PRODUCT SPECIFICATION SHEET
BELZONA 1392
FN10035

BELZONA®
Repair • Protect • Improve

GENERAL INFORMATION

Product Description:
A two-component high temperature coating system resistant to water, aqueous solutions and hydrocarbons up to a temperature of 248°F (120°C). Designed specifically to provide erosion corrosion protection in acid contaminated water/hydrocarbon systems. For use in Original Equipment Manufacture or repair situations.

Application Areas:
When mixed and applied as detailed in the Belzona Instructions for Use (IFU), the system is ideally suited for application to the following:

- Condensate extraction pumps
- Heat exchanger barrels
- Scrubber units
- Condensate return tanks
- Oil/gas and oil/water separators
- Calorifiers
- Evaporators
- Autoclaves
- Distillation units

APPLICATION INFORMATION

Working Life
Will vary according to temperature. At 68°F (20°C) the usable life of mixed material is 35 minutes.

Cure Time
Allow the applied material to solidify for the times shown in the Belzona IFU before subjecting it to the conditions indicated.

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

Limitations of Use
Belzona 1392 should not be applied at temperatures below 59°F (15°C).

Volume Capacity
26.8 cu.in. (439 cm^3)/kg.

Coverage rate
Belzona 1392 should be applied as a two coat system at a recommended average thickness of 18 mil (450 µm) per coat.
At the minimum recommended two coat system thickness of 24 mil (600 µm), the theoretical coverage rate will be 7.9 ft^2 (0.73m^2)/kg.

Base Component

Appearance	Paste
Colour	Grey
Density	2.36 - 2.56 g/cm^3

Solidifier Component

Appearance	Liquid
Colour	Pale amber
Density	0.91 - 0.95 g/cm^3

Mixed Properties

Mixing Ratio by Weight (Base : Solidifier)	20 : 1
Mixed Form	Liquid
Sag Resistance	nil at 50 mil (1.25 mm)
Mixed Density	2.28 g/cm^3
VOC content (ASTM D2369 / EPA ref. 24)	0.98% / 22.26 g/L

The above application information serves as introductory guide only. For full application details including the recommended application procedure/technique, refer to the Belzona IFU which is enclosed with each packaged product.

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ABRASION

Taber
The Taber abrasion resistance determined in accordance with ASTM D4060 with 1 kg load is typically:
H10 Wheels (Wet)
145 mm^3 loss per 1000 cycles — 212°F (100°C) cure

ADHESION

Tensile Shear
When tested in accordance with ASTM D1002, using degreased strips, grit blasted to a 3-4 mil profile, typical values will be:

68°F (20°C) cure	212°F (100°C) cure
2,630 psi (18.13 MPa)	2,530 psi (17.44 MPa)

Pull Off Adhesion
When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will be typically:
2720 psi (18.75 MPa) — 68°F (20°C) cure
3690 psi (25.44 MPa) — 212°F (100°C) cure

CHEMICAL ANALYSIS

The mixed **Belzona 1392** has been independently analysed for halogens, heavy metals, and other corrosion-causing impurities in accordance with ASTM E165, ASTM D4327 and ASTM E1479. Typical results are displayed as follows:

Analyte	Total Concentration (ppm)
Fluoride	100
Chloride	394
Bromide	ND (<11)
Sulphur	165
Nitrite	ND (<8)
Nitrate	ND (<8)
Zinc	6.7
Lead	3.5
Silver	3.8
Antimony, Arsenic, Bismuth, Cadmium, Tin, Mercury, Gallium and Indium	ND (<3.0)

ND : Not Detected

CHEMICAL RESISTANCE

Once fully cured, the material will demonstrate excellent resistance to a wide range of chemicals.

* *For a more detailed description of chemical resistance properties, determined in accordance with ISO 2812-1, please refer to relevant Chemical Resistance chart.*

COMPRESSIVE PROPERTIES

When determined in accordance with ASTM D695, typical values will be:

	Compressive Strength	Proportional Limit	Youngs Modulus
68°F/20°C cure & test	84.2 MPa 12,217 psi	71.9 MPa 10,431 psi	1,757.9 MPa 2.55 x 10^5 psi
212°F/100°C cure & 68°F/20°C test	135.7 MPa 19,680 psi	97.9 MPa 14,201 psi	1,783.1 MPa 2.59 x 10^5 psi

CORROSION PROTECTION

Cathodic Disbondment
When tested in accordance with ASTM G42-11 at 194°F (90°C), the average disbondment radius will typically be 0.541 inch (13.75 mm).

