



World leaders in the conservation of man-made resources and the environment

PRODUCT SPECIFICATION SHEET

BELZONA® 3211

1. PRODUCT NAME

Belzona® 3211 (Lagseal)

For seamless, flexible waterproofing and fire protection of all types of pipe insulation and cladding materials.

2. MANUFACTURER

Belzona Inc.,
2000 N.W. 88th Court
Miami, Florida 33172

Belzona Polymerics Ltd.,
Claro Road, Harrogate,
HG1 4AY, England

3. PRODUCT DESCRIPTION

Designed for protection of all types of thermal insulation. A formulated water based styrene acrylic emulsion polymer incorporates a polymer bonded glass reinforcing sheet (**Belzona® 9321**). The seamless, flexible system is water and weather resistant but micro-porous allowing moisture from within the substrate to evaporate. It can be applied to damp as well as dry surfaces.

The material also offers fire resistance and conforms to a **Class A** requirement in accordance with **ASTM E84** "Standard Test Method for Surface Burning Characteristics of Building Materials".

Applications

Protection of insulation on:

- Pipes
- Air conditioning ducting
- Valve boxes
- Flange covers
- Boilers
- Pressure vessels
- Bulk storage tanks
- Heat exchangers

4. TECHNICAL DATA

A one component product.

Appearance	Thixotropic liquid
Color	White
Odor	Styrene acrylic
Viscosity	1.7 - 3.7 poise at 77°F (25°C)
Density	1.49 - 1.54 g/cm ³
Solids	
by weight	72 - 76%
by volume	57 - 62%
Solvent	Water
Flash point	None

• **Shelf Life:**

When stored in unopened containers between 41°F (5°C) and 86°F (30°C), this material is expected to have a minimum 5 years shelf life. The product is able to withstand 5 freeze/thaw cycles between 15°F (-9°C) and 70°F (21°C) with no detrimental effect, thus, accidental freezing should not alter product performance.

• **Usable Life:**

At temperatures between 41°F (5°C) and 86°F (30°C) this material will have an indefinite usable life.

• **Drying Time:**

Drying times at 68°F (20°C) are shown in the chart below. Under cool or humid conditions, these times will be greatly extended. **Belzona® 3211** should not be applied when the temperature is below 41°F (5°C).

DRYING TIMES AT 68°F (20°C)

	1st Coat	2nd Coat
Touch dry	2 hours	1 hour
Hard dry for overcoating	4 hours	2 hours
Maximum overcoating time	3 days	3 days
Full hardness when chemical contact is anticipated	7 days	7 days

• **Coverage Rates:**

Apply the first coat of **Belzona® 3211** incorporating **Belzona® 9321** sheet to a dry film thickness of 10 mil (254 microns). Apply the second coat of **Belzona® 3211** to a dry film thickness of 6.0 mil (152 microns). Do not exceed the coverage rates given below.

5. PHYSICAL / MECHANICAL PROPERTIES

• **Elongation at Break:**

The elongation of the unreinforced system after 7 days cure at 68°F (20°C) when tested against BS 2782 or similar test method is typically 90%.

• **Fire Resistance:**

- The material conforms to a Class A requirement of ASTM E84 with flame spread value 0, smoke developed value 40.
- The fire propagation index when tested in accordance with BS 476 Part 6 is 0.1.
- The material when tested in accordance with BS 476 Part 7 for surface spread of flame shall be Class 1 with nil spread of flame.

COVERAGE RATES OF BELZONA® 3211 (per kg)

Substrate	First Coat	Second Coat
New Calcium Silicate	15.1 sq.ft. (1.40 sq.m.)	27.4 sq.ft. (2.55 sq.m.)
Old Calcium Silicate	14.5 sq.ft. (1.35 sq.m.)	27.4 sq.ft. (2.55 sq.m.)
New Glass Fibre/Mineral Wool	12.1 sq.ft. (1.12 sq.m.)	27.4 sq.ft. (2.55 sq.m.)
Old Glass Fibre/Mineral Wool	8.6 sq.ft. (0.80 sq.m.)	25.8 sq.ft. (2.40 sq.m.)
New Foam Sectional (urethane)	16.4 sq.ft. (1.52 sq.m.)	27.4 sq.ft. (2.55 sq.m.)
Old Foam Sectional (urethane)	15.1 sq.ft. (1.40 sq.m.)	27.4 sq.ft. (2.55 sq.m.)

• **Oil Resistance:**

The system is unaffected by immersion for 24 hours in light fuel oil at 122°F (50°C) and lubricating oil at 122°F (50°C).

• **Tensile Strength:**

The tensile strength of the unreinforced system after 7 days at 68°F (20°C) when tested against BS 2782 or similar test method is typically, 370 psi (2.5 N/mm²)

• **Vapor Resistance:**

The vapor resistance of the reinforced system after 7 days cure at 68°F (20°C) is typically 10.0 MN/sg.

• **Water Vapor Permeability:**

The water vapor permeability of the reinforced system after 7 days cure at 68°F (20°C) is typically

- 1.48mg cm⁻² mm⁻¹ 24 hours⁻¹
- reinforced
- 1.73mg cm⁻² mm⁻¹ 24 hours⁻¹
- unreinforced

6. SURFACE PREPARATION AND APPLICATION PROCEDURES

To ensure excellent adhesion, a primer coat of **Belzona® 3911** or **Belzona® 3921** may be required.

For proper technique, refer to the Instructions For Use Leaflet which is enclosed with each packaged product.

7. AVAILABILITY AND COST

Belzona® 3211 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.

8. WARRANTY

Belzona® guarantees this product will meet the performance claims stated herein when material is stored and used as instructed in the Instructions 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 recognized standards (ASTM, ANSI, BS, DIN, etc.). Since Belzona® has no control over the use of the product described herein, no warranty for any application can be given.

9. TECHNICAL SERVICES

Complete technical assistance is available and includes fully trained Technical Consultants, technical service personnel and fully staffed research, development and quality control laboratories.

10. HEALTH AND SAFETY

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

11. APPROVALS/ ACCEPTANCES

LLOYDS REGISTER
BUREAU VERITAS
GENERAL MOTORS

Belzona Polymerics Ltd.,
Claro Road,
Harrogate, HG1 4AY,
England.
Tel: +44 (0) 1423 567641
Fax: +44 (0) 1423 505967
E-Mail: Belzona@belzona.co.uk



BS EN ISO 9002 : 1994
Certificate No. Q/09335



www.belzona.com

Belzona Inc.,
2000 N.W. 88 Court,
Miami, Florida 33172,
U.S.A.
Tel: +1 (305) 594 4994
Fax: +1 (305) 599 1140
E-Mail: Belzona@belzona.com

Copyright © 2001 by Belzona International Limited. All rights reserved. Certain portions of this work copyright © 1997 by Belzona International Limited. No part of this work covered by the copyrights hereon may be reproduced or used in any form or by any means - graphic, electronic or mechanical including photocopying, recording, taping or information storage and retrieval systems - without written permission of the publisher.

Belzona® is a registered trademark

Printed in England 12/01 UK

Private and Confidential - For Internal Use Only



Belzona® 3211 - Product Specification Sheet (2)