

VELOSIT® SC 243

Flowable Screed Cement



Application fields

VELOSIT SC 243 is a cementitious binder for flowable screed mixes produced on-site or at a batch plant. It is mixed with sand and aggregates creating a rapid hardening overlayment ready to receive flooring systems within 24 hours. VELOSIT SC 243 may also be used as a binder for special concrete mixes and mortar formulations. Typical application fields besides others are as follows:

- Interior and exterior use
- Bonded screeds
- De-coupled screeds on insulation or membranes
- On-site concrete mixes

Properties

VELOSIT SC 243 is a shrinkage compensated special cement formulation with very quick strength development. VELOSIT SC 243 binds the mixing water very fast allowing a very short wait time before it can be covered.

VELOSIT SC 243 surpasses the requirements of EN 13813.

VELOSIT SC 243 is processed with suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent flowable workability
- Ready for covering with ceramic tiles after 6 hours, for moisture sensitive floor coverings after 24 hours.
- 90 min. working time and 12 MPa (1740 psi) compressive strength after 6 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 5 hours
- Very good adhesion to properly prepared concrete
- Excellent water resistance, no strength loss under water
- High tensile strength allowing thin applications on de-coupled screed applications
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

Bonded screed application

VELOSIT SC 243 is designed for concrete substrates. Steel may be coated with a suitable bonding bridge.

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 1.0 MPa (145 psi) and for the compressive strength 20 MPa (2900 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.

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 must be primed with VELOSIT CP 201 and the screed can be applied wet in wet immediately after priming.

De-coupled screeds

a.) Insulation boards (EPS, XPS etc.) must be laid out on a solid substructure that prevents future settlement. A PE membrane is mandatory to avoid the screed mortar entering the joints and building bridges to the substrate. Use de-coupling strips on the wall termination.

b.) Existing membranes like bitumen sheets can be covered directly with a VELOSIT SC 243 based screed.

c.) Wooden substrates must be covered with a de-coupling membrane (for example PE sheet).

2.) Processing

Mixing: VELOSIT SC 243 requires 35-45% potable water, i.e. 8.8 – 11.3 l (2.3 – 3.0 gal.) water and 100 to 125 kg screed sand with a proper grading per 25 kg (55 lb.) bag. Depending on aggregate moisture fill the 20-35% mixing water (5.0-8.8 l per bag) into a freefall mixer and add the calculated amount of screed sand. 100 kg (220 lbs.) screed sand are usually 14 - 15 shovels. Add a bag of VELOSIT SC 243 and mix for 2 min. Check the consistency and add water to adjust the desired consistency (total water not to exceed 11.3 l). Small volumes can be hand-mixed in a suitable bucket. But we recommend the ready-to-use screed mix VELOSIT SC 244 for this application.

Replacing part of the sand with up to 10% per weight of the mix fly ash will improve flowability and strength development. Add the calculated water amount and add the powder and screed sand mix afterwards with a slow speed drill (300-600 rpm) into the water until a lump-free mix is achieved. Do not over water the product!

The product is workable for 90 min. at 23°C.

a.) Trowel application: Pour VELOSIT SC 243 screed onto the prepared substrate and level with a rake to the desired thickness. Finish with a screed trowel and compact the surface. Make sure to work in sections that can be finished within 60 min.

b.) Pump application: Suitable mortar pumps are for example:

- Brinkmann GmbH: Estrichboy FHS 200/3
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The screed mix must be prepared in a concrete batch plant and pumped within 90 min.

Mix design for 1 m³ (1 yd³):

VELOSIT SC 243:	460 kg (775 lb.)
Fly ash:	208 kg (350 lb.)
Sand 0 - 2 mm:	1.100 kg (1854 lb.)
Sand 2 - 4 mm:	312 kg (526 lb.)
Water*:	218 l (44 gal)

* incl. sand moisture

Adjust the slump with a Hägermann cone to a flow rate of 25 to 28 cm (10-11"). By using an aggregate grading including a fraction of 4-8 mm the amount of binder may be significantly reduced in the mix. For every sieve curve an fly ash quality separate lab trials are required.

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 pump interruptions. VELOSIT SC 243 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!

3.) Curing

VELOSIT SC 243 based screed do 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:

Based on above mix design: 25 kg (55 lbs.) VELOSIT SC 243 plus screed sand and fly ash result in approx. 54 liter (2.0 ft³) cured screed.

Consumption per m²:

- 1 cm thickness: 4.6 kg (10.1 lbs.)
- 4 cm thickness: 18.5 kg (40,7 lbs.)
- 5 cm (2") thickness: 23 kg (50.6 lbs.)

Cleaning

VELOSIT SC 243 screeds 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
Water demand:	35-45%
Density:	1.6 kg/l
Substrate temperature:	10 – 35°C* (50-95°F)
Initial set:	150 min.
Final set:	210 min.
Compressive / flexural strength:	
4 hours:	12 / 3 MPa (1740/435 psi)
24 hours:	28 / 4 MPa (4060/580 psi)
7 days :	40/ 6 MPa (5800/870 psi)
28 days:	47 / 7 MPa (6815/1015 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:	2.0MPa (290 psi)
Length change after 56 days	
- dry storage:	-0.3 mm/m (-0.04%)
- water storage:	+0.0 mm/m (+0.01%)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT SC 243 is available in 25 kg (55 lb.) watertight plastic bags and 1,500 kg (3,300 lb.) BigBags.

Storage

VELOSIT SC 243 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.

Used product containers must be emptied completely after use. They can be returned to VELOSIT GmbH & Co. KG on request.

Recommendations

VELOSIT SC 243 is only available for professional applicators.

Never add water to VELOSIT SC 243 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.

Effective date

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Manufacturer

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