VELOSIT® SL 502

Universal Self Leveling Underlayment

Application fields

VELOSIT SL 502 is a cementitious self leveling underlayment for concrete substrates. It creates a very smooth surface for coatings and floor coverings. Typical application fields besides others are as follows:

- Interior and exterior use
- Suitable for permanently water immersed applications
- Leveling of concrete slabs and floors
- Cosmetic repair of surface defects on concrete floors
- Structural repair of concrete
- Application thickness from 3 mm (1/8”) to 38 mm (1 ½“)
- Self leveling screed
- Floor heating systems
- As a binder for terrazzo floors

Properties

VELOSIT SL 502 is a shrinkage compensated cementitious self leveling underlayment with very quick strength development. VELOSIT SL 502 binds the mixing water very fast allowing a very short wait time before it can be covered. VELOSIT SL 502 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 502 meets the requirements of EN 13813 class CT-C50-F7.

VELOSIT SL 502 can be applied by rake or suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent flow with long slump life
- Smooth surface profile
- Fast air release with minimal requirement for agitation
- Ready for covering with ceramic tiles after 4 hours, for moisture sensitive floor coverings after 16 hours

- 30 – 40 min. working time and 16 MPa (2340 psi) compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 3 hours
- Excellent adhesion to properly prepared concrete
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Excellent water resistance, no strength loss under water
- Good weathering resistance
- Good sulfate resistance
- Colors: Light gray, gray, anthracite

Application

1.) Substrate preparation

VELOSIT SL 502 is designed for concrete substrates. Steel may be coated with a suitable bonding bridge. Also plywood or OSB-floors with an engineers design for minimal deflection can be coated.

a.) Steel
must be prepared to a purity of SA 2.5 acc. SIS 05 5900.

b.) Concrete
substrates must be prepared with sand blasting, shot blasting or high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances.
Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3450 psi). 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.

Leaking cracks need to be sealed with a PU injection material.

c.) Wooden substrates
must be free from bond breaking substances. Otherwise the surface must be sanded before priming.

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 (suitable quartz sand 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.

b.) Concrete substrates
with a humidity of max. 4 % and a water vapor emission rate of less than 0.6 g/m²h (3 lbs./24h x 1000 ft²) 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. VELOSIT SL 502 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 ⌀ 0.7 – 1.25 into the primer.

c.) Wooden substrates
must be primed with VELOSIT PU 412. Wood substrates swell with water. An overlay is only permitted if these are completely dry before the application and no negative side water source will impact the topping later on. Wood is generally not a sufficiently load bearing substrate to achieve high adhesive strengths. A mechanically fastened mesh can increase the bond to the wood substrate.

2.) Processing

Mixing: Mix VELOSIT SL 502 with 18 – 20 % potable water, i.e. 4.5 – 5.0 l (1.2 – 1.3 gal.) water per 25 kg (55 lb.) bag.

Note: for the anthracite color, 1 % (0.25 l = 0.07 gal.) more water per 25 kg is required, i.e. 4.75 - 5.25 l (1.3 – 1.4 gal.) per 25 kg (55 lb.).

Fill 18 % mixing water (4.5 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. 2 % additional water under stirring until the desired consistency is achieved. VELOSIT SL 502 may be used as a binder for terrazzo. For this application 2.5% of inorganic pigments like iron oxide or titanium oxide may be added and the water
demand can be increased by up to 4 %. Do not over water the product!
The product is workable for 30 – 40 min. at 23 °C.

a.) Rake application:
Pour VELOSIT SL 502 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 (1 ½ ”) 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 surface at larger application thickness. Finish with a smooth rake.

b.) 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
- 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 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 502 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!

c.) Application as a terrazzo binder:
VELOSIT SL 502 can be blended with 2.0 to 2.2 kg terrazzo aggregate 6 – 9 mm per kg VELOSIT SL 502 (for example in a free fall mixer). The mix must be compacted manually to ensure a uniform distribution of the aggregates.
Alternatively, the aggregate can be applied as a loose mix with a small amount of a transparent binder the substrate. After the binder has cured VELOSIT SL 502 is poured onto the surface until all voids between the aggregates have been filled. The terrazzo floor can be ground with a diamond grinder / fine grinding and polishing after 1 day or later.

3.) Curing

VELOSIT SL 502 does not require curing. Protect the applied product for 24 hours against direct sun light, wind and temperature changes exceeding 5 °C (9 °F).

Estimating

Volume yield:
25 kg (55 lbs.) VELOSIT SL 502 result in approx. 14.0 liter (0.49 ft^3) cured mortar.

Standard leveling:
11 kg (24 lbs.)* VELOSIT SL 502 per m^2 (10.7 ft^2) for 6 mm (1/4”) dry mortar thickness on smooth substrates. Depending on surface roughness

application rates can be significantly higher.
* 11 kg VELOSIT SL 502 powder + 1.9 kg water, i.e. 12.9 kg mixed material per 6 mm and m²

Cleaning

VELOSIT SL 502 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

Colors:	Light gray, gray, anthracite
Mixing ratio by weight:	100 : 19
Mixing ratio by volume:	100 : 30
Density:	1.6 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set (typical):	55 min.
Final set (typical):	105 min.
Compressive / flexural strength:	
4 hours:	16 / 3 MPa (2340/435 psi)
24 hours:	25 / 5 MPa (3626/725 psi)
7 days:	38 / 6 MPa (5511/870 psi)
28 days:	52 / 7 MPa (7540/1015 psi)
Adhesive strength*:	
- primed with PR 303:	1.8 MPa (261 psi)
- primed with PA 911:	1.5 MPa (218 psi)
Restrained shrinkage:	1.7 MPa (247 psi)
Length change after 56 days (typical):	
- dry storage:	- 0.5 mm/m (- 0.05 %)
- water storage:	+ 0.0 mm/m (+ 0.00 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SL 502 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SL 502 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 SL 502 is only available for professional applicators.

Never add water to VELOSIT SL 502 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.

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17
VELOSIT SL 502

EN 13813
Cementitious screed material for use internally in buildings
CT-C50-F7

Reaction to fire	$A1_{fl}$
Release of corrosive substances	CT
Compressive strength	C50
Flexural strength	F7