

# PRODUCT SPECIFICATION SHEET

## BELZONA 4311

FN10084



### GENERAL INFORMATION

#### Product Description:

A high performance, two-component barrier coating with outstanding resistance to a broad range of chemicals, especially acids and alkalis.

#### Application Areas:

When mixed and applied as detailed in the Belzona Instructions for Use (IFU), the system, which isolates concrete and metal substrates from deteriorating chemical environments, is ideally suited for application to:

- Acid retaining walls
- Chemical drains and channels
- Chemical transfer and holding areas
- Pump bases
- Pump casings
- Tank pads
- Walkways (with non-slip aggregate incorporated)
- Tanks

### APPLICATION INFORMATION

#### Cure Time

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

Note: Below 59°F (15°C), solidification times will be significantly extended and the resultant chemical resistance capability of the **Belzona 4311** will be reduced.

For optimum results, **Belzona 4311** should be forced cured at 180°F (80°C) for 4 hours. This will ensure the very best chemical resistance.

#### Coverage Rate

Each 1.5 kg unit applied at the recommended film thickness of 10 mils (250 microns) will cover approximately 44-48 ft<sup>2</sup> (4-4.4m<sup>2</sup>). Application to rough or irregular surfaces may reduce this coverage by 20-25%.

#### Volume Capacity

71 cu.ins. (1160 cm<sup>3</sup>) per 1.5 kg unit.

#### Base Component

Appearance Thixotropic liquid  
Color Dark Red or Gray  
Gel Strength 70 -120 g/cm<sup>3</sup>  
Density 1.34 - 1.38 g/cm<sup>3</sup>

#### Solidifier Component

Appearance Clear Liquid  
Color Amber  
Viscosity 0.4 - 1 poise at 77°F (25°C)  
Density 1.02 - 1.04 g/cm<sup>3</sup>

#### Mixed Properties

Mixing Ratio by Weight (Base : Solidifier) 5 : 1  
Mixing ratio by Volume (Base : Solidifier) 3.8 : 1  
Density 1.27 - 1.31 g/cm<sup>3</sup>  
Sag Resistance > 30 mil  
Time to Peak Exotherm at 68°F (20°C) 30 - 45 minutes  
Peak Exotherm Temperature 320 - 374°F (160 - 190°C)  
Useable Life at 68°F (20°C) 20 - 25 minutes  
Resistance to 98% Sulfuric Acid, percent weight loss, of cured coupon after 7 days immersion at 77°F (25°C) is < 2.0.

*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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### ADHESION

#### Tensile Shear

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

2900 psi (20.0 MPa)

#### Pull Off Adhesion

When tested in accordance with ASTM D 4541/ ISO 4624, the pull off strength from grit blasted steel will typically be:

5300 psi (36.5 MPa)

### CATHODIC PROPERTIES

#### Cathodic Disbondment

When tested in accordance with ASTM G8 a rating Class B is obtained.

### CHEMICAL RESISTANCE

This material offers excellent resistance to a broad range of chemicals particularly acids and alkali's

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

### COMPRESSIVE PROPERTIES

#### Compressive Strength

The compressive yield strength of the material when tested to ASTM D695 is typically:

12,000 psi (82.7 MPa).

### FLAMMABILITY

When tested in accordance with ASTM E648, **Belzona 4311** has a critical radiant flux greater than 1.07W/cm<sup>2</sup>. The coating therefore is Class 1 in accordance with model building codes.

### FLEXURAL PROPERTIES

#### Flexural Strength

The flexural strength of the material when tested to ASTM D790 is typically:

10,000 psi (68.9 MPa).

### HEAT RESISTANCE

#### Heat Distortion Temperature (HDT)

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

#### Cure Schedule

7 days @ 68°F (20°C) cure  
7 days @ 212°F (100°C) post cure

#### HDT Values

118°F (48°C)  
181°F (83°C)

#### Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 392°F (200°C).

For many applications the product is suitable down to -40°F (-40°C).

#### Wet Heat Resistance

Designed to operate under continuous immersion at operating temperatures up to 140°F (60°C).

### IMPACT RESISTANCE

#### Izod Impact

The impact strength when tested in accordance with ASTM D256 is typically:

0.41 ft.lb./in. (22J/m). (Reverse notched)

### THERMAL PROPERTIES

#### Thermal Expansion

Tested to ASTM E228 the coefficient of thermal expansion is typically 61.9 ppm/°C.

### SHELF LIFE

All components when stored between 32°F (0°C) and 86°F (30°C) will have a shelf life of 5 years.

### APPROVALS/ACCEPTANCES

The material has received recognition from organizations worldwide including:

U.S.D.A.  
DEGUSSA  
RHODE ISLAND DEPARTMENT OF TRANSPORT  
PAPER BOARD INDUSTRIES CORPORATION

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### WARRANTY

Belzona guarantees 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 further guarantees that all its products are carefully manufactured to ensure the highest quality possible and tested strictly in accordance with universally recognised 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 4311** 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.

### HEALTH AND SAFETY

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

### MANUFACTURER

Belzona Polymerics Ltd.  
Claro Road, Harrogate,  
HG1 4DS, UK

Belzona Inc.  
2000 N.W. 88<sup>th</sup> Court,  
Miami, Florida, USA, 33172

### 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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ISO 9001:2008  
Q 09335  
ISO 14001:2004  
EMS 509612

Manufactured under an ISO 9000  
Registered Quality Management System

