PRODUCT SPECIFICATION SHEET
BELZONA 5871
FN10198

BELZONA®
Repair • Protect • Improve

GENERAL INFORMATION

Product Description:
A novel, two-component, polymeric, solvent-free system, that expands to produce a lightweight, closed-cell foam to provide corrosion protection combined with thermal and subzero cool-to-touch insulation properties.
Hand or spray applied thermal insulation system, suitable for dry heat up to 150°C/302°F and for wet conditions up to 120°C/248°F.
Exhibits excellent corrosion resistance at ambient, elevated and sub-zero temperatures.

Application Areas:
When mixed and applied as detailed in the Belzona Instructions for Use (IFU), the system is ideally suited for application to metal pipework, ducting and other industrial equipment to provide:

- Worksite personal protection and safety against contact-burn injuries
- Corrosion (CUI) protection
- Thermal insulation
- Condensation prevention
- Anti-icing

APPLICATION INFORMATION

Application Methods
Brush
Cartridge Spray
Heated Plural Airless Spray

Application Temperature
For best results, application should occur in the following ambient temperature range: 5°C/41°F to 40°C/104°F. Consult the Belzona IFU for specific details.

Coverage Rate
When applied at 1000 microns wet film thickness to give 3000 microns dry film thickness (due to foaming action), the theoretical coverage rate will be 1.0 m² (10.8 sq. ft.) per litre.

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

Base Component

Appearance:	Thixotropic liquid
Colour:	White
Density:	1.16 g/cm³

Solidifier Component

Appearance:	Thixotropic liquid
Colour:	Orange
Density:	1.01 g/cm³

Mixed Properties

Appearance:	Thixotropic liquid
Colour:	Orange
Applied density:	1.11 g/cm³
Cured density:	0.35 - 0.40 g/cm³
Sag resistance (BS 5350-B9):	1000 µm / 40 mils
VOC content (ASTM D2369 / EPA ref. 24):	0.20% / 2.28 g/L

Mix Ratio

Mix ratio by weight (Base : Solidifier)	2.3 : 1
Mix ratio by volume (Base: Solidifier)	2 : 1

Overcoat Window
Minimum overcoat times will vary depending on the ambient conditions; consult the Belzona IFU for specific details.
The maximum overcoat time will typically be 24 hours.

Working Life
The working life will vary according to the temperature. At 20°C/68°F, the usable life of mixed material will typically be 20 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
Dry sliding abrasion resistance, when determined in accordance with ASTM D4060 using CS17 wheels, will typically result in:

777 mm^3 loss per 1000 cycles (20°C/68°F cure & test)

ADHESION

Cleavage Adhesion
The Cleavage Adhesion on mild steel, as determined in accordance with ASTM D1062, will typically be:

Grit Blasted (ISO 8501-1 Sa 2.5)	Cleavage Adhesion
20°C/68°F cure & test	52 N/mm / 300 pli*
120°C/248°F cure & 20°C/68°F test	76 N/mm / 435 pli*

Pull Off Adhesion
The PosiTest Dolly Pull Off Strength on 10mm thick substrates, as determined in accordance with ASTM D4541 and ISO 4624, will typically be:

Mild Steel Grit Blasted (ISO 8501-1 Sa 2.5)	Pull Off Adhesion
20°C/68°F cure & test	4.5 MPa / 650 psi*
150°C/302°F cure & 20°C/68°F test	3.7 MPa / 530 psi*

Mild Steel Ground (SSPC-SP11 ≥25 microns)	Pull Off Adhesion
20°C/68°F cure & test	4.3 MPa / 620 psi*
120°C/248°F cure & 20°C/68°F test	4.7 MPa / 680 psi*

Mild Steel Grit Blasted (ISO 8501-1 Sa 2.5)	Pull Off Adhesion After Immersion in Deionised Water At 40°C/104°F **
20°C/68°F cure & test	3.0 MPa / 440 psi* (3000 hours immersion)
150°C/302°F cure & 20°C/68°F test	3.0 MPa / 440 psi* (2000 hours immersion)

Stainless Steel Grit Blasted (ISO 8501-1 Sa 2.5)	Pull Off Adhesion
20°C/68°F cure & test	4.7 MPa / 680 psi*
150°C/302°F cure & 20°C/68°F test	3.9 MPa / 570 psi*

