PRODUCT SPECIFICATION SHEET
BELZONA 1331
FN10027

GENERAL INFORMATION

Product Description:
A two component system designed to operate under continuous immersion at operating temperatures up to 122°F/50°C.
The coating offers excellent erosion resistance combined with negligible wear to spray equipment. Suitable for one or two coat application and can be used to achieve high build films (50mils/1250µm) in one coat without sagging.

Application Areas:
When mixed and applied as detailed in the Belzona Information For Use (IFU), the system is suitable for applications such as:

- Chutes and Hoppers
- Girth Welds
- Pipelining
- Process Vessels
- Scrubber Units
- Separators

APPLICATION INFORMATION

Application Methods
Heated Airless Spray (single component, plural component, spin spray)
Brush

Application Temperature
Application should ideally occur in the following ambient temperature range: 50°F/10°C to 104°F/40°C

Coverage Rate
To achieve a minimum system thickness of 20 mils (500 microns), the theoretical coverage rate is
21.5 sq.ft. (2 m^2)/litre
18.8 sq.ft. (1.75m^2)/kg

Cure Time
Cure times will vary depending on the ambient conditions; consult the Belzona IFU for specific details.

Mixed Properties

Colour	Grey or White
Density	1.14 g/cm^3
Viscosity (BS5350-B8)	11Poise (113°F/45°C)
Sag Resistance (BS 5350-B9)	>50 mils / >1250 µm
Edge Retention (NACE TM0304)	Pass at 0.7mm radius
VOC content (ASTM D2369 / EPA ref. 24)	1.16% / 13.2 g/L

Mix Ratio (base : solidifier)
2 : 1 (pbv) and 2.2 : 1 (pbw)

Overcoat window
Overcoat times will vary depending on the ambient conditions; consult the Belzona IFU for specific details.
At 68°F/20°C, the maximum overcoat time will typically be 24 hours.

Working Life
The working life will vary according to the temperature. At 77°F/25°C, the usable life of mixed material will typically be 40 minutes, consult the Belzona IFU for specific details.

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
Wet and dry sliding abrasion resistance, when determined in accordance with ASTM D4060 with 1kg load will typically result in:

Wet (H10 wheels):	46mm³ loss per 1000 cycles
Dry (CS17 wheels):	13mm³ loss per 1000 cycles
	(68°F/20°C cure & test)

ADHESION

Tensile Shear
The Tensile Shear Adhesion on grit blasted mild steel, as determined in accordance with ASTM D1002, will typically be:

3900 psi / 26.9 MPa (68°F/20°C cure & test)

Pull Off Adhesion
The PosiTest Dolly Pull Off Strength as determined in accordance with ASTM D4541 and ISO 4624, will typically be:

Blasted Mild Steel:
4900 psi / 33.8 MPa (68°F/20°C cure & test)
Fusion Bonded Epoxy:
3200 psi / 22.1 MPa (68°F/20°C cure & test)

CHEMICAL ANALYSIS

The mixed **Belzona 1331** 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	39451
Chloride	897
Bromide	ND (<12)
Sulphur	40
Nitrite	ND (<7)
Nitrate	ND (<7)
Zinc, Antimony, Arsenic, Bismuth, Cadmium, Lead, Tin, Silver, Mercury, Gallium and Indium	ND (<3.0)

ND : Not Detected

CHEMICAL RESISTANCE

When tested in accordance with ISO 2812 and ISO 4628, the coating demonstrates excellent resistance to a wide range of chemicals including; dilute acids, alkalis and hydrocarbons.

COMPRESSIVE PROPERTIES

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

Compressive Yield Strength
5775 psi / 39.8 MPa (68°F/20°C cure & test)

Compressive Modulus
1.14x10⁵ psi / 784.6 MPa (68°F/20°C cure & test)

CORROSION PROTECTION

Cathodic Disbondment
When tested in accordance with ASTM G95 at 68°F (20°C), the average disbondment radius will typically be 0.135 inch (3.43 mm).

Salt Spray
When tested in accordance with ASTM B117, the coating will show no signs of failure after 1000 hours continuous exposure.

ELECTRICAL PROPERTIES

When tested in accordance with ASTM D149, method A, with voltage rise of 2kV/s, typical value will be:
Dielectric strength 36.7 kV/mm

ELONGATION & TENSILE PROPERTIES

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

Tensile Strength
2,770 psi (19.10 MPa) (68°F/20°C cure & test)

Elongation
0.90% (68°F/20°C cure & test)

Young's Modulus
3.46x10⁵ psi / 2,383 MPa (68°F/20°C cure & test)

FLEXURAL PROPERTIES

When determined in accordance with the relevant test method, typical values will be:

Flexural Strength (ASTM D790)
6250 psi / 43.1 MPa (68°F/20°C cure & test)

Flexural Modulus (ASTM D790)
2.95x10⁵ psi / 2037.4 MPa (68°F/20°C cure & test)

Mandrel Flexibility (NACE RP0394)
Pass at 2.5°/pipe diameter (68°F/20°C cure & test)

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HARDNESS

Shore D
When determined in accordance with ASTM D2240, typical value will be:
77 — 68°F (20°C) cure

Barcol Hardness
The Barcol hardness, when determined in accordance with ASTM D2583, will typically be:

	Ambient cure (68°F/20°C)	Post cure (122°F/50°C)
Barcol 935	56	62

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

147 seconds — ambient cure

HEAT RESISTANCE

Heat Distortion Temperature (HDT)
The HDT when determined in accordance with ASTM D648 will typically be:
113°F / 45°C (68°F/20°C cure)
153°F / 67°C (212°F/100°C cure)

Atlas Cell Cold Wall Immersion Test
Atlas Cell Immersion Resistance, when determined in accordance with NACE TM0174 procedure A, will result in no rusting (ASTM D610 rating 10) or blistering (ASTM D714 rating 10) after 6 months continuous immersion in deionised water at 122°F/50°C.

Dry Heat Resistance
The coating will exhibit no significant degradation when exposed to dry heat at temperatures up to 248°F (120°C) and down to -40°F (-40°C).

Resistance to Water Immersion
When tested in accordance with ISO 2812-2, the coating will show no signs of failure after 6 months continuous immersion in artificial seawater at 104˚F/40˚C.

IMPACT RESISTANCE

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

2.3 KJ/m² — (68°F/20°C cure & test)

Falling Weight
The direct falling weight impact resistance when determined in accordance with ASTM D2794 will typically be:

24.4 in.lbs / 0.28 kg.m — (68°F/20°C cure & test)

POTABLE WATER APPROVAL

KC
Listed in Barrier Materials as epoxy resin-based waterproof and anticorrosion material, which has passed full test of sanitation and safety.

수 도 용
위생안전기준
인증번호 : KCW-2014-0174

THERMAL PROPERTIES

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).

SHELF LIFE

Separate base and solidifier components shall have a shelf life of 3 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 1331 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