

## RESTORATION

**REBUILD<sup>40</sup> R4**

*One-component thixotropic mortar for structural restorations of reinforced concrete*

**One-component thixotropic premixed mortar, classified as structural in R4 class (according to EN 1504-2). The balanced composition of natural silica sand and carbonate filler, together with the use of special additives, allow to obtain an excellent workability, as well as excellent adhesion performances and mechanical strength. The product is ideal for the restoration of reinforced concrete even in earthquake zone. Moreover, it is also suitable for all kind of concrete restoration and rebuilding, to be performed in short time.**

**BENEFITS**

- Excellent workability and thixotropy.
- Workability time 40 minute.
- Excellent adhesion to concrete.
- Class R4 according to EN 1504-2.
- Suitable to seismic zones.

**YIELD**

17 ± 5% kg/m<sup>2</sup> per cm of thickness,  
8.83 ± 5% lb/ft<sup>2</sup> per inc of thickness.

**COLOUR**

Dark gray.

**PACKAGING**

25 kg (55.12 lb) paper bag.  
Pallet: 48 bags (1200 kg – 2645.5 lb).

**CAMPI D'IMPIEGO**

*Rebuild<sup>40</sup> R4* is designed for the restoration of concrete and reinforced concrete structures in earthquake zones. The product is suitable for the restoration of pillars angles and damaged beams, as well as for the restoration of clear covers of concrete/clay floors, eaves, damaged balconies, retaining walls, reinforced concrete walls or exposed concrete structures. The mortar can be used indoor or outdoor.

**STORAGE**

Store the product in its original containers well

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closed, in well ventilated areas, away from sunlight, water and ice, at temperature higher than +5°C (41°F). Storage time: 12 months.

**PREPARATION OF SUPPORT****Concrete**

The substrate must be completely hardened and resistant enough. The surface must be thoroughly clean, well consolidated, without debris or detaching parts, greases or oils. Do not apply over frozen supports or if there is the probability of ice in the next 24 hours. Before product application, it is recommended to cover doorsteps, fixtures and each element that will not be coated. If the support is crumbly, it is recommended to totally scrape it until obtaining a good support. If necessary, sand the support: the thicker the layer, the rougher the surface. For supports not mentioned in this technical data sheet please contact Diasen technical department

**MIXING**

Depending on the degree of water absorption of the support and the environmental conditions, it is recommended to dose the right amount of water needed to obtain the correct adhesion. The amount of water specified is indicative.



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Mix the product using a tumbler mixer, a drill mixer or in the mixer of the spraying machine by gradually adding water to the powder. The mixture should not be mixed by hand.

*Rebuild<sup>40</sup> R4* must be diluted with 15 – 17% of clean water (3.5-4.5 l, 0.92-1.19 gal US per bag of 25 kg) until obtaining a plastic, homogeneous mixture, without clumps. Never add other substance to the product. If a whip drill mixer is used, mix at low speed to not absorb air in the mortar.

## APPLICATION

1. Before the mortar application, wet the support with water at low pressure until complete saturation, without leaving a superficial thin layer of water. A not complete saturation could compromise the adhesion of the mortar and it can create cracks.
2. On smooth and/or low absorbent concrete supports, pre-emptively apply the bonding primer *Aquabond* (see technical data sheet) to guarantee an excellent adhesion of the mortar *Rebuild<sup>40</sup> R4*.
3. *Rebuild<sup>40</sup> R4* can be applied by trowel (on little surfaces) or by spraying machines (on larger surfaces) until reaching the desired thickness. Next layers should have a thickness of 1-2 cm.
4. For total thickness up to 2 – 3 cm the product can be applied on sanded surfaces. In case of higher thickness, the support must be made rough to guarantee a higher adhesion.
5. For final higher thickness application, it is recommended to apply a layer of *Rebuild<sup>40</sup> R4* as regularization to uniform water absorption of the masonry and to improve the adhesion, and then to carry on with the application of next layers.
6. For thickness higher than 4 cm, between one layer and the other one, insert a fibre glass reinforcement mesh (*Polites 140*, see technical data sheet) or an electro-welded zinc mesh. The electro-welded mesh must be fixed with a nail to the

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- substrate, in order to guarantee a thickness of the cover of at least 1.5 cm.
7. During interruptions of spray application, it is necessary to carefully clean pipes with water pressure.
  8. Once the application is over, smooth the mortar to obtain a surface as flat as possible, taking care to wet the leveler.
  9. Trowel and smooth *Rebuild<sup>40</sup> R4* by using a sponge float. The mortar should be trowelled when placing a hand on the surface, the fingers do not sink but leave a slight impression. Correct trowelling prevents the formation of micro-cracks due to normal plastic shrinkage of the mortar.

