VELOSIT® SC 245

Flowable Screed Cement

CE
EN13813

Application fields

VELOSIT SC 245 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 screed ready to receive flooring systems within 24 hours. VELOSIT SC 245 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
- Especially optimized for processing from 2 chamber silos or mobile screed processing units
- Fast traffic able concrete mixes
- Suitable for floor heating systems
- On-site concrete mixes

Properties

VELOSIT SC 245 is a shrinkage compensated special cement formulation with very quick strength development. VELOSIT SC 245 binds the mixing water very fast allowing a very short wait time before it can be covered.

VELOSIT SC 245 surpasses the requirements of EN 13813. Depending on the mix design screed formulations with a class CT-C50-F7 are achievable.

VELOSIT SC 245 is processed with suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent flowable workability
- Variable water addition
- 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 with suitable sand quality and 32 % water addition
- 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 245 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 245 based screed.

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

Refer to applicable cement screed guidelines for dimensions of joints.

2.) Processing

Mixing:
VELOSIT SC 245 requires 28 – 34 % potable water. Consider the aggregate moisture in the calculation of the water demand. Aggregate moisture is often between 3 and 5 %.

- In a barrel mixer (for example GB Mobileman D3): Depending on aggregate moisture use 20 – 34 % water and add VELOSIT SC 245 under stirring. Add calculated around of aggregate and continue stirring until a homogeneous mix is achieved.

- in a continuous mixer from a two chamber silo: Meter sand and VELOSIT SC 245 at the calculated mixing ratio and use slightly more water than calculated. Then gradually reduce the water addition until the correct consistency is achieved.

With both systems the water addition is controlled through the flow. Adjust the flow with a Hägermann cone to 26 cm. Discard or or recycle the material before the correct consistency is achieved.

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.

Application: Pump the screed mix in the desired thickness on the prepared substrate. Agitate to remove air and help leveling. Work in sections that can be finished in 60 min.

Mix design for 0,25 m^3 (0.33 yd^3):

VELOSIT SC 245:	160 kg (352 lb.)
Sand 0 - 4 mm:	340 kg (748 lb.)
Water*:	46 l (12.2 gal)

* incl. sand moisture

The binder amount can be adjusted between 32 and 35 % of the dry mix. Water content shall be kept below 34 % from the VELOSIT SC 245 content. Additional water prolongs the drying time and reduces the final strength. Each sand quality requires preliminary tests.

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 245 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! Refer to DIN 18560 in regards to the positioning of joints.

3.) Curing

VELOSIT SC 245 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: 1.000 kg (2.200 lbs.) VELOSIT SC 245 plus 2.125 kg (4.675 lb.) screed sand and and 290 l water result in approx. 1.6 m^3 (56 ft^3) cured screed.

Consumption at 32 % binder per m^2:
1 cm thickness: 6.4 kg (14.1 lbs.)
4 cm thickness: 25.6 kg (56.3 lbs.)
5 cm (2“) thickness: 32.1 kg (70.6 lbs.)

Estimating of the residual moisture
Moisture content of VELOSIT SC 245 based screeds can be determined by drying at 45 °C (113 °F). The CM method gives higher readings exceeding the real residual moisture as much as 5 %.
VELOSIT SC 245 is capable of binding water in an amount of 29 % of it weight. When the product is mixed with max. this amount of water residual moisture readings are usually below 2.0 % within 24 hours at 23 °C (73 °F). If the water level is raised to the max. allowable 34 % the residual moisture after 24 hours will be around 3.6 %. The readiness for flooring materials then depends on the drying conditions over the following days.

VELOSIT SC 245 based heated floors can start the temperature protocol after 24 hours curing.

Cleaning

VELOSIT SC 245 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:	28 – 34 %
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)

Initial set:	150 min.
Final set.	210 min.

Compressive / flexural strength (29 % water)
(32 % SC 245):

6 hours:	13 / 3 MPa (1885/435 psi)
24 hours:	25 / 4 MPa (3626/580 psi)
7 days:	40/ 6 MPa (5801/870 psi)
28 days:	51 / 7 MPa (7397/1015 psi)

Adhesive strength*:
- primed with CP 201: 2.0MPa (290 psi)

Length change after 56 days:

- dry storage:	- 0.3 mm/m (- 0.03 %)
- 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!

The proportion of mixing water influences the achievable final strength. Increasing the water to 34 % will reduce the strength values by approximately 25 % compared to mixes with 29 % water. The grain strength of the used sand also has an influence on the achievable strength values.

Packaging

VELOSIT SC 245 is available in 1.000 kg (2.200 lb.) BigBags or in bulk.

Storage

VELOSIT SC 245 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 SC 245 is only available for professional applicators.

Never add water to VELOSIT SC 245 when it has started to set. Stiffened material must be disposed. Sand, water and VELOSIT 245 shall be at 10 – 30 °C (50 – 86 °F) during installation. Never use raw materials colder than 5 °C (41 °F).

Raw material temperatures of 30 °C (86 °F) and higher cause a significant reduction in working time. Using ice water can compensate high sand temperatures to a certain degree.

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

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