PRODUCT SPECIFICATION SHEET
BELZONA 4111
FN10007

GENERAL INFORMATION

Product Description:
Repair system, comprising a two-component epoxy resin system (Belzona 4151) combined with selected quartz particles, for repairing and resurfacing concrete and stonework damaged by impact, vibration, chemicals and environmental attack. Also, for grouting and bonding. Offers outstanding abrasion and chemical resistance.

Application Areas:
When mixed and applied as detailed in the Belzona Instructions for Use (IFU), the system is ideally suited for:

- Repairing and rebuilding any structure made from concrete, brick, marble, stone, etc.
- Lining concrete surfaces subject to chemical attack.
- Surfacing and resurfacing areas subject to extreme wear, impact and abrasion.

APPLICATION INFORMATION

Working Life
Will vary according to temperature. At 77°F (25°C), use all mixed material within 30 minutes.

Coverage Rates
Each 15 kg unit applied at film thickness of ¼ inch (6 mm) will cover approximately 12 ft² (1.1 m²).

Cure Time
Will be reduced for thicker sections and extended for thinner applications. Allow to solidify for the times shown in the Belzona IFU before subjecting it to the conditions indicated.

Volume Capacity
414 in³ (6783 cm³) per 15 kg unit.

Base Component

Appearance	Clear Liquid
Color	Light amber
Viscosity	5 - 7 poise at 77°F (25°C)
Density	1.16 g/cm³

Solidifier Component

Appearance	Clear Liquid
Color	Amber
Viscosity	0.5 - 1.5 poise at 77°F (25°C)
Density	1.00 g/cm³

Aggregate Component

Appearance	Pre-wetted, fine granular powder
Color	Light gray or Beige
Density	2.6 – 2.9 g/cm³

Mixing Ratio
For mixing small quantities the mixing ratio by weight of the component is:-

(Base : Solidifier : Aggregate)	2 : 1 : 30
Mixing ratio by volume (Base : Solidifier)	2 : 1

Aggregate may be added to desired consistency.

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 4111
FN10007

ABRASION

Taber
When tested in accordance with ASTM D4060 with a 1kg load, typical loss per 1,000 cycles is:

Wet (H10 wheels)	820 mm^3
Dry (CS17 wheels)	14 mm^3

ADHESION

Tensile Shear
The tensile shear adhesion to steel of the polymeric binder, when tested in accordance with ASTM D1002 is typically 2,700 psi (18.62 MPa).

Positest dolly pull-off (ASTM D4541)

Dry concrete	525 psi (3.62 MPa)*
Wet concrete	450 psi (3.10 MPa)*

** Cohesive failure of substrate*

CHEMICAL RESISTANCE

Once fully cured, the material will demonstrate excellent resistance to most commonly found inorganic acids and alkalis at concentrations up to 20%.
The material is also resistant to hydrocarbons, mineral oils, lubricating oils and many other commonly found chemicals.

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

COMPRESSIVE PROPERTIES

Compressive Strength
When tested in accordance with ASTM D695 the compressive strength is typically 13,000 psi (89.63 MPa).

Compressive Modulus
When tested in accordance with ASTM D695 the compressive modulus is typically 1.16×10^5 psi (800 MPa).

ELECTRICAL PROPERTIES

Dielectric Strength
Tested to ASTM D149 is typically: 142.5 volts/mil (5700 volts/mm).

Loss Tangent
Tested to ASTM D150 is typically: 0.038 at 1MHz

Permittivity
The permittivity of the material when tested in accordance with ASTM D150 is typically: 4.25

Surface Resistivity
Tested to ASTM D257 is typically: 3.98×10^{14} ohms

Volume Resistivity
Tested to ASTM D257 is typically: 1.0×10^{13} ohm cms

FLEXURAL PROPERTIES

Flexural Strength
The flexural strength of the material when tested to ASTM D790 is typically 5,500 psi (37.9 MPa).

The flexural strength of the polymeric binder when tested to ASTM D790 will be typically 13,000 psi (89.6 MPa).

Flexural Modulus
When tested in accordance with ASTM D790 the flexural modulus is typically 1.01×10^6 psi (6964 MPa).

HEAT RESISTANCE

Heat Distortion Temperature (HDT)
The heat distortion temperature when tested to ASTM D648 is typically 97°F (36°C).

Heat Resistance
For many typical applications, the product is thermally stable to 300°F (150°C) dry and 140°F (60°C) wet, and down to -40°F (-40°C).

SHRINKAGE

Shrinkage
The material, when tested in accordance with ASTM C157, will show no measurable shrinkage during cure.

PRODUCT SPECIFICATION SHEET
BELZONA 4111
FN10007

THERMAL PROPERTIES

Thermal Conductivity
The thermal conductivity of the material, when tested in accordance with BS 874 or similar test method is typically 1.9 W/M°K.

Thermal Expansion
Tested to ASTM E228 the coefficient of thermal expansion is typically 28.2 ppm/°C.

APPROVALS/ACCEPTANCES

The material has received recognition from organizations worldwide including:
U.S.D.A.
GENERAL MOTORS
G.E. NUCLEAR ENERGY
FORD
FLORIDA DEPARTMENT OF TRANSPORT
RHODE ISLAND DEPARTMENT OF TRANSPORT

SHELF LIFE

Belzona 4111 shall have a shelf life of 5 years from date of manufacture when stored in their original unopened containers between 32°F (0°C) and 86°F (30°C).

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 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 4111 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 Polymerics Ltd.
Claro Road, Harrogate,
HG1 4DS, UK

Belzona Inc.
14300 N.W. 60th Ave,
Miami Lakes, FL, USA, 33014

HEALTH AND SAFETY

Prior to using this material, please consult the relevant Material 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 © 2021 Belzona International Limited. Belzona® is a registered trademark.

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