VELOSIT[®] RM 208

Ultra High Strength Sewer Maintenance-Mortar R4



VELOSIT RM 208 is a micro-silica-modified cement-based repair mortar for the repair of underground sewage structures. It is used as a waterproofing and structural reinforcement in sewer structures. It is used to fill large voids or build up larger cross-sections up to 50 mm

VELOSIT RM 208 is a shrinkage compensated cementitious repair mortar with quick strength development.

VELOSIT RM 208 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 208 is the result of many years in the field testing and research. VELOSIT RM 208 is based on a complex formulation of mineral and organic identifiers and additives

TYPICAL APPLICATIONS

- Repair of large surface defects on concrete
- Surface coating of manholes, pipes, collectors and similar structures
- Processing on horizontal and vertical surfaces including overhead processing
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical incl. overhead areas
- Application thickness from 6 mm to 50 mm
- Used as micro-concrete

PROPERTIES

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Wide range of water addition
- Fiber reinforced
- 40 min. working time and extended finishing window
- Final strength of more than 65 MPa after 28 days
- Excellent adhesion to properly prepared concrete
- Good resistance against $\mathrm{CO}_{\rm 2}$ and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance

TECHNICAL DETAILS

Color	gray
Mixing ratio by weight	100 : 16
Mixing ratio by volume	100 : 27
Density	1.7 kg/l
Substrate temperature	5 - 35 °C
Initial set	120 min.
Final set	240 min.
Compressive / flexural strength	24 hours: 21 / 3 MPa 28 days: 69 / 10 MPa
Chloride ions	< 0.05 %
Carbonation resistance	passed
Capillary water absorption	0.1 kg/m ² x h ^{0.5}

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

Adhesive strength*	primed with CP 201: > 2.0 MPa sprayed: > 2.0 MPa
Restrained shrinkage*	> 2.0 MPa
Chloride penetration resistance:	< 550 C
Fire rating EN13501-1 days	Class A1

APPLICATION GUIDELINES

Surface preparation

VELOSIT RM 208 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&1/2 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 208.

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. Before the application of VELOSIT RM 208, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

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 208 with 15.5 - 18 % potable water, i.e. 3.1 - 3.6 l water per 20 kg bag. Fill the 15.5 % mixing water (3.1 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 more water (max. 0.5 l) under stirring until the desired consistency is achieved.

The product is workable for 40 min. at 23 °C.

Priming

Apply a prime coat of VELOSIT CP 201 before applying VELOSIT RM 208 onto concrete.

Trowel application

Trowel VELOSIT RM 208 can be applied fresh in fresh into the prime coat. The product can be applied up to 50 mm on vertical areas. Rebars and other penetrations must be fully embedded into the mortar.

Spray application

Use suitable spray machines such as:

- APM Spincaster
- 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 above 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.

With the APM Spincaster, manholes can be coated very conveniently. The wastewater flow does not have to be interrupted.

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 208 is a fast curing material and may be hard to remove if left in the machine.

Using as a micro-concrete

VELOSIT RM 208 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 208 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 24 hours is required.

ESTIMATING

Repair of surface defects

20 kg VELOSIT RM 208 result in approx. 10.6 litre cured mortar.

Surface Coating:

45 kg** VELOSIT RM 208 per m^2 for 25 mm dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

 ** 45 kg VELOSIT RM 208 powder + 7.2 kg water, i.e. 52.2 kg mixed material per 25 mm and m^2

CLEAN UP

VELOSIT RM 208 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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