ELONGATION & TENSILE PROPERTIES

When determined in accordance with ASTM D638, typical values will be:

	Cure temperature
Tensile Strength	
4,866 psi (33.55 MPa)	68°F (20°C)
5,852 psi (40.35 MPa)	212°F (100°C)
Elongation	
0.65%	68°F (20°C)
0.83%	212°F (100°C)
Young's Modulus	
9.81x10^5 psi (6,764 MPa)	68°F (20°C)
9.28x10^5 psi (6,397 MPa)	212°F (100°C)

EXPLOSIVE DECOMPRESSION

When tested to NACE TM 0185, using a seawater/hydrocarbon test fluid, the coating will exhibit no blistering after a 21 day immersion period at 212°F (100°C) and 100 bar pressure followed by decompression over 15 minutes.

FLEXURAL PROPERTIES

When determined in accordance with ASTM D790, typical values will be:

Flexural Strength
7,560 psi (52.12 MPa)

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HARDNESS

Shore D & Barcol Hardness
The Shore D and Barcol hardness, when determined in accordance with ASTM D2240 and ASTM D2583, will typically be:

	Ambient cure (68°F/20°C)	Post cure (212°F/100°C)
Shore D	84	87
Barcol 934-1	20	33
Barcol 935	86	94

Koenig Pendulum
When tested to ISO 1522 the Koenig damping time of the ambient cured coating will typically be

152 seconds	68°F (20°C) cure
150 seconds	212°F (100°C) cure

HEAT RESISTANCE

Heat Distortion Temperature (HDT)
Tested to ASTM D648 (264 psi fibre stress), typical values obtained will be:

118°F (49°C)	when cured at 68°F (20°C)
257°F (125°C)	when post cured at 212°F (100°C)
390°F (199°C)	when post cured at 356°F (180°C)

Atlas Cell Cold Wall Immersion Test
When tested in accordance with NACE TM 0174 procedure A, the coating will exhibit no blistering or rusting (ASTM D714 rating 10; ASTM D610 rating 10) after 12 months immersion in both 5% Sulphuric acid and 5% Hydrochloric acid at 194°F (90°C).

Immersion Resistance
Suitable for service at temperatures up to 248°F (120°C) but refer to chemical resistance data for chemical contact limitations.

Steam-out Resistance
Once fully cured the coating will exhibit no blistering, cracking or delamination after 96 hours exposure to pressurized steam at 410°F (210°C).

Dry Heat Resistance
The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 446°F (230°C).

IMPACT RESISTANCE

Izod Pendulum
Izod impact strength, when determined in accordance with ASTM D256, will typically be:

	Reversed notched Izod Impact Strength	**Un-notched Izod Impact Strength**
68°F/20°C cure & test	4.3 KJ/m^2 46.6 J/m	4.8 KJ/m^2 60.9 J/m
212°F/100°C cure & 68°F/20°C test	4.6 KJ/m^2 48.9 J/m	6.2 KJ/m^2 79.1 J/m

THERMAL PROPERTIES

Thermal Conductivity
When tested in accordance with ASTM E1461-13 at a temperature of 100°C (212°F), the thermal conductivity will typically be 0.479 W/m·K.

Low Temperature Thermal Shock
Coated steel panels will exhibit no blistering, cracking or delamination after multiple cycles of rapid cooling from 212°F (100°C) to -76°F (-60°C).

Thermal Cycling
When tested in accordance with section 9 of NACE TM0304 the coating passed after 252 cycles between +140°F and -22°F (+60°C and -30°C).

THICK FILM CRACKING

Thick Film Cracking
When tested in accordance with Section 12 of NACE TM0104, the coating at three times recommended thickness, exhibited no cracking after 12 weeks immersion in seawater at 104°F (40°C).

SHELF LIFE

Separate base and solidifier components shall have a shelf life of 2 years from date of manufacture when stored in their original unopened containers between 41°F (5°C) and 86°F (30°C).

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WARRANTY

This product will meet the performance claims stated herein when material is stored and used as instructed in the Belzona Information For Use leaflet. Belzona ensures that all its products are carefully manufactured to ensure the highest quality possible and are tested strictly in accordance with universally recognized standards (ASTM, ANSI, BS, DIN, ISO, etc.). Since Belzona has no control over the use of the product described herein, no warranty for any application can be given.

AVAILABILITY AND COST

Belzona 1392 is available from a network of Belzona Distributors throughout the world for prompt delivery to the application site. For information, consult the Belzona Distributor in your area.

MANUFACTURER / SUPPLIER

Belzona Limited,
Claro Road, Harrogate,
HG1 4DS, UK

Belzona Inc.
14300 NW 60th Ave,
Miami Lakes, FL, 33014, USA

HEALTH AND SAFETY

Prior to using this material, please consult the relevant Safety Data Sheets.

TECHNICAL SERVICE

Complete technical assistance is available and includes fully trained Technical Consultants, technical service personnel and fully staffed research, development and quality control laboratories.

Belzona products are manufactured under an ISO 9001 Registered Quality Management System