

PRODUCT SPECIFICATION SHEET

BELZONA 4301

FN10208



GENERAL INFORMATION

Product Description:

A high performance, two-component paste grade system with outstanding resistance to a broad range of chemicals, especially concentrated inorganic acids and alkalis. The material is ideally suited for rebuilding surfaces wasted through chemical attack and for repairing and rebuilding damaged chemical resistant linings. The product can also be used for profiling and fairing rough surfaces, prior to application of a suitable Belzona coating.

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:

- Pit filling
- Plate bonding
- Damaged or worn flange faces
- Nozzle inserts
- Acid-retaining walls
- Chemical channels
- Chemical drains
- Chemical transfer and holding areas
- Pump bases and plinths

APPLICATION INFORMATION

Application Methods

Plastic applicator
Spatula
Short bristled brush

Application Temperature

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

Volume Capacity

The volume capacity of mixed material is 667 cm³/40.7 in³ per 1 kg unit.

Cure Time

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

Note: Below 10°C (50°F), solidification times will be significantly extended and the resultant chemical resistance capability of the **Belzona 4301** will be reduced.

For optimum results, **Belzona 4301** should be force cured at 80°C (176°F) for 4 hours. This will ensure the very best chemical resistance.

Base Component

Appearance: Paste
Colour: Red
Gel Strength (HF paddle): 230 g/cm
Density: 1.50 g/cm³

Solidifier Component

Appearance: Paste
Colour: Black
Gel Strength (QH paddle): 170 g/cm
Density: 1.50 g/cm³

Mixed Properties

Mixing Ratio by Weight (Base : Solidifier): 2 : 1
Mixing ratio by Volume (Base : Solidifier): 2 : 1
Colour: Red
Mixed Density: 1.50 g/cm³
Mixed Form: Paste
Slump Resistance: nil at 12.7mm (0.5 inch)
VOC (ASTM D2369 / EPA ref. 24): 0.12% (1.85 g/L)
Resistance to 98% Sulfuric Acid; weight loss, of cured coupon after 7 days immersion at 20°C (68°F) is < 0.2%.

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 will typically be:

Dry (CS17 Wheels)
44 mm³ loss per 1,000 cycles 20°C (68°F) cure & test

Wet (H10 Wheels)
833 mm³ loss per 1,000 cycles 20°C (68°F) cure & test

ADHESION

Pull Off Adhesion

When tested in accordance with ASTM D4541/ISO 4624, the pull off strength will typically be:

Mild Steel
35.1 MPa (5,090 psi) 20°C (68°F) cure & test

Concrete (using Belzona 4911 Conditioner)
Dry* - 8.1 MPa (1,170 psi)** 20°C (68°F) cure & test
Damp* - 7.4 MPa (1,080 psi)** 20°C (68°F) cure & test
* With Belzona 4911
** Cohesive failure of concrete

Tensile Shear Adhesion

When tested in accordance with ASTM D1002, the adhesion to grit blasted steel will typically be:

19.4 MPa (2,820 psi) 20°C (68°F)

CHEMICAL RESISTANCE

The product has excellent resistance to a broad range of chemicals, particularly strong/concentrated inorganic acids and alkalis.

* For a more detailed description of chemical resistance properties, refer to relevant Chemical Resistance chart.

COMPRESSIVE PROPERTIES

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

Compressive Strength
81.0 MPa (11,750 psi) 20°C (68°F) cure & test

Limit of Elasticity
61.2 MPa (8,880 psi) 20°C (68°F) cure & test

Compressive Modulus
1,143 MPa (1.66 x 10⁵ psi) 20°C (68°F) cure & test

ELONGATION & TENSILE PROPERTIES

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

Tensile Strength	Cure temperature
6,759 psi (46.60 MPa)	68°F (20°C)
8,305 psi (57.26 MPa)	212°F (100°C)

Elongation	
0.92%	68°F (20°C)
1.19%	212°F (100°C)

Young's Modulus	
9.43x10 ⁵ psi (6,499 MPa)	68°F (20°C)
9.35x10 ⁵ psi (6,450 MPa)	212°F (100°C)

FLEXURAL PROPERTIES

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

Flexural Strength (Maximum)	
66.8 MPa (9,690 psi)	20°C (68°F) cure & test

Flexural Strength (Yield)	
47.2 MPa (6,850 psi)	20°C (68°F) cure & test

Flexural Modulus	
4,448 MPa (6.45 x 10 ⁵ psi)	20°C (68°F) cure & test

HARDNESS

Shore D

When determined in accordance with ASTM D2240, typical value will be:

80 20°C (68°F) cure & test

Barcol (Model 935)

When determined in accordance with ASTM D2583, typical value will be:

85 20°C (68°F) cure & test

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HEAT RESISTANCE

Heat Distortion Temperature (HDT)

The heat distortion temperature (HDT) of the material when tested in accordance with ASTM D648, under 1.8 MPa (264 psi) fibre stress will typically be:

48°C (118°F) 20°C (68°F) cure
78°C (172°F) 100°C (212°F) post cure

Glass Transition Temperature (T_g)

When measured in accordance with ISO 11357 part 2, typical Tg values will be:

57°C (134°F) 20°C (68°F) cure
94°C (201°F) 100°C (212°F) post cure

Service Temperature Limits

For many typical applications, the product will be suitable for use at the following service temperatures:

Type of Service	Temperature
Lower temperature limit	-40 °C (-40 °F)
Upper temperature limit (dry)	80 °C (176 °F)
Upper temperature limit (wet)	60 °C (140 °F)

Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO 11357 is typically 210°C (410°F).

IMPACT RESISTANCE

Izod Impact

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

3.98 KJ/m² 20°C (68°F) cure & test

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 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 4301 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

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

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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.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

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