** Cohesive failure of Belzona 5871*
*** Tested on 3mm thick mild steel substrates*

ADHESION

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

Grit Blasted ISO 8501-1 Sa 2.5	Tensile Shear Adhesion
20°C/68°F cure & test	8.6 MPa / 1250 psi*
60°C/140°F cure & 20°C/68°F test	10.9 MPa / 1580 psi*
90°C/194°F & 20°C/68°F test	11.7 MPa / 1700 psi*
120°C/248°F cure & 20°C/68°F test	11.8 MPa / 1710 psi*
150°C/302°F cure & 20°C/68°F test	9.9 MPa / 1430 psi*
60°C/140°F cure & test	7.3 MPa / 1060 psi*
90°C/194°F cure & test	7.4 MPa / 1070 psi*
120°C/248°F cure & test	4.3 MPa / 630 psi*
150°C/302°F cure & test	2.3 MPa / 340 psi*

Ground SSPC-SP11 ≥ 25 microns	Tensile Shear Adhesion
20°C/68°F cure & test	11.3 MPa / 1640 psi*
120°C/248°F cure & 20°C/68°F test	10.7 MPa / 1550 psi*
120°C/248°F cure & test	6.8 MPa / 990 psi*

Tensile Shear Adhesion (Immersion)
The Tensile Shear Adhesion on mild steel, as determined in accordance with ASTM D1002, tested at 20°C/68°F after 1000 hours immersion in water at 40°C/104°F, will typically be:

Grit Blasted ISO 8501-1 Sa 2.5	Tensile Shear Adhesion After Immersion in Water At 40°C/104°F
20°C/68°F cure & test	7.6 MPa / 1100 psi*
120°C/248°F cure & 20°C/68°F test	7.3 MPa / 1060 psi*

Ground SSPC-SP11 ≥ 25 microns	Tensile Shear Adhesion After Immersion in Water At 40°C/104°F
20°C/68°F cure & test	5.9 MPa / 860 psi*
120°C/248°F & 20°C/68°F test	4.6 MPa / 660 psi*

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COMPRESSIVE PROPERTIES

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

	Compressive Strength	Limit of Elasticity	Compressive Modulus
20°C/68°F cure & test	9.4 MPa 1360 psi	6.8 MPa 980 psi	240 MPa 3.40 x 10^4 psi
60°C/140°F cure & 20°C/68°F test	11.5 MPa 1670 psi	8.4 MPa 1210 psi	250 MPa 3.60 x10^4 psi
90°C/194°F cure & 20°C/68°F test	12.2 MPa 1770 psi	8.1 MPa 1170 psi	270 MPa 3.90 x10^4 psi
120°C/248°F cure & 20°C/68°F test	13.0 MPa 1880 psi	7.9 MPa 1140 psi	260 MPa 3.80 x10^4 psi
150°C/302°F cure & 20°C/68°F test	11.7 MPa 1700 psi	7.9 MPa 1150 psi	270 MPa 3.90 x10^4 psi
60°C/140°F cure & test	7.4 MPa 1070 psi	6.3 MPa 910 psi	250 MPa 3.60 x10^4 psi
90°C/194°F cure & test	7.0 MPa 1020 psi	4.9 MPa 710 psi	210 MPa 3.00 x10^4 psi

CORROSION PROTECTION

Corrosion Under Insulation (CUI)
Belzona 5871 when applied as a single or multi-layer system will show no signs of failure on grit blasted or ground mild steel after 1000 hours simulated CUI, cycled between 60°C/140°F and 120°C/248°F, with alternating, hourly dry and wet (constant deluge of water at 5 litres per minute*) periods.

** Equates to 300m³ total water exposure over 1000 hours simulated CUI.*

Belzona 5871 when applied as a multi-layer system will show no signs of failure on grit blasted or ground mild steel after 1000 hours simulated CUI, cycled between 120°C/248°F and 10°C/50°F, with alternating, wet (constant deluge of water at 5 litres per minute) and dry periods**.

*** Cycling regime:*
- *4 days at 120°C/248°F (with alternating 4 hours wet exposure and 4 hours dry exposure)*
- *3 days at 10°C/50°F (dry exposure only)*

CORROSION PROTECTION

Electrochemical Impedance Spectroscopy (EIS)
The EIS result ($\log_{10}|Z|_{0.1Hz}$) on **Belzona 5871** (at 5.8 mm cured thickness), as determined in accordance with ISO 16773, will typically be:

12.1 Ω.cm² (20°C/68°F cure & test)

Electrochemical Impedance Spectroscopy (EIS Immersion)
The EIS result ($\log_{10}|Z|_{0.1Hz}$) as determined in accordance with ISO 16773, measured after 1000 hours immersion in 1% KCl, with the steel substrate cycled between 120°C/248°F for five days and 20°C/68°F for two days, will typically be:

12.1 Ω.cm² (20°C/68°F test)

Salt Spray
When tested in accordance with ASTM B117, **Belzona 5871** tested as a one-layer system (at 3.0 mm cured thickness), cured at 20°C/68°F and post cured at 120°C/248°F respectively, will show no signs of failure after 4500 hours continuous exposure.

