



VELOSIT® SL 503

HIGH STRENGTH SELF LEVELING OVERLAYMENT

Product Description

VELOSIT SL 503 is a cementitious self leveling overlayment for concrete floors. It creates an abrasion resistant smooth surface.

VELOSIT SL 503 is a shrinkage compensated self leveling overlayment based on a special cement with very quick strength development. VELOSIT SL 503 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. VELOSIT SL 503 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 503 is the result of many years in the field testing and research. VELOSIT SL 503 is a cementitious self leveling overlayment for concrete floors.

Typical Applications

- Interior and exterior floors
- Leveling of concrete slabs and floors as a finished surface
- Repair of surface defects on concrete floors
- Application thickness from 3 mm to 38 mm

Properties

- Ready for covering with ceramic tiles after 4 hours, for moisture sensitive floor coverings after 16 hours
- Ready for foot traffic after 3 hours, for forklift traffic after 16 hours
- Resistant to freeze/thaw cycles
- Excellent flow with long slump life
- Final strength of more than 60 MPa after 28 days
- Good resistance against CO₂ and Chloride penetration due to a very tight pore structure
- Excellent water resistance, no strength loss under water
- Good weathering resistance
- Good sulfate resistance
- Smooth surface profile
- Very good adhesion to properly prepared concrete
- Fast air release with minimal requirement for agitation

Technical Details

Color	Light gray
Mixing ratio by weight	100 : 21
Mixing ratio by volume	100 : 34
Density	1.6 kg/l
Substrate temperature	10 – 35°C
Initial set	50 min.
Final set	95 min.



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Compressive / flexural strength	4 hours: 20 / 4 MPa 24 hours: 43 / 7 MPa 7 days: 51 / 8 MPa 28 days: 65 / 9 MPa
Chloride ions	< 0.05%
Carbonation resistance	Passed
Capillary water absorption	0.1 kg/m ² x h ^{0.5}
Adhesive strength*	Primed with Hychem GP Epoxy: 2.3 MPa Primed with PA 911: 1.6 MPa
Restrained shrinkage	2.0 MPa
Length change after 56 days	Dry storage: - 0.4 mm/m (- 0.04%) Water storage: + 0.0 mm/m (+ 0.00%)
Fire rating EN13501-1	Class A1 _{fi}

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

APPLICATION GUIDELINES

Surface preparation

VELOSIT SL 503 is designed for concrete substrates. Steel may be coated with a suitable bonding bridge.

Steel

Must be prepared to a purity of SA 2.5 acc. SIS 05 5900.

Concrete

Must be prepared with sand blasting, shot blasting or high pressure water blasting (> 100 bar) to remove all bond breaking substances. 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. Lower strength values can be accepted if lower adhesive strength is acceptable. Active water leaks must be treated and fully stopped with VELOSIT PC 222. Leaking cracks need to be sealed with a Hychem Spetec PU Injection material.

Priming

Steel

Apply a corrosion protection coat on rebar with VELOSIT CP 201. Other steel areas can be primed with Hychem E100SS or E500P with a full broadcast (suitable quartz sand ϕ 0.7 mm – 1.25 mm). Steel may expand and contract differently under temperature changes than a cementitious mortar. Thus steel application is only recommended if steel is embedded in larger concrete bodies or the temperature is not subject to major changes.

Concrete substrates

Concrete substrates with a humidity of max. 4% and a water vapor emission rate of less than 0.6 g/m²h can be primed with VELOSIT PA 911 (Acrylic Primer). VELOSIT PA 911 is ready to receive the leveler usually after 2 – 3 h curing. At higher moisture levels or in case the moisture levels in the substrate are expected to increase, priming must be done with Hychem GP Epoxy. VELOSIT SL 503 can be applied into the tacky primer coating within 2 – 4 hours after application. Longer wait times require a full broadcast with suitable quartz sand ϕ 0.7 mm – 1.25 mm into the primer.



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Processing

Mixing

Mix VELOSIT SL 503 with 21 – 22% potable water, i.e. 4.2 – 4.4 l water per 20 kg bag. Fill the 21% mixing water (4.2 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. Use a cage type mixing paddle to reduce the air entrainment into the mix. Add max. 1% additional water under stirring until the desired consistency is achieved. Do not over water the product!

VELOSIT SL 503 may be extended with up to 50% clean and dried silica sand 1 – 2 mm for large application thickness.

VELOSIT SL 503 can be colored within organic pigments. Add dry pigments together with the product to the mixing water and stir until a streak-free mix is achieved. Do not add more than 3% pigments.

The product is workable for 30 – 40 min. at 23°C.

Rake application

Pour VELOSIT SL 503 onto the primed substrate and rake to the desired thickness. Make sure there are no bond breaking substances on the primer. The product can be applied up to 38 mm in one application. Make sure to work in sections that can be finished within 30 min. Immediately after pouring use gauge rake to achieve thickness and force entrapped air to the surface. Alternatively a spiked roller can be used to help air to the surface at larger application thickness. Higher temperatures shorten the pot life. Lower temperatures increase the pot life. Finish with a smooth rake.

Pump application

Use suitable mortar pumps such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- m-tec duo mix 2000

In mixing pumps feed the powder into the product hopper and adjust the water to the specified rate. The water rate can be adjusted by comparing the flow with a hand-mixed batch with a correct water addition. Control the flow with a flow cone every 5 to 10 min. With mortar pumps add the mixed product as described under “Mixing” into the feed hopper of the pump and pump continuously.

Rake and smooth the material as described under section “**Rake application**”.

Long pump interruptions may result in clogging of the pump hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after pumping or before long spray interruptions. VELOSIT SL 503 is a fast curing material and may be hard to remove if left in the machine.

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

If used as an underlayment, VELOSIT SL 503 is ready to receive a coating after 16 hours. For use as a wear surface a clear sealer, a surface hardener or VELOSIT FH 921 (silicone enhanced floor hardener) is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents!

Curing

VELOSIT SL 503 does not require curing. Protect the applied product for 24 hours against direct sun light, wind and temperature changes exceeding 5°C.



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Coverage

Volume yield:

20 kg VELOSIT SL 503 result in approx. 11.4 Litre cured mortar.

Standard leveling:

10.5 kg* VELOSIT SL 503 per m² for 6 mm dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 10.5 kg VELOSIT SL 503 powder + 2.22 kg water, i.e. 12.7 kg mixed material per 6 mm and m²

Clean up

VELOSIT SL 503 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 and shelf life

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.

Warranties and Disclaimers

Hychem warrants that this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product is dependent upon the proper use and application of the product by the applicator. Hychem has no role in the application of the finished polymer other than to manufacture and supply its components. It is vital that the person applying this product understands the product and is fully trained and certified in the use of spray equipment and application of sol-gel materials. There are no warranties that extend beyond the description on the face of this instrument, except when provided in writing, directly by Hychem and executed under seal by a company officer.

Field Support

Field support where provided, does not constitute supervisory responsibility. Suggestions made by HYCHEM either verbally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they and not HYCHEM are responsible for carrying out procedures appropriate to a specific application.

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