

3MG.012

Castable Ceramic Cements



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SAFETY

PRODUCT RANGE

Rescor™ 740

Rescor™ 750

Rescor™ 760

Rescor™ 770

Rescor™ 780

Rescor™ RTC 60

Replicast™ 101

Replicast™ 102MR

PACKAGING

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Rescor™ castable ceramic cements are available in six different formulations to meet the different needs of industry. These products enable the fast manufacturing of moulds, tubes, crucibles and other complex parts. They can be used in just a few minutes: supplied “ready for use”, they must be diluted with demineralised and deionised water or the activator.

Once applied, ceramic cements cure at room temperature. However, an appropriate heat treatment improves their final properties.

The resulting products offer good resistance to corrosive atmospheres, concentrated hydrochloric and sulphuric acids as well as strong bases. These characteristics make them ideal for use in industry or research and development.

The surface finish and detail of the part obtained depend on the quality and finish of the tooling.



Implementation Guidelines

The Rescor™ 700 serie (740, 750, 760, 770 and 780), Rescor™ products 360M and RTC-60 enable the fast production (just a few minutes) of complex parts. They cure at room temperature, with or without subsequent post-curing. This heat treatment improves the hardness and/or resistance of the finished product. The parts can then be used at temperatures ranging from 1,260 to 2,200 °C.

The moulds

Replicast™ 101 is an ideal product for making moulds but any non-absorbent product is suitable. The mould should have sufficient draft to facilitate demoulding and enough vents to enable proper moulding

One layer of Replicast™ 102MR applied with a brush to the mould or lubrication with vegetable oil promotes demoulding.

Important

- Specific binders are supplied with some of the cements: they are not resistant to frost and must be stored above zero.
- Pot life: approximately 20 minutes for all cements.
- Curing two-component mixtures: at room temperature in 2 to 4 hours.
- 90 % of the final hardness is guaranteed after 24 hours.

Shrinkage

Even though very small, shrinkage must be taken into account for all critical applications. The values set out below vary according to the mixing conditions. A moulding test is recommended for cases where dimensional accuracy is essential.

Cure Temperature	°C	23	535	910	1,350
Typical Shrinkage	%	0.1 to 0.5	0.3 to 1.3	0.5 to 2.0	1.0 to 2.5
Modules of Rupture	MPa	5.5 to 8.2	6.8 to 13.7	10.3 to 20.6	20.6 to 48.3

Applications

- Casting moulds for molten metals
- Electrical and thermal insulators
- Welding jigs and fixtures
- Furnace parts
- Prototypes or short runs
- Crucibles
- Tooling
- Brewing supports



Castable Ceramic Cements

Example of moulding an alumina part:



Pouring



Demoulding



Final part

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

These ceramic cements are available in six different compositions which are adapted to applications requiring great precision and excellent dimensional stability.

Rescor™ 740 – Lightweight insulating foam, 1,260 °C

Properties

- Composition: alumina silicate
- Lightweight, high-strength foam
- Good thermal insulation
- Excellent resistance to oxidising and reducing atmospheres
- Good resistance to non-ferrous metals and the steam of most chemicals and solvents

Implementation

- Curing: at room temperature
- Highly machinable



Castable Ceramic Cements

Rescor™ 750 – Liquid silica, 1,480 °C

Properties

- Composition: liquid silica
- Excellent resistance to thermal shocks
- Not very expandable
- Thermally insulating at $0.58 \text{ W.m}^{-1}.\text{K}^{-1}$
- Good thermal and dimensional stability
- Excellent electrical and mechanical properties

Applications

- For casting metals
- Producing large parts (2 m, for a weight of one tonne)

Implementation

- Curing: at room temperature
- Easy to use: no specific tooling required

Rescor™ 760 – Liquid zircon, 2,200 °C

Properties

- Composition: liquid zircon
- Maximum operating temperature: 2,200 °C
- Very good resistance to chemical attacks

Caution: this cement becomes electrically conducting when the temperature exceeds 900 °C.

Rescor™ 770 – Thermally conductive liquid silicon carbide, 1,480 °C

Properties

- Composition: liquid silicon carbide
- Maximum operating temperature: 1,480 °C
- Excellent resistance to oxidation and erosion

Applications

- For casting and moulding molten metals
- For creating runners, crucibles and nozzles



Castable Ceramic Cements

Rescor™ 780 – Liquid alumina, 1,650 °C

Properties

- Composition: liquid aluminium oxide
- Maximum operating temperature: 1,650 °C
- High mechanical strength
- Electrically insulating

Applications

- General purpose cement
- Recommended for all types of applications

Implementation

- Mix the powder and activator
- Pour this paste into the mould

Rescor™ RTC 60 – Pure alumina powder, 1,790 °C

Properties

- Composition: pure alumina
- Maximum operating temperature: 1,790 °C
- Low adhesion
- Resistant to hot materials, oxidizing and reducing atmospheres, molten metals
- Resistant to acids and common detergents
- Different grain sizes available:
 - Standard grain: all applications, ideal for large parts
 - Fine grain: for small production series

Applications

- For pouring into any non-absorbent moulds

Implementation

- Powder to be mixed with water to obtain a paste
- Add Resbond™ 901A binder as required

TECHNICAL DATA SHEET 3MG.012

Property	Unit	740	750	760	770	780	RTC-60
Description		Insulating Foam	Shock Resistant	Ultra Temperature	Corrosion Resistant	General Use	High Purity
Nature		Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Composition		Al ₂ O ₃ -SiO ₂	SiO ₂	ZrO ₂	SiC	Al ₂ O ₃	Al ₂ O ₃
Colour		yellow	white	yellow	black	white	white
Max. Operating Temperature	°C	1,260	1,480	2,200	1,480	1,650	1,790
Density	g/cm ³	0.86	1.76	4.0	2.32	2.88	2.8
Shrinkage at 540 °C	%	1.0	1.3	1.0	1.5	1.0	1.25
Compressive Strength	MPa	10.3	41.3	27.5	41.3	41.3	17.2
Modules of Rupture	MPa	6.2	10.3	8.2	10.3	12.4	6.8
Specific Heat	J K ⁻¹ kg ⁻¹	1.008	-	-	-	-	-
Thermal Conductivity at 260 °C	W.m ⁻¹ .K ⁻¹	0.14	0.58	0.94	4.3	1.44	1.44
Thermal Expansion	10 ⁻⁶ .K ⁻¹	8.1	0.5	10.1	8.1	7.2	7.2
Dielectric Strength	kV/mm	3.9	3.9	Conductor*	Conductor *	7.8	6.8
Resistivity	Ω.m	10 ¹¹	10 ¹¹	-	-	10 ¹¹	10 ¹²
Mix Ratio	Powder : Liquid	100 : 62	100 : 28	100 : 18	100 : 24	100 : 24	100 : 10
Working Time	min	20	20	20	20	20	25

*The presence of small quantities of metal in the powder compromises its insulating properties but is not sufficient for an electrical current to pass through.



Castable Ceramic Cements

Replicast™ 101 – Two-component elastomer

Properties

- Two-component
- Curing: at room temperature
- Protect from frost

Applications

- Creation of flexible moulds for ceramic parts or epoxide resins
- Can be used with all Cotronics products

Implementation

- Replicast™ 101 catalyst: the product remains fluid for around 20 minutes (no abrupt viscosity)
- Stable after 16 hours
- Heat curing: possible but greater shrinkage

Technical data

Property	Unit	101
Components		2
Colour		bronze
UN Code		1950
Max. Operating Temperature	°C	93
Density	g/cm ³	1.39
Viscosity	cps	4,000
Tensile Strength	MPa	4.8
Modules of Rupture	MPa	0.62
Shrinkage	%	0.05
Elongation	%	700
Dielectric Strength	Kv/mm	7.8
Resistivity	Ω.m	10 ¹¹
Hardness	Shore A	40
Porosity		0.00
Cure at Room Temperature	hrs	8 to 16

Replicast™ 102MR – High temperature demoulding paste

Properties

- Maximum operating temperature: 38 °C
- Creamy paste for ceramics

Applications

- Ideal for large dimension moulding

**Castable Ceramic Cements****Implementation**

- Apply a thin layer:
 - to ensure the accurate reproduction of shapes and dimensions
 - to avoid cracking

Technical data

Property	Unit	102MR
Component		1
Colour		white
Max. Operating Temperature	°C	38
Form		paste
Viscosity	cps	25,000
Porosity	%	0.0
Cure at Room Temperature		-.
Packaging	g	370



Castable Ceramic Cements

Packaging

Item N°	Adhesive		Hardener	
	Volume	Unit	Masse / Volume	Volume
101-1	4 kg	Gallon US	400 g	Pint US
101MR	530 ml	Aerosol	One-component	
740-1	2.7 kg	Gallon US	2.2 kg	½ Gallon US
740-2	13.5 kg	5 Gallon US	9 kg	2 Gallon US
740-3	Kit 45 kg – Contact us			
740-1A	/	/	4.5 kg	½ Gallon US
740-2A	/	/	22.7 kg	Gallon US
750-1	3.6 kg	Bag	1.1 kg	Quart US
750-2	18 kg	5 Gallon US	5.6 kg	Bottle
750-3	36 kg	2 x 5 Gallon US	11.3 kg	Bottle
760-1	3.6 kg	Bag	1.1 kg	Quart US
760-2	18 kg	2 Gallon US	4.5 kg	Gallon US
760-3	36 kg	NC	9 kg	NC
770-1	3.6 kg	Bag	1.1 kg	Quart US
770-2	18 kg	5 Gallon US	4.5 kg	Gallon US
770-3	36 kg	2 x 5 Gallon US	9 kg	2 Gallon US
780-1	3.6 kg	Bag	1.1 kg	Quart US
780-2	18 kg	5 Gallon US	4.5 kg	Gallon US
780-3	36 kg	2 x 5 Gallon US	9 kg	2 Gallon US
RTC60-F	4.5 kg	Bag	Water	
RTC60-FBP1	22.6 kg	5 Gallon US	Water	
RTC60-FBP2	45 kg	2x 5 Gallon US	Water	
RTC60-M	4.5 kg	Bag	Water	
RTC60-MBP1	22.6 kg	5 Gallon US	Water	
RTC60-MBP-2	45 kg	2x 5 Gallon US	Water	
RTC60-R	4.5 kg	Bag	Water	
RTC60-RBP1	22.6 kg	5 Gallon US	Water	
RTC60-RBP2	45 kg	2x 5 Gallon US	Water	
RTC60-TK	2x 2.25 kg	Bag	Water	
RTC70-EF-1	3.6 kg	Bag	1.1 kg	Quart US
RTC70-EFBP1	18.1 kg	5 Gallon US	4.5 kg	Gallon US
RTC70-EFBP2	36.2 kg	2x 5 Gallon US	9 kg	Gallon US

Grain size:

R : regular / M : medium / F : fine / TK : Fine + Regular

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.