

# PRODUCT SPECIFICATION SHEET

## BELZONA 1391S

FN10033



### GENERAL INFORMATION

#### Product Description:

A two component spray applied high temperature coating system designed to operate under continuous immersion at operating temperatures up to 230°F (110°C). Applied by heated airless spray. Suitable for steaming out up to 410°F (210°C). Exhibits excellent corrosion resistance at elevated temperatures. Resistant to a broad range of aqueous solutions, hydrocarbons and process chemicals. (Refer to Belzona TKL for specific recommendations). 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 return tanks
- Oil/gas and oil/water separators
- Calorifiers
- Evaporators
- Autoclaves
- Distillation units
- Heat exchanger barrels
- Scrubber units

### APPLICATION INFORMATION

#### Working Life

Will vary according to temperature. At 68°F (20°C) the usable life of mixed material is 45 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 1391S** should not be applied at temperatures below 50°F (10°C).

#### Coverage Rate

The **Belzona 1391S** shall be applied in 2 coats to achieve a minimum thickness of 20 mils (500 microns). The theoretical coverage rate at 20 mils (500 microns) is 21.5 sq.ft. (2m<sup>2</sup>)/liter.

#### Base Component

Appearance	Paste
Color	Gray
Density	1.75 - 1.95 g/cm <sup>3</sup>

#### Solidifier Component

Appearance	Liquid
Color	Blue or Violet
Density	0.97 - 1.01 g/cm <sup>3</sup>

#### Mixed Properties

Mixing Ratio by Weight (Base : Solidifier)	7.5 : 1
Mixing Ratio by Volume (Base : Solidifier)	4 : 1
Mixed Form	Liquid
Sag Resistance	Nil at 30 mil (0.75 mm)
Mixed Density	1.60 - 1.76 g/cm <sup>3</sup>

*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.*



# PRODUCT SPECIFICATION SHEET

## BELZONA 1391S

FN10033



### FLEXURAL PROPERTIES

The flexural strength when determined in accordance with ASTM D790, will typically be:

6,400 psi (44.12 MPa)	<b>Cure temperature</b> 68°F (20°C)
5,500 psi (37.92 MPa)	212°F (100°C)

### HARDNESS

#### Shore D

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

84	<b>Cure temperature</b> 68°F (20°C)
86	212°F (100°C)

83

**Cure/test temperature**  
212°F(100°C)

#### Barcol

When determined in accordance with ASTM D2583, using Model No.935, typical values will be:

91	<b>Cure temperature</b> 68°F (20°C)
97	212°F (100°C)

#### Koenig Pendulum

When tested in accordance with ISO 1522 the Koenig damping time of the coating will typically be:

168 seconds	68°F (20°C)
-------------	-------------

### HEAT RESISTANCE

#### Heat Distortion Temperature (HDT)

Tested to ASTM D648 (264 psi fiber stress), typical values obtained will be:

131°F (55°C)	<b>Cure temperature</b> 68°F (20°C)
306°F (152°C)	212°F (100°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 6 months immersion in water at 230°F (110°C).

#### Immersion Resistance

Suitable for service at temperatures up to 230°F (110°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 482°F (250°C).

### IMPACT RESISTANCE

#### Impact Strength

The impact strength (reverse notched) when tested to ASTM D256 is typically:

1.02 ft.lbs./in (55 J/m)	<b>Cure temperature</b> 68°F (20°C)
0.67 ft.lbs./in (36 J/m)	212°F (100°C)

### TENSILE PROPERTIES

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

#### Tensile Strength

2983 psi (20.57 MPa) at yield  
4490 psi (30.96 MPa) at break

#### Young's Modulus

6.72x10<sup>5</sup> psi (4638 MPa)

# PRODUCT SPECIFICATION SHEET

## BELZONA 1391S

FN10033



### 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 to -76°F (100°C to -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).

### WATER ABSORPTION & PERMEABILITY

#### Water Absorption

When tested in accordance with ASTM D570 at 185°F(85°C) water absorption will typically be 51g/m<sup>2</sup> after 30 days.

#### Water Vapor Transmission

When tested in accordance with ASTM D1653 (method B) average water vapor transmission through the coating at 185°F (85°C) was 26.8g/m<sup>2</sup>/24hrs.

### 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 32°F (0°C) and 86°F (30°C).

### 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 1391S** 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 Polymerics Ltd.  
Claro Road, Harrogate,  
HG1 4DS, UK

Belzona Inc.  
14300 NW 60<sup>th</sup> 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.

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.

Nothing in the foregoing statement shall exclude or limit any liability of Belzona to the extent such liability cannot by law be excluded or limited.

Copyright © 2019 Belzona International Limited. Belzona® is a registered trademark.

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

