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Technical Information

www.velosit.de

2020

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Technical Information 2020

This book is intended to supply technical guidelines for the use of VELOSIT systems based on the state of our literature in November 2019. It represents an extract of the available products and should be used as a reference only. Refer to our website **www.velosit.de** for the latest and legally binding version of the data sheets.

Table of contents

About VELOSIT

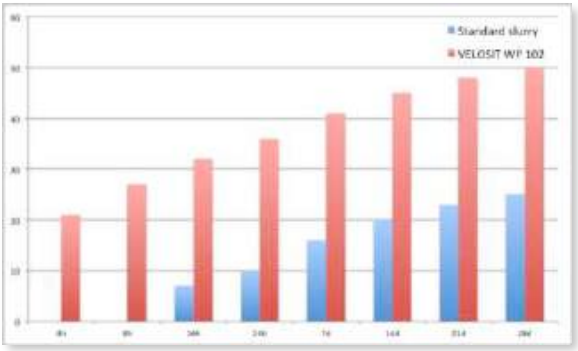
VELOSIT is based on decades of experience in R & D, production and consulting for high performance construction materials which are fully conversant with modern construction techniques, all conducted in harmonious team working. Our global team combines the latest construction methods with novel proven chemistries.

In mid-2015, our new production facility for dry mortar, dispersion products and swellable water stops went into operation. The factory is located in the new "Industriepark Lippe" in East Westphalia, which still offers plenty of room for expansion. The location is close to two freeways and has all the main commodities within just 50 km (30 mile). After just over three years in the market, we have reached our capacity limit for the first time and need to expand accordingly. In December 2018 we have applied for the building permit for our second warehouse and will invest again in production technology.

This experience behind **VELOSIT** has been utilized to design and formulate products based on state-of-the-art technologies approved for the construction industry. The novel **VELOSIT Binder Formula** is the "platform technology" for our cementitious mortars, waterproofing and self leveling

Introduction

product ranges. A range that offers easily mixed & applied products with good workability times, extremely rapid strength development with no shrinkage in addition to outstanding chemical, mechanical and water-resisting properties, requiring minimal or no post-application curing. The applied "platform technology" enables us to create products with very predictable and safe properties. Alongside the cementitious waterproofing range we also offer polyurea-based protective coatings which offer extraordinary physical and chemical-resistant properties.



VELOSIT GmbH & Co. KG is managed by its owners who believe in making distances closer, decision making faster and providing customers with their requirements. Not only are our products "fast"; you will also experience quick, precise and technical answers to your queries coupled with short delivery times and adequate after sales service.

The **VELOSIT** plant is designed to manufacture 8,000 tons of cementitious and polymer based products per year in one shift. Production capacity can easily be increased as the whole factory is based on a modular design.

Our mission is speed and flexibility and these are the cornerstones that determined the layout of the plant. All cementitious products are supplied in eco-friendly and very resistant PE packaging. Filling volumes and even the labelling can be modified without delay to accommodate the needs of our clients in regards to language or work safety requirements.

Introduction

We always stock sufficient raw material quantities to supply at least 20 tons of each product in our range without re-ordering. For the volume products we are capable of making 50 tons on short notice.

The powder production line is equipped to produce fine cementitious mortars and micro concrete formulations with a grading of up to 4 mm grain size. Besides the standard PE bags we are also capable of filling jumbo bