Belzona® 1521
(HTS1)

INSTRUCTIONS FOR USE

1. TO ENSURE AN EFFECTIVE MOLECULAR WELD

METALLIC SURFACES – APPLY ONLY AFTER BLAST CLEANING

a) Brush away any loose contamination and remove dirt, oil, grease etc., with **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 SP10
Swedish Standard SA2½ SIS 05 5900

d) After blasting, metal surfaces should be coated before any contamination of the surface takes place.

NOTE: 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 for 24 hours to allow the ingrained salts to sweat to the surface, then washed prior to a further brush blast to remove these. This process may need to be repeated several times to ensure complete removal of the salts. The soluble salt contamination of the prepared substrate, immediately prior to application, should be less than 20mgs/m^2.

2. COMBINING THE REACTIVE COMPONENTS FOR HEATED AIRLESS SPRAY

**** Only commence mixing once the spray equipment has been assembled and thoroughly tested****

a) Mechanical mixing should be carried out at all times using a mechanical 'spiral' or 'Jiffy' type mixer.
b) Ensure product is above 73°F (23°C).
c) Transfer half of the contents of the Belzona® 1521 solidifer to the Belzona® 1521 base unit.
d) Mix at slow speed to reduce air entrapment. Avoid removing the blade of the mixer from the product. Mix for 2 minutes.
e) Add the remaining Solidifier and mix thoroughly to a uniform streak free material.
f) Scrape down sides of container and re-mix.

NOTES:

1. APPLICATION TEMPERATURE
Belzona® 1521 should not be applied at ambient or substrate temperatures below (5°C). The substrate temperature must always be at least 3°C above the dewpoint.

2. WORKING LIFE
From the commencement of mixing, **Belzona® 1521** must be used within the times shown:

Temperature	68°F(20°C)	86°F(30°C)	104°F(40°C)	122°F(50°C)
Use all material within	65 mins.	35 mins.	20 mins.	10 mins.

3. MIXING SMALL QUANTITIES
For mixing small quantities of **Belzona® 1521** use:
20 parts Base to 1 part Solidifier by weight

3. APPLYING BELZONA® 1521

FOR BEST RESULTS
Do not apply when:-
i) The temperature is below 5°C or the relative humidity is above 85%.
ii) The substrate temperature is less than 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 or grease from adjacent equipment or from smoke from kerosene heaters.

3.1 EQUIPMENT REQUIRED
Minimum 63:1 ratio airless spray pump fitted with dump valve and #60 or finer in-line filter.
Trace heated lines, (electrical or circulating hot water)*.
Lines should be insulated to avoid heat loss.
Compressed air supply capable of delivering a minimum of 70 psi (5 bar) free from oil and water.
3/8 in. high pressure braided spray hose of suitable length.
1/4 in. high pressure braided whip hose (minimum length 1m)
Suitable spray gun such as Graco 510 fitted with Diffuser and tip.
Suitable spray tip typically 519-529.
Suitable A.C. power supply for heater.
* If using circulating hot water an additional air supply may be required.

3.2 SETTING UP OF EQUIPMENT
a) Connect the air supply to the spray pump and connect all hoses and gun as per the equipment manufacturer's instructions.
b) Without fitting the diffuser or the spray tip housing circulate a suitable cleaning solvent such as acetone or MEK. This is done by placing a container of solvent under the pump inlet, and increasing the pressure by turning the air supply regulator until the pump begins to stroke.
c) Place the gun above the solvent container and continue to circulate solvent until the material is clean. Check all fittings for weepage and tighten where necessary. Ensure that the 'dump' valve is operating correctly.
d) Stop the pump and fit the diffuser to the spray gun. Remove the solvent container from under the pump.
Restore the pressure to approximately 30 psi (2 bar) and by gently squeezing the trigger, pump out the remaining solvent into the solvent bucket.
e) Wipe any excess solvent from the base of the pump.
f) Warm the trace heated lines to give the correct spray temperature of 35 - 40°C for application.

3.3 INTRODUCING MATERIAL
a) Place a container of freshly mixed **Belzona® 1521** under the pump and purge any remaining solvent from the system by discharging into a waste container until **Belzona® 1521** emerges.
b) Stop the pump and fit the spray tip housing and tip, and adjust the pressure regulator to 65-70 psi (4,100-4,400 psi at tip)*.
c) Once primed correctly the pump should cease stroking immediately on release of the trigger. If the pump piston continues to creep it should be stripped and serviced in accordance with the manufacturer's instructions.

d) Commence spraying and adjust pressure if necessary to provide atomisation with no obvious tail patterns.
* This figure is for a 63:1 ratio pump. For 56:1 ratio pump adjust inlet pressure to 75-80 psi.

