VELOSIT® SR 207

Sulphate Resistant
High Build Structural Grade
Concrete Repair Mortar R4

CE
EN1504-3
Class R4

Application fields

VELOSIT SR 207 is a Sulphate-resistant, structural grade 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 (4”) specifically designed for repairs in sewage and waste water structures. Typical application fields besides others are as follows:

- Repair of large surface defects on in concrete manholes, primary & secondary sewage treatment basins and waste water treatment plants
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application Suitable on horizontal, and vertical incl. overhead applications
- Application thickness from 6 mm (¼“) to 100 mm (4”)
- Used as micro-concrete

System components:
Corrosion inhibiting pimer: VELOSIT CP 201
Structural repair mortar: **VELOSIT SR 207**

Properties

VELOSIT SR 207 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT SR 207 binds the mixing water fast reducing or completely eliminating the need for water curing and protection after application. VELOSIT SR 207 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT SR 207 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 SR 207 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 to meet different workability requirements
- Fiber reinforced with grain sizes reaching 4mm
- Hydrophobic
- Advanced corrosion inhibitor technology
- 30 min. working time and 12 MPa (1740 psi) compressive strength after 4 hours
- Final strength exceeds 45 MPa (6525 psi) after at 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 max. 4 hours
- Good resistance against CO_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 sulphate resistance
- Light gray grey colour close to that of concrete

Application

1.) Substrate preparation

VELOSIT SR 207 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 as a bridging primer.

a.) 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.

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 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT SR 207.

Substrate must be rough, pore-open and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and 30 MPa (4350 psi) 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 SR 207, dampen the substrate with plenty of clean water to a saturated surface dry (SSD) condition. This is a precautionary measure to prevent pre-mature water loss.

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 SR 207 with 12 % potable water, i.e. 3 l (0.8 gal.) water per 25 kg (55 lb.) bag. Fill the 12 % mixing water (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.
The product is workable for 30 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT SR 207 onto concrete.

a.) Trowel application: Trowel VELOSIT SR 207 can be applied fresh -in -fresh into the prime coat. The product can be applied up to 100 mm (4”) on vertical areas in a single application. Make sure to work in sections that can be finished within 30 min. at 23°C. Higher temperatures reduce, lower temperatures increase the required wait times. Rebars and other penetrations must be fully embedded into the mortar.

b.) 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 spraying. 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 SR 207 is a fast curing material and may be hard to remove if left in the machine. Once cured, VELOSIT SR 207 can only be removed mechanically.

Never overcoat joints or underrated cracks as this will most likely result in surface cracks!

c.) VELOSIT SR 207 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 SR 207 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:

25 kg (55 lbs.) VELOSIT SR 207 result in approx. 13.3 liter (0.46 ft^3) cured mortar.

Surface Coating:
45 kg (100 lbs.)* VELOSIT SR 207 per m^2 (10.7 ft^2) for 25 mm (1”) dry mortar thickness on smooth & level

substrates. Consumption will increase proportionately to roughness of substrate surfaces.Depending on surface roughness application rates can be significantly higher.
* 45 kg VELOSIT SR 207 powder + 5.4 kg water, i.e. 50.4 kg mixed material per 25 mm and m^2

Cleaning

VELOSIT SR 207 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 Grey
Mixing ratio by weight:	100 : 12
Mixing ratio by volume:	100 : 20
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	50 min.
Final set:	70 min.
Compressive / flexural strength:	
4 hours:	12 / 3 MPa (1740/335 psi)
24 hours:	30 / 6 MPa (4350/870 psi)
7 days:	40 / 7 MPa (5800/1015 psi)
28 days:	45 / 7 MPa (6525/1015 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
Adhesive strength*:	
- primed with CP 201:	2.2 MPa (319 psi)
Restrained shrinkage*:	2.1 MPa (305 psi)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT SR 207 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SR 207 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 SR 207 is only available for professional applicators.

Never add water to VELOSIT SR 207 when it has started to set. Stiffened material must be disposed.

VELOSIT SR 207 can be mixed with up to 16% water. But the increased water leads to significantly lower final strength values.

VELOSIT SR 207 creates significant heat of hydration. Especially in warm conditions and high application thickness sufficient heat exchange must be possible. Never encase large bodies of VELOSIT SR 207 in thermal insulation during curing.

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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