

VELOSIT[®] RM 205

Structural Concrete Repair Mortar R4

6 – 100 mm

DATA SHEET



HYCHEM

velosit

VELOSIT RM 205 is a cementitious repair mortar for concrete restoration acc. to EN 1504-9. It is used to fill large voids or build up larger cross-sections up to 100 mm.

VELOSIT RM 205 is a shrinkage compensated cementitious repair mortar with quick strength development.

VELOSIT RM 205 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 205 is the result of many years in the field testing and research. VELOSIT RM 205 is a cementitious repair mortar for concrete restoration acc. to EN 1504-9. It is used to fill large voids or build up larger cross-sections up to 100 mm.

TYPICAL APPLICATIONS

- Repair of large surface defects on concrete
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facade
- Application on horizontal and vertical incl. overhead areas
- Application thickness from 6 mm to 100 mm
- Used as micro-concrete
- Prime coat to fill blow holes, honeycombs and surface roughness

PROPERTIES

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Approval Standards - AS4020:2005 Potable Water
- Excellent workability
- Wide range of water addition
- Fiber reinforced
- Hydrophobic
- Final strength of more than 45 MPa after 28 days
- Open to foot traffic after 3 – 4 hours
- Excellent adhesion to properly prepared concrete
- Water curing only under hot and dry conditions required for 3 – 4 hours
- Good resistance against CO₂ and Chloride penetration due to a very tight pore structure
- Good weathering resistance
- Good sulfate resistance

TECHNICAL DETAILS

Color	light gray
Mixing ratio by weight	100 : 12
Mixing ratio by volume	100 : 20
Density	1.7 kg/l
Substrate temperature	5 – 35 °C
Initial set	120 min.
Final set	200 min.
Compressive / flexural strength	4 hours: 12 / 3 MPa 24 hours: 27 / 6 MPa 7 days: 41 / 8 MPa 28 days: 50 / 8 MPa
Adhesive strength *	primed with CP 201: 2.2 MPa
Restrained shrinkage*	2.1 MPa

*acc. EN 1542. Adhesion depends very much on proper surface preparation!

APPLICATION GUIDELINES

Surface preparation

VELOSIT RM 205 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

Steel

must be prepared to a purity of SA 2.5 acc. SIS 05 5900. Apply a corrosion protection coat on rebar with VELOSIT CP 201.

Concrete substrates

must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 25 mm behind rebar to fully embed the steel into VELOSIT RM 205.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa and for the compressive strength 30 MPa. Active water leaks must be treated and fully stopped with VELOSIT PC 222. Leaking cracks need to be sealed with Hychem Spetec PU injection. Before the application of VELOSIT RM 205, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair

acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results.

Processing

Mixing

Mix VELOSIT RM 205 with 11 – 16 % potable water, i.e. 2.3 – 3.2 l water per 20 kg bag. Fill the 11 % mixing water (2.3 l per bag) into a suitable bucket and mix the powder with a slow speed drill (300–600 rpm) into the water until a lump-free mix is achieved. Add up to max. 0.9 l water under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT RM 205 onto concrete.

Trowel application

Trowel VELOSIT RM 205 can be applied fresh in fresh into the prime coat. The product can be applied up to 100 mm on vertical areas. Make sure to work in sections that can be finished within 60 min. Rebars and other penetrations must be fully embedded into the mortar.

Spray application

Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency.

With mortar pumps add the mixed product as described under "Mixing" into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT RM 205 is a fast curing material and may be hard to remove if left in the machine.

micro-concrete

VELOSIT RM 205 can be mixed to a very plastic consistency and used as a micro-concrete. Pour the product into the shuttering and make sure to compact the pour properly for example with suitable vibration equipment.

Curing

VELOSIT RM 205 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

ESTIMATING

Repair of surface defects

20 kg VELOSIT RM 205 result in approx. 10.6 Litre cured mortar.

Surface Coating:

45 kg* VELOSIT RM 205 per m² for 25 mm dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 45 kg VELOSIT RM 205 powder + 5.4 kg water, i.e. 50.4 kg mixed material per 25 mm and m²

CLEAN UP

VELOSIT RM 205 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid and mechanical cleaning are required.

PACKAGING

20 kg watertight plastic bags

STORAGE

In unopened original packs for 12 months at 5 – 35 °C in a dry storage place protected against sunlight.

SAFETY

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

NOTE: Customer responsibility

The technical information and application advice given here is based on the best information available at the time of print. As the information herein is of a general nature, no assumption can be made as to the products suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by Commonwealth or State Legislation.

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If unsure contact Hychem for further technical advice before proceeding.

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ISSUE NUMBER 220620