VELOSIT® SC 250

Economic Flowable Screed Cement

Application fields

VELOSIT SC 250 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 fast hardening screed. 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
- Suitable for floor heating systems

Properties

VELOSIT SC 250 is a shrinkage compensated special cement formulation with quick strength development. VELOSIT SC 250 binds the mixing water fast allowing a covering with various materials after 10 – 14 days.

VELOSIT SC 250* surpasses the requirements of EN 13813. Depending on the screed formulation class CT-C20-F4 to CT-C35-F6 can be achieved.

VELOSIT SC 250 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 3 days, for moisture sensitive floor coverings after approx. 14 days**
- 90 min. working time and 12 MPa (1740 psi) compressive strength after 24 hours
- Final strength of more than 30 MPa (4350 psi) after 28 days* with suitable sand quality and 32% water addition
- 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
- Gray color close to concrete color

* 28–35 % VELOSIT SC 250 plus 65 – 72 % Sand 0 – 8 mm
** Formulation acc. Point 2.) a.)

Application

1.) Substrate preparation

Bonded screed application

VELOSIT SC 250 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.

<u>Priming:</u>

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 250 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 250 requires 27 – 32 % potable water. Consider the aggregate moisture in the calculation of the water demand. Aggregate moisture is often between 3 and 5 %. Do not over water the product!

- In a barrel mixer (for example GB Mobileman D3): Depending on aggregate moisture use 20 – 32 % water and add VELOSIT SC 250 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 250 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.

a.)
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 (1/3 yd^3):

VELOSIT SC 250:	160 kg (352 lb.)
Sand 0 – 8 mm*:	340 kg (748 lb.)
Water**:	46 l (12.2 gal)

*Sieve curve between A8 and B8
** incl. sand moisture

The binder amount can be adjusted between 25 and 35 % of the dry mix from the content VELOSIT SC 250. Water content shall be kept below 32 %. 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 250 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 250 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 250 plus 2.125 kg (4.675 lb.) screed sand and 280 l water result in approx. 1.55 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.)

Consumption at 28 % binder per m^2:
1 cm thickness: 5.7 kg (12.5 lbs.)
4 cm thickness: 22.7 kg (50.0 lbs.)
5 cm (2“) thickness: 28.4 kg (62.5 lbs.)

Estimating of the residual moisture

Moisture content of VELOSIT SC 250 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 2 %.
VELOSIT SC 250 is capable of binding water in an amount of 28 % of it weight which takes about 14 days at 23 °C (73 °F). When the product is mixed with max. this amount of water residual moisture readings are usually below 2.0 % within 14 days at 23 °C (73 °F). If the water level is raised to the max. allowable 32 % the residual moisture after 24 hours will be around 3.3 %. The readiness for flooring materials then depends on the drying conditions over the following days.

VELOSIT SC 250 based heated floors can start the temperature protocol after 24 hours curing.

Cleaning

VELOSIT SC 250 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:	27 – 32 %
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	180 min.
Final set:	240 min.

Compressive / flexural strength (28 % SC 250):

6 hours:	5 / 2 MPa (725/290 psi)
24 hours:	11 / 3 MPa (1595/435 psi)
7 days:	19 / 4 MPa (2755/580 psi)
28 days:	24 / 4 MPa (3480/580psi)

Compressive / flexural strength (32 % SC 250):

6 hours:	6 / 2 MPa (870/290 psi)
24 hours:	12 / 3 MPa (1740/435 psi)
7 days:	22 / 4 MPa (3190/580 psi)
28 days:	31 / 5 MPa (4495/725 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!

Reducing the VELOSIT SC 250 content to 28 % will reduce the strength values by approximately 15 %. Increasing the water to 32 % will reduce the strength values by approximately 25 % compared to mixes with 28 % water. The grain strength of the used sand also has an influence on the achievable strength values.

Packaging

VELOSIT SC 250 is available in 1.000 kg (2.200 lb.) BigBags.

Storage

VELOSIT SC 250 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 250 is only available for professional applicators.

Never add water to VELOSIT SC 250 when it has started to set. Stiffened material must be disposed.

Sand, water and VELOSIT SC 250 must be in a temperature range of 10 – 30 °C (50 – 86 °F) at the time of installation. Never install at raw material temperatures of less than 5 °C (40 °F).

Raw material temperatures above 30 °C (86 °F) reduce the pot life significantly. High sand temperatures can be partly compensated by using ice water.

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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VELOSIT SC 250

EN 13813
Cementitious screed material for use internally in buildings
CT-C25-F4

Reaction to fire	$A1_{fl}$
Release of corrosive substances	CT
Compressive strength	C25
Flexural strength	F4