Water Immersion
When tested in accordance with ISO 2812-2, continuous immersion at 40°C/104°F in deionised water, **Belzona 5871** tested as a one-layer system (at 3.0 mm cured thickness) will show no signs of failure after:

4500 hours (20°C/68°F cure)
2000 hours (120°C/248°F cure)

When tested in accordance with NACE TM 0174 procedure B, **Belzona 5871** tested as a one-layer system (at 3.0 mm cured thickness), cured at 20°C/68°F, will exhibit no blistering or rusting (ASTM D714 rating 10; ASTM D610 rating 10) after 6 months immersion in deionised water at 40°C/104°F.

ELONGATION & TENSILE PROPERTIES

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

	Elongation	Tensile Strength	Young's Modulus
20°C/68°F cure & test	0.49%	1.9 MPa 280 psi	370 MPa 5.30 x10^4 psi
120°C/248°F cure & 20°C/68°F test	0.56%	2.5 MPa 360 psi	400 MPa 5.80 x10^4 psi

HARDNESS

The König Pendulum Hardness, when determined in accordance with ISO 1522, will typically be:

126 seconds (20°C/68°F cure & test)

HEAT RESISTANCE

Dry Heat Resistance
The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO 11357 is typically 220°C (428°F).

For typical dry applications, **Belzona 5871** is suitable for use up to 150°C (302°F).

Glass Transition Temperature (T_g)
The T_g when determined in accordance with ISO 11357-2 respectively, following a 7-day cure period, will typically be:

Cure temperature	T_g
20°C/68°F	61°C/142°F
60°C/140°F	98°C/208°F
90°C/194°F	116°C/240°F
120°C/248°F	116°C/240°F
150°C/302°F	116°C/240°F

IMPACT RESISTANCE

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

	Izod Impact Strength
Un-notched (20°C/68°F cure & test)	0.30 KJ/m²
Reversed notched (20°C/68°F cure & test)	0.38 KJ/m²

SUB-ZERO PROPERTIES

Pull Off Adhesion
When tested in accordance with ASTM D4541 and ISO 4624 on 10mm thick, grit blasted (ISO 8501-1 Sa 2.5) mild steel substrates, pull off adhesion will typical be:

4.1 MPa / 590 psi* (20°C/68°F cure & -30°C/-22°F test)
** Cohesive failure of Belzona 5871*

Tensile Shear Adhesion
When tested in accordance with ASTM D1002, on grit blasted (ISO 8501-1 Sa 2.5) mild steel, tensile shear adhesion will typically be:

8.7 MPa / 1270 psi* (20°C/68°F cure & -10°C/14°F test)
** Cohesive failure of Belzona 5871*

Low Temperature Limit
For typical applications, **Belzona 5871** is suitable for use down to -40°C (-40°F).

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THERMAL PROPERTIES

Cool-To-Touch Surface
In accordance with the temperature limits and contact times detailed in ASTM C1055, **Belzona 5871** can be used to prevent contact-burn injuries by reducing the surface temperature of metallic substrates to below 60°C (140°F).

E.g. At 100°C/212°F substrate temperature, **Belzona 5871** applied at approximately 1500 microns wet film thickness, will reduce the surface temperature to 60°C/140°F.

Additionally, due to the reduced heat energy transfer of the system, **Belzona 5871** can offer a safe touch surface for ≥ 5 seconds at temperatures greater than 60°C/140°F.

Please refer to **Belzona 5871** IFU for thickness requirements.

Thermal Conductivity
When tested in accordance with EN 12667 and ASTM C177, the thermal conductivity will typical be:

Test Temperature	Thermal Conductivity (λ/ W/m.k)
-40°C/-40°F	0.0645
-20°C/-4°F	0.0675
0°C/32°F	0.0698
20°C/68°F	0.0723
60°C/140°F	0.0770
120°C/248°F	0.0844
150°C/302°F	0.0874

Thermal Cycling
When tested in accordance with ISO 19277, **Belzona 5871** applied onto steel substrates exhibited no cracking after:

20 cycles between 15°C/59°F and 150°C/302°F (20°C/68°F cure)
50 cycles between -30°C/-22°F and 120°C/248°F (20°C/68°F cure)

UV RESISTANCE

When tested in accordance with ISO 4892-2 (Xenon Arc), **Belzona 5871** overcoated with **Belzona 3211** will not show significant chalking or colour change after 8500 hours exposure.

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 5°C (41°F) and 30°C (86°F).

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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 5871 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.

SUPPLIER

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

Belzona Inc.
14300 N.W. 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