FINAL ADVANCED MATERIALS

TECHNICAL DATA SHEET

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Embedding Ceramic Cements

COTRONICS CORP

High Temperature Specialty Materials Since 1971

Summary

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SAFETY

PRODUCT RANGE

- **Durapot™ 801**
- **Durapot™ 804**
- **Durapot™ 805**
- **Durapot™ 809**
- **Durapot™ 814**

PACKAGING

TABLE

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Overview

Embedding ceramic cements are manufactured from ceramic materials: alumina, magnesia (magnesium oxide) or zircon (zirconium silicate). They provide the optimum solution to embedding problems at high temperatures and exceed the performances of epoxy and silicone resins. Their resistance to chemicals and solvents is excellent.

Once applied, the cements cure at room temperature and harden. This operation can be accelerated by mild heating (fast cure).

Encapsulation is intended to protect and insulate circuits and components, in particular in electrical and electronic equipment. The Durapot™ range is available in several versions to meet the thermal, physical and electrical requirements of technical applications.

Embedding Ceramic Cements

Implementation Guidelines

Selection

The operating temperature, electrical characteristics and thermal conductivity help you make an informed choice. Embedding ceramic cements are available in four materials:

- Pure alumina,96 %
- Very thermally conductive alumina
- Magnesia
- Zircon

Mixing

- Thoroughly stir each component individually.
- All of the mix ratios are given in weight.
- Weigh the powder in clean container and then the liquid.
    - The label indicates whether an activator or water needs to be added.
    - Adding water at a ratio of around 1 to 2 % increases the fluidity for the creation of finer details.
- Mix to obtain a paste-like consistency
    - A paste-like product has better resistance and spreads easily by vibrating the mould.
- Pour the paste completely embedding the parts.
- Vibrate the mould for between 1 and 5 minutes to get rid of any air bubbles.
- Remove any excess product with the trowel after 20 minutes.
- Curing: between 5 minutes and 4 hours at 20 °C

Note: We recommend performing a size test on a glass (Ø 50 mm, height 25 mm) to familiarise yourself with the product.

Important

Once the curing operations have finished, it is recommended to eliminate any surface pitting using the Duraseal™ 1529 sealant. This operation prevents any water uptake and ensures the insulating properties of your ceramic.

Safety

Do not inhale the powders!
Wear a mask when handling in large quantities.
Avoid all contact with the eyes or skin.
In the event of an accident, quickly clean skin and eyes with water and consult a doctor.
We will provide you with the safety data sheets.

Product Range

Durapot™ 801 - Ultra-pure alumina ceramic cement

Properties

- Maximum operating temperature: up to 1,840 °C
- Al_2O_3 alumina-based powder (99 %)
- Kit composed of a powder and an activator
- Does not contain any binders
- High electrical resistance

Applications

- Electrical and metallurgical applications.

Implementation

- Cures at room temperature in 24 hours

Durapot™ 804- Moulding of small parts

Properties

- Maximum operating temperature up to 1,650 °C
- Al_2O_3 alumina-based powder (96 %)
- Low cost
- Excellent electrical properties

Applications

- For low volumes and small parts

Implementation

- Powder to be diluted in water
- Mix, pour and leave to dry
- Cures at room temperature in 24 hours
- Accelerated curing not possible
- Post-curing: 2 hours at 107 °C

Durapot™ 805- Moulding of large parts

Properties

- Maximum operating temperature up to 1650 °C
- Al_2O_3 alumina-based powder (96 %)
- Low cost
- Excellent electrical properties

Applications

- For larger volumes and large parts

Implementation

- Powder to be diluted in water
- Mix, pour and leave to dry
- Cures at room temperature in 24 hours

Durapot™ 809 - Electrical resistance

Properties

- Maximum operating temperature up to 1,530 °C
- MgO magnesia-based powder
- Excellent dielectric properties
- The best general purpose potting compound

Applications

- Potting, sealing and bonding
- Ignitions, heating coils
- Electronics
- Many production applications

Implementation

- Powder to be diluted in water
- Mix, pour and leave to dry
- Cures at room temperature in 24 hours

Durapot™ 814 - Very fast curing

Properties

- Maximum operating temperature up to 1,093 °C
- Zircon-based
- Kit composed of a powder and an activator

Applications

- Series production applications with a high cycle time.

Implementation

- Cures at room temperature in 24 hours
- Very fast curing in a few minutes
- Post-curing: 4 hours at 120° C

Packaging

Item N°	Resin		Hardener	
	Volume	Unit	Volume	Unit
801-1	1.45 kg	Quart US	650 g	Bottle
801-2	4.5 kg	Gallon Us	2 kg	½ Gallon US
804-1	1.3 kg	Quart US	Water	
804-2	5.4 kg	Gallon Us	Water	
805-1	1.3 kg	Quart US	Water	
805-2	5.4 kg	Gallon Us	Water	
809-1	1.35 kg	Quart US	Water	
809-2	5.4 kg	Gallon US	Water	
809-3	22.7 kg	5 Gallon US	Water	
814-1	1.25 kg	Quart US	300 g	Bottle
814-2	4.5 kg	Gallon US	1.2 kg	Quart US

Table

Property	Unit	801	804	805	809	814
Description		High purity	Small parts	Large Castings	High Dielectric	Fast Curing
Base		Alumina 99 %	Alumina 96 %	Alumina 96 %	Magnesia	Zirconia Silicate
Components		2	2	2	2	2
Colour		white	white	white	bronze	white
Max. Operating Temperature	**°C**	1,840	1,650	1,650	1,530	1,093
Resistivity	**Ω.m**	10^{17}	10^{12}	10^{12}	10^{13}	10^{10}
Dielectric Strength	**kV/mm**	13.7	6.8	6.8	10.5	4.9
Thermal Expansion	**10^{-6}/K**	7.7	7.2	7.2	4.7	8.1
Thermal Conductivity	**$W.m^{-1}.K^{-1}$**	1.15	1.15	1.44	0.58	1.15
Working Time	**min**	15	30	30	20	20
Chemical Resistance		Good	Good	Good	Good	Good
Solvent Resistance		Excellent	Excellent	Excellent	Excellent	Excellent
Mix Ratio	**Filer : Activator**	100 : 44	100 : 19	100 : 12	100 : 13	100 : 30
Cure at Room Temperature	**hrs**	24	24	24	24	24
Fast Cure		Cure can be accelerated by mild heating at 65 - 93 °C.				
Post Cure		2 to 4 hrs at 120 °C				

Physical variables included in this documentation are provided by way of indication only and do not, under any circumstances, constitute a contractual undertaking. Please contact our technical service if you require any additional information.