughly together to achieve a uniform material free of any streakiness.

NOTES:

1. APPLICATION TEMPERATURE

Belzona® 1391 should NOT be applied at temperatures below 50°F (10°C).

2. WORKING LIFE

From the commencement of mixing, **Belzona® 1391** must be used within the times shown below.

Temperature	50°F (10°C)	68°F (20°C)	77°F (25°C)	85°F (30°C)	105°F (40°C)
Use all material within	80 mins.	40 mins.	30 mins.	20 mins.	10 mins.

3. MIXING SMALL QUANTITIES

For mixing small quantities of **Belzona® 1391** use:
5 parts Base to 1 part Solidifier by volume
13 parts Base to 1 part Solidifier by weight.

4. VOLUME CAPACITY OF MIXED BELZONA® 1391

26.1 cu in (431 cm³) per kg.

3. APPLYING BELZONA® 1391

FOR BEST RESULTS

Do not apply when:

i) The temperature is below 50°F (10°C) or the relative humidity is above 90%.
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.

(A) FOR SERVICE TEMPERATURES BELOW 212°F (100°C) BELZONA® 1391 IS APPLIED AS A SINGLE COAT SYSTEM AT MINIMUM 24 MILS (600 MICRONS).

Apply the **Belzona® 1391** directly on to the prepared surface with a stiff bristled brush or with the plastic applicator provided. To achieve the average film thickness of 30 mils (750 microns), the theoretical coverage rate is 6.1 sq.ft (0.57 m²) per kg.

TO ACHIEVE A UNIFORM COATING

a) Apply the coating in one operation without interruption.
b) In the area being treated by one unit of material, first "stripe coat" detail areas such as brackets, edges, corners and welds. Use a brush or applicator to initially wet out the substrate before building up to the full coating thickness over the complete area designated for that unit of material.
c) Use a wet film thickness gauge to regularly check that the correct film thickness is being achieved.
d) Finish application with a brush to obtain uniform coverage.
e) Ensure adequate lighting is available to prevent misses.

(B) FOR SERVICE TEMPERATURES OF 212-248°F (100-120°C) BELZONA® 1391 IS APPLIED AT MINIMUM 32 MILS (800 MICRONS).

Where application conditions permit, **Belzona® 1391** should be applied as a single coat as in (A) above, but at an average thickness of 40 mils (1000 microns). The theoretical coverage rate is 4.6 sq.ft (0.43 sq.m) per kg.

Where it is not possible to achieve a uniform coating at this thickness, the material should be applied as a two coat system.

a) Apply the first coat of **Belzona® 1391** as in (A) above and allow to harden for at least 16 hours.
b) Before carrying out repairs or applying a second coat, wash the surface of the **Belzona® 1391** with a warm detergent solution to remove any amine bloom that has formed. Rinse with clean water and allow to dry.

c) Grit blast to create a frosted surface free from any gloss with a target profile of 40 microns. Remove debris and degrease with **Belzona® 9111** or any other effective cleaner which does not leave a residue e.g. MEK.
d) Apply a second coat of **Belzona® 1391** at an average thickness of 15 mils (375 microns). The theoretical coverage rate is 11.8 sq.ft (1.1 sq.m) per kg.

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.

REPAIRS
Any misses, pinholes or mechanical damage found in the coating should be repaired by grit blasting to produce a frosted appearance with a target profile of 1.5 mil (40 microns) prior to application of further material as detailed above.

INSPECTION
NOTE
Belzona® 1391 contains ferro-magnetic fillers, therefore, direct measurement of DFT with electromagnetic gauges cannot be carried out. As product is 100% solids, WFT gauge readings taken during application are same as DFT.

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 (refer to “Use involving no loading” column in section 4), 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.**

COLOR
In service, the color of the applied product may change.

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

4. COMPLETION OF THE MOLECULAR REACTION

Allow **Belzona® 1391** to solidify as below subjecting it to the conditions indicated.

Substrate temperature	Use involving no loading	Light loading	Cold water immersion	Hot water immersion*
50°F/10°C	8 hours	16 hours	7 days	14 days
68°F/20°C	5½ hours	9 hours	4 days	7 days
77°F/25°C	3½ hours	4½ hours	2½ days	4 days
85°F/30°C	2 hours	3 hours	2 days	3 days
105°F/40°C	1½ hours	2 hours	1½ days	2 days

* In certain instances, it may be advantageous to post cure material prior to putting into service where chemical contact is involved, refer to Belzona® TKL for specific recommendations.

5. FINAL SOLIDIFICATION OF BELZONA® 1391

When time is important and equipment usage is pressing, installing forced air heaters and taking steps to contain this heat around the equipment being reclaimed, final solidification time can be as little as 24 hours. Due allowance must be made for "warming up".
A final physical check can be made as precaution by taking a metal object and tapping the surface of the **Belzona® 1391**. Any partially solidified or soft spots will give a dull tone in relation to the metallic tone offered by solidified **Belzona® 1391**.
If there is any doubt regarding final solidification then
BE SAFE - MAKE MORE TIME.

6. POST CURING TO OBTAIN OPTIMUM HEAT RESISTANCE

Although the heat resistance of **Belzona® 1391** cured at normal ambient temperatures is good, this can be improved dramatically by elevating the cure temperature.
This can be done prior to putting coated equipment into service by first allowing the coating to harden at ambient temperature for 24 hours prior to force curing at 212°F (100°C) for between 2 hours and 24 hours. This procedure should be adopted for any application when immediate exposure to a hot aggressive environment will occur.
Alternatively, the coating can be allowed to harden at ambient temperature for the time indicated in the "hot water immersion" column of the "Completion of the molecular reaction" table (see Section 4) and then put into service when any heat involved will advance the cure and enhance the heat resistance. This procedure is suitable for application where operating temperatures will be achieved gradually.

7. STORAGE

Belzona® 1391 Solidifier may crystallize on prolonged storage and particularly if stored at temperatures below 10°C (50°F). It is recommended that the sealed unit of Solidifier is carefully warmed to 60°C (140°F), shaken and allowed to cool before use.

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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