3.4 SPRAY PROCESS

a) Apply the **Belzona® 1521** directly onto the prepared surface using airless spray application.
b) Once spraying has commenced it must continue without interruption.
c) Freshly mixed units of product must be continually produced to replace that being applied so that freshly mixed material is constantly forcing the earlier mixed material through the system.
d) Regular wet film thickness checks should be carried out to ensure correct thickness.
e) Ensure that the maximum thickness of 40 mils (1000 micron) is not exceeded.
f) Suitable Personal Protective Equipment should be worn at all times.
g) During application pay particular attention to welds, brackets and fixings. Stripe coating of awkward areas prior to spray application may be required to ensure uniform coverage. Refer to Belzona® TKL for best recommendation.

NOTE:
Belzona® 1521 can be brush applied to "pre-coat" detail areas such as brackets, nozzles, welds, corners and edges. If spray application of surrounding areas is not carried out immediately, these areas should be allowed to harden (12 - 24 hours depending on ambient temperatures) then flash blasted to give 25-40 micron profile before being overcoated during spray application of surrounding areas.

3.5 END OF SPRAYING PROCESS

a) Remove the mixed material and container from beneath the pump and replace with a container of cleaning solvent such as MEK or acetone.
b) Turn off the trace heated lines.
c) Purge the mixed material from the system.
d) Recirculate clean solvent to thoroughly clean the whole system.
e) Clean spray tip, filter and flush out dump valve.
f) If the equipment is to be left standing or after prolonged use, the pump should be stripped, seals replaced and solvent flushed through the system.

3.6 EQUIPMENT MAINTENANCE
Filters should be checked at the start and end of each shift. Ensure suitable spares are available for regular maintenance.

3.7 COVERAGE RATE
A. Where application conditions permit, **Belzona® 1521** should be applied as a single coat at a thickness of 26-34 mils (650-850 microns). To achive the recommended film thickness a practical coverage rate of 12.9sq.ft. (1.2 m^2)/litre should be aimed for. Interruption to spraying will significantly increase losses.

B. Where it is not possible to achieve a uniform coating at this thickness, the material should be applied as a two coat system. Apply the first coat of **Belzona® 1521** as in (A) above, but at a thickness of 16-20 mils (400-500 microns) and allow to harden for at least 16 hours. Before carrying out repairs or applying a second coat, wash the surface of the **Belzona® 1521** with a warm detergent solution to remove any amine bloom that has formed. Rinse with clean water and alow to dry. Carefully flash blast using a moderate blast pressure and fine grit to remove surface layer, but without significant loss of coating. A frosted appearance should be produced with a surface profile of 25 microns being ideal. Apply a second coat of **Belzona® 1521** at a thickness of 12-16 mils (300-400 microns).

3.8 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 has hardened, 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 by repeated passage of the sponge tester over the surface. The addition of a wetting agent such as detergent to the water used on the sponge will also assist.
d) Spark testing can be carried out to confirm coating continuity. A DC voltage of 3,000 volts is recommended to confirm that a minimum coating thickness of 26 mil (650 microns) has been achieved.

3.9 REPAIRS
Any misses, pinholes or mechanical damage found in the coating should be repaired by brush blasting or abrading the surface to produce a frosted appearance prior to cleaning the surface and application of further material.

CLEANING
Mixing tools should be cleaned immediately after use with **Belzona® 9111** or any other effective solvent e.g. MEK or Acetone. Brushes, spray equipment and other application tools should be cleaned using a suitable solvent such as MEK or Acetone.

4. COMPLETION OF THE MOLECULAR REACTION

Allow to cure as below before putting into service. The system is designed to post cure in service at temperatures above 60°C

Temperature	10°C	15°C	20°C	25°C	30°C
Minimum cure time	4 days	3 days	2 days	36 hours	24 hours

For applications normally operating below 60°C it is necessary to achieve an acceptable degree of cure by raising the surface temperature to 60°C, ideally using wet steam before putting into service.

NOTE:
For applications not being put into service within 7 days, the following process should be adopted.

Store vessel partially filled with water (after blanking off all nozzles, access hatches etc.). In extreme climate conditions shading from direct sunlight or wind chill should be provided to prevent rapid thermal cycling.

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

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