

VELOSIT® RM 208

Ultra High Strength Sewer Maintenance- Mortar R4



Application fields

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 (2"). Typical application fields besides others are as follows:

- 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 (¼") to 50 mm (2")
- Used as micro-concrete

Properties

VELOSIT RM 208 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT RM 208 is based on a complex formulation of mineral and organic identifiers and additives. It's optimized grading allows for a very dense packing, which improves the cohesiveness and watertightness. VELOSIT RM 208 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 208 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 208 can be applied by trowel or suitable spray equipment.

- 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 (9425 psi) after 28 days
- Excellent adhesion to properly prepared concrete
- Good resistance against CO₂ 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
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 208 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

a.) 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.

b.) Concrete substrates must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) 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 (1") 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 (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed

with a PU injection material. Before the application of VELOSIT RM 208, 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.

2.) Processing

Mixing: Mix VELOSIT RM 208 with 15.5 – 18 % potable water, i.e. 3.9 – 4.5 l (1.0 – 1.15 gal.) water per 25 kg (55 lb.) bag. Fill the 15.5 % mixing water (3.9 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 2,5 % water 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.

a.) 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 (2") on vertical areas. Rebars and other penetrations must be fully embedded into the mortar.

b.) 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.

c.) 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.

3.) 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:

25 kg (55 lbs.) VELOSIT RM 208 result in approx. 13.3 liter (0.47 ft³) cured mortar.

Surface Coating:

45 kg (102 lbs.)* VELOSIT RM 208 per m² (10.7 ft²) for 25 mm (1") 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 m²

Cleaning

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.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 16
Mixing ratio by volume:	100 : 27
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set:	240 min.
Compressive / flexural strength:	
24 hours:	21 / 3 MPa (3046/435 psi)
28 days:	69 / 10 MPa (10005/1450 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m ² x h ^{0.5}
Adhesive strength**:	
- primed with CP 201:	> 2.0 MPa (319 psi)
- sprayed:	> 2.0 MPa (319 psi)
Restrained shrinkage**:	> 2.0 MPa (305 psi)
Chloride penetration resistance:	< 550 C
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT RM 208 is available in 20 kg (44 lb.) and 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 208 can be stored in unopened original packs for 12 months at 5 – 35 °C (40 – 95 °F) 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.

Recommendations

VELOSIT RM 208 is only available for professional applicators.

Never add water to VELOSIT RM 208 when it has started to set. Stiffened material must be disposed.

All described product features are determined under controlled laboratory conditions according to the relevant international standards. Values determined under job site conditions may deviate from the stated values.

Please always use the latest version of this data sheet available from our website www.velosit.de.

Manufacturer

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