BELZONA 4411 Product Specification Sheet

1. PRODUCT NAME

Belzona® 4411 (Granogrip)
A safety grip system which creates a durable, non-slip walking surface on steel, concrete, quarry tile, or wood.

2. MANUFACTURER

Belzona Inc.,
2000 NW 88th Court,
Miami, Florida 33172.

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

3. PRODUCT DESCRIPTION

A three-component system consisting of a colored thixotropic base, liquid solidifier, and aluminum oxide aggregate. The material is provided in three colors - Red, Gray and Safety Yellow. The aggregate is dark gray or white. The system provides a durable non-slip surface with excellent adhesion, wear and chemical resistance.

Applications
Concrete floors, ramps or steps.
Quarry tile.
Terrazzo, kitchen and laboratory floors.
Shower and pool areas.
Chemical storage tank tops.
Metal ladder rungs.
Diamond plate walkways.
Aircraft wing walks.
Machinery and chemical work areas.
Loading docks and bays.
Warehouse forklift traffic.
Wooden decks.
Fiberglass boat decks.
Building entrances.
Incorporated decorative logos.

4. TECHNICAL DATA

Base Component

Appearance	Thixotropic liquid
Colour	Red, Yellow or Gray
Gel Strength	>200 gcm
Specific Gravity	1.17 - 1.25
Sag Index (mixed)	Min. 40 mils (1 mm)

Solidifier Component

Appearance	Clear Liquid
Viscosity	1 - 2 poise at 77°F (25°C)
Specific Gravity	1.00

Aggregate Component

Belzona® 9211 (Supergrip)

Al_2O_3 content typically	95.2%
Density	3.95g/cm³
Sieve analysis:	
12 mesh	100% passing
16 mesh	0-20% retained
18 mesh	min 45% retained
18-20 mesh	min 70% retained
25 mesh	max 3% passing

Belzona® 9221 (Surefoot White)

Al_2O_3 content typically	95.2%
Density	3.94g/cm³
Sieve analysis:	
18 mesh	100% passing
25 mesh	0-25% retained
30 mesh	min 45% retained
30-35 mesh	min 65% retained
40 mesh	max 3% passing

Mixing Ratio

Base : Solidifier by weight	2.5 : 1
by Volume	2.0 : 1
Aggregate	As desired

• ***Shelf Life:***
Separate Base and Solidifier components will have a 5 year shelf life when stored between 32°F (0°C) and 86°F (30°C).

• ***Coverage Rates:***
Depends on the choice of aggregate and nature of substrate. As a practical guide, an 800 gram mix will cover 13.7 - 25 sq. ft. (1.25 - 2.30 m²).

• ***Volume Capacity:***
The volume capacity of mixed material is 43 cu.in. (713 ccs) per 800 gm unit.

• ***Cure Time:***
Allow the system to solidify for the times shown in the chart below before subjecting it to the conditions indicated.

5. PHYSICAL/MECHANICAL PROPERTIES

Determined after 7 days cure at 68°F (20°C).

• ***Abrasion Resistance:***
Taber
The Taber abrasion resistance of the resin system (no aggregate) with H10 wheels and 1 kg dry load is typically 124 mm³ loss of coating per 1,000 cycles.

• ***Adhesion:***
Tensile Shear
When tested in accordance with ASTM D1002 the tensile shear adhesion to grit blasted, mild steel is typically 3,500 psi (246 kg/cm²).

Pull-off (Positest)
When tested in accordance with ASTM D4541:

Dry concrete	930 psi*
Damp concrete	1040 psi*
Dry, grit blasted quarry tile	2330 psi*
Dry, grit blasted quarry tile after total immersion in water	2110 psi*

** Failure in the substrate material*

CURE TIMES

Temperature	41°F (5°C)	59°F (15°C)	77°F (25°C)	86°F (30°C)
Light pedestrian traffic	24 hrs	9 hrs	4 hrs	3 hrs
Vehicular traffic	4 days	2 days	24 hrs	12 hrs
Full chemical resistance	10 days	6 days	3 days	2 days

• ***Chemical Resistance:***
Once fully cured, the material will demonstrate excellent resistance to the following chemicals:

carbonic acids
10% hydrobromic acid
10% nitric acid
60% nitrous acid
20% sulfuric acid
ethylene glycol
diethanolamine
gasoline
kerosene
heptane
inorganic salts
lubricating oil
vegetable oils

* *For a more detailed description of chemical resistance properties, refer to Product Data Q507.*

• ***Color Stability:***
The color stability of the coating alone should show no more than very slight discoloration after 100 hours exposure to artificial weather conditions in the QUV Accelerated Weathering Tester. The use of the aggregate will extend color stability. Indoor color stability is excellent.

• ***Compressive Strength:***
When tested in accordance with ASTM D695 is typically 7,600 psi (534 kg/cm²).

• ***Flexural Strength:***
When tested in accordance with ASTM D790 is typically 7,800 psi (548 kg/cm²).

• ***Heat Distortion Temperature:***
Tested to ASTM D648 (264 psi fiber stress) is typically 109°F (43°C).

• ***Heat Resistance:***
For many typical applications, the product is thermally stable to 392°F (200°C).

• ***Impact Strength:***
Izod Impact
The material, when tested in accordance with ISO 180 using notched test pieces is typically 9.8 kJ/m².

Falling Weight
When tested in accordance with ASTM D2794 (falling weight impact), is typically 59 inch-lbs.

6. SURFACE PREPARATION AND APPLICATION PROCEDURES

For proper techniques, refer to Belzona® Instructions For Use which is enclosed with each packaged product.

7. AVAILABILITY AND COST

Belzona® 4411 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 Belzona® 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 recognised 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

U.S.D.A.
GENERAL MOTORS
FORD
FLORIDA DEPARTMENT OF TRANSPORT
PAPER BOARD INDUSTRIES CORPORATION

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