## DRYING TIME

At a temperature of 23 °C and relative humidity of 50% the product dries completely in 8 hours.

- The drying times are influenced by the relative humidity of the environment, the temperature and may vary also in a significant way
- Make sure the curing of the product is completed within the first 24 hours.
- At 5–10 °C the curing is slower; it is therefore recommended to apply the mortar in the middle hours of the morning.
- In situations of high temperatures, hot sun or strong ventilation it is necessary to keep the masonry moist during the first stages of drying.

## SUGGESTIONS

- Apply *Rebuild<sup>40</sup> R4* within 40 minutes from the mixing (at 23°C/73.4°F and 50% relative humidity).
- Do not apply at temperatures lower than +5°C (+41°F) or higher than +35°C (+95°F).
- During summer season apply the product during the cooler hours of the day, away from sun.

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- Do not apply in case of imminent threat of rain or frost, in conditions of strong fog or with relative humidity level higher than 70%.

To finish the mortar, on outdoor applications *Argacem HP* o *Argatherm* smoothers or finishes such as *Acrilid Protect Coating* o *Diathonite Cork Render* can be applied on top of the hardened product. On indoor applications it can be used the smoother *Argacem HP* to obtain a rough surface or *Argacem Ultrafine* to realize perfectly smoothed surfaces. Both smoothers, when used in indoor applications, can be

painted with *C.W.C. Stop Condense*, *Limepaint*, *Diathonite Cork Render* or a breathable paint.

## CLEANING

The equipment used can be washed with water before curing the product.

## SAFETY

During handling, always use personal protective equipment and follow the product safety data sheet.

\* The reported data even if performed according to standard test methodologies are indicative and may be subject to changes to the specific site conditions.

## Technical Data\*

Features		Unit
Yield	17 ± 5% kg/m <sup>2</sup> per cm of thickness 8.83 ± 5% lb/ft <sup>2</sup> per inch of thickness s	kg/m <sup>2</sup>
Aspect	powder	-
Colour	dark grey	-
w/c ratio	0.15 – 0.17 3.5 – 4.5 L per bag (25 kg) 0.92 – 1.19 gal per bag (55.12 lb)	L - kg gal - lb
Mixture consistency	thixotropic	-
Grain size	from 0 to 1	mm
Oven-dry mass (powder material)	1364 ± 15%	kg/m <sup>3</sup>
Minimum application thickness	1.0	cm
Maximum application thickness per layer	2.0	cm
Application temperature	+5 /+35 +41/+95	°C °F
Application time ( <i>pot life</i> ) at T=+23°C/+73.4°F; U.R. 50%	40	min
Drying time (T=+23°C/+73.4°F; U.R. 50%)	8	hours
Storage	12 months in original packaging and dry place	months
Packaging	25 kg (55.12 lb) paper bag	Kg (lb)

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Whereas all indications and recommendations supplied herein are stated to the best of our experience and knowledge, they should be considered as indicative only and should be confirmed by exhaustive practical applications. Diasen doesn't know the peculiarity of the processing, or the characteristics of the support. Therefore, the applicator should carry out preliminary tests, in order to verify the suitability to the foreseen application, and in any case, he will take the responsibility of the intended use. In case of uncertainties or doubts, please contact the company's technical department, provided that this is only a simple assistance for the applicator: he should have the appropriate capabilities and experience in order to determine the more suitable solution. Always respect the latest update of the technical sheet available on [www.diasen.com](http://www.diasen.com)

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Final performances		Units	Regulations	Results
Compression resistance <i>after 28 gg</i>	46,0	MPa = N/mm <sup>2</sup>	UNI EN 12190 UNI EN 1504-3	class M 45
Bending strength <i>after 28 gg</i>	7,2	MPa = N/mm <sup>2</sup>	UNI EN 12190 UNI EN 1504-3	
Elastic modulus at compression <i>dopo 28 gg</i>	> 20	GPa	UNI EN 13412	-
Adhesion on brick	> 1,5	MPa = N/mm <sup>2</sup>	UNI EN 1504	-
Mass density of the mixture	1950 ± 50	kg/m <sup>3</sup>	UNI EN 1504	-
Mixture spreading	148	mm	UNI EN 13395-1	-
Thermal conductivity λ	0,225	W/mK	UNI EN 12667	-
Vapour permeability coefficient (μ)	25	-	UNI EN 1745	-



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