

VELOSIT® SL 503

High Strength Self Leveling Polishable Overlayment



Application fields

VELOSIT SL 503 is a cementitious self leveling polishable overlayment for concrete floors. It creates an abrasion resistant smooth surface. It may also be used as a high strength underlayment for coatings and floor coverings. Typical application fields besides others are as follows:

- Interior and exterior floors
- Leveling of concrete slabs and floors as a finished surface
- Repair of surface defects on concrete floors
- Application thickness from 1/8" (3 mm) to 1 1/2" (38 mm). 5" (13 cm) when extended with aggregate

Properties

VELOSIT SL 503 is a shrinkage compensated self leveling polishable overlayment based on a special cement with very quick strength development. VELOSIT SL 503 binds the mixing

water very quickly 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 can be applied by rake or suitable pumping equipment.

- Minimal shrinkage/expansion under dry or wet curing conditions minimizing the risk of micro-cracking
- Excellent flow with long pot life
- Smooth surface profile
- Fast air release with minimal requirement for agitation
- Ready for foot traffic after 3 hours, for forklift traffic after 16 hours.
- 30 - 40 min. working time and 2900 psi (20 MPa) compressive strength after 4 hours
- Final strength of more than 8700 psi (60 MPa) after 28 days
- Excellent adhesion to properly prepared concrete
- 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
- Polishable

Application

1.) Substrate preparation

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

a.) Steel must be prepared to white metal

b.) Concrete substrates must be prepared with sand blasting, shot blasting or high pressure water blasting (>1450 psi/100 bar) to remove all bond breaking substances.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 290 psi (2 MPa) and for the compressive strength 4350 psi (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 221/222. Leaking cracks need to be sealed with a suitable VELOSIT IR injection resin.

Priming:

a.) Steel: Apply a corrosion protection coat on rebar with VELOSIT CP 201. Other steel areas can be primed with VELOSIT PR 303 with a full broadcast. 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.

b.) Concrete substrates with a humidity of max. 4% and a water vapor emission rate of less than 3 lbs./24h x 1000 ft² or 75% R.H. 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 VELOSIT PR 303 moisture mitigating epoxy. VELOSIT SL 503 can be applied into the tacky coating within 2-4 hours after application. Longer wait times (more than 5 days) require a full broadcast with 50-70 mesh clean dry silica sand into the primer.

2.) Processing

Mixing: Mix VELOSIT SL 503 with 21-22% potable water, i.e. 1.4 – 1.5 gal (5.3-5.5 l) water per 55 lb (25 kg) bag. Fill the 21% mixing water (1.4 gal 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. The product is workable for 30-40 min. at 70°F.

a.) 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 1 ½ " (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. Finish with a smooth rake.

b.) Pump application: 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 above into the feed hopper of the pump and pump continuously.

Rake and smooth the material as described under section a.).

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 12 hours. For use as a wear surface a clear sealer or surface hardener such as VELOSIT FH 921 is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents and for polishing.

3.) Curing

VELOSIT SL 503 does not require curing. Protect the applied product for 24 hours against direct sun light, wind and temperature changes exceeding 9°F (5°C).

Estimating

Volume yield:
44 lbs (20 kg) VELOSIT SL 503 result in approx. 0.40 ft³ (11.4 liters) cured mortar. 20 sqft/bag at 1/4" (6 mm).

Cleaning

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.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 21
Mixing ratio by volume:	100 : 34
Density:	1.6 kg/l
Substrate temperature:	50 – 95°F (10-35°C)
Initial set:	50 min.
Final set:	95 min.
Compressive / flexural strength:	
4 hours:	2900/580 psi (20/4 MPa)

24 hours:	6235/1015 psi (43/7 MPa)
7 days:	7395/1160 psi (51/8 MPa)
28 days:	8990/1305 psi (62/9 MPa)
Chloride ions:	< 0.05%
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m ² x h ^{0.5}
Adhesive strength**:	
- primed with PR 303:	334 psi (2.3 MPa)
- primed with PA 911:	232 psi (2.6 MPa)
Restrained shrinkage:	290 psi (2 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

Packaging

VELOSIT SL 503 is available in 44 lb (20 kg) watertight plastic bags.

Storage

VELOSIT SL 503 can be stored in unopened original packs for 12 months at 40-95°F (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.

Recommendations

VELOSIT SL 503 is only available for professional applicators.

Never add water to VELOSIT SL 503 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. Velosit USA LLC warrants this product for a period of 1 year from the date of installation to be manufactured without defects and to be consistent with printed

The logo for Velosit, featuring a stylized blue 'V' symbol followed by the word 'velosit' in a bold, lowercase, sans-serif font.

technical characteristics. Velosit USA LLC makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied.

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

Effective date

June 2015

Manufacturer

VELOSIT GmbH & Co. KG
Industriepark 7
32805 Horn-Bad Meinberg
Germany