BELZONA 4301 Product Specification Sheet

1. PRODUCT NAME

Belzona® 4301
(Magma CR1 Hi-Build)
For rebuilding and profiling surfaces suffering chemical attack.

2. MANUFACTURER

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

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

3. PRODUCT DESCRIPTION

A high performance, two-component paste grade system with outstanding resistance to a broad range of chemicals, especially acids and alkalis. The material is ideally suited for rebuilding surfaces wasted through chemical attack and for repairing and rebuilding damaged chemical resistant linings. Also used for profiling and fairing rough surfaces, prior to application of **Belzona® 4311.**

Applications:

- Acid retaining walls.
- Chemical drains and channels.
- Chemical transfer and holding areas.
- Glass lined reactors.
- Pump bases.
- Pump casings.
- Tank pads.
- Tanks.

4. TECHNICAL DATA

Base Component

Appearance	Thixotropic liquid
Color	White
Gel Strength	180 -220 g/cm³
Density	1.42 g/cm³

Solidifier Component

Appearance	Thixotropic liquid
Color	Black
Gel Strength	70 - 90 g/cm³
Density	1.32 g/cm³

Mixed Tests

Mixing Ratio by Weight (Base : Solidifier)	3.22 : 1
Mixing ratio by Volume (Base : Solidifier)	3 : 1
Density	1.39 g/cm³
Sag Resistance	>0.5 inch (12.5 mm)
Time to Peak Exotherm at 68°F (20°C)	30 - 40 minutes
Peak Exotherm Temperature	284 - 338°F (140 - 170°C)
Useable Life at 77°F (25°C)	30 minutes

Resistance to 98% Sulfuric Acid, percent weight loss, of cured coupon after 7 days immersion at 77°F (25°C) is < 2.0.

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

• Volume Capacity:
The volume capacity of mixed product is 44 cu.ins. (720 cm³) per 1 kg unit.

• Cure Time:
Allow to solidify for the times shown in the chart below 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® 4301** will be reduced.

For optimum results, **Belzona® 4301** should be force cured at 180°F (80°C) for 4 hours. This will ensure the very best chemical resistance.

5. PHYSICAL/MECHANICAL PROPERTIES

Determined after 7 days cure at 77°F (25°C).

• Adhesion:
Tensile Shear
The tensile shear adhesion shall be tested to ASTM D1002. Surface preparation shall be grit blasting with a profile of 0.003 - 0.004 inch. Typical values obtained will be:

Steel	2900 psi (204 kgs/cm²)
Copper	2550 psi (179 kgs/cm²)
Aluminum	2450 psi (172 kgs/cm²)

• Chemical Resistance:
The chemical resistance using specimens immersed in all of the following chemicals for at least 52 weeks, is rated excellent.

INORGANIC ACIDS

- 36% hydrochloric acid
- 30% hydrofluosilicic acid
- 10% nitric acid
- 60% perchloric acid
- 30% phosphoric acid
- 98% sulfuric acid
- 6% sulfurous acid

INORGANIC BASES

- 30% ammonia solution
- 40% sodium hydroxide
- 40% potassium hydroxide
- bromide water (saturated)
- chlorine water (saturated)

ORGANIC ACIDS

- 30% citric acid
- 37% formaldehyde

ORGANIC BASES

- methylamine

Continued . . .

CURE TIMES

Temperature	59°F (15°C)	68°F (20°C)	77°F (25°C)	86°F (30°C)
Light pedestrian traffic	16 hrs	12 hrs	8 hrs	6 hrs
Vehicular traffic	48 hrs	36 hrs	24 hrs	20 hrs
Full chemical resistance	14 days	7 days	6 days	5 days

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SOLVENTS

amyl acetate
benzene
cellosolve
dibutylphthalate
ester EEP
ethanol
ethylethoxyproprionate
hexane
isobutanol
mesitylene
methyl amyl ketone
n-butanol
petroleum naphtha
skydrol
styrene
toluene
xylene

HALOGENATED COMPOUNDS

carbon tetrachloride
1,1,1 trichloroethane
trichlorethylene
trichlorotrifluoroethane
bromide water (saturated)
chlorine water (saturated)

* *For a more detailed description of chemical resistance properties, refer to Product Data Q508.*

• Compressive Strength:
The compressive yield strength of the material when tested to ASTM D695 is typically 14,200 psi (998 kgs/cm²).

• Flexural Strength:
The flexural strength of the material when tested to ASTM D790 is typically 13,000 psi (914 kgs/cm²).

• Heat Distortion Temperature:
The heat distortion temperature (HDT) of the material shall be tested in accordance with ASTM D648, under 264 psi fiber stress. Typical results obtained using different cure schedules will be as follows:

Cure Schedule	HDT Values
77°F (25°C) cure	129°F (54°C)
122°F (50°C) post cure	158°F (70°C)
212°F (100°C) post cure	170°F (77°C)

• Heat Resistance:
For many typical applications, the product is thermally stable to 392°F (200°C) dry and 140°F (60°C) wet, and down to -40°F (-40°C).

• Impact Strength:
The material, when tested in accordance with ASTM D256 is typically 0.26 ft.lbs./in. (14J/m).

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® 4301 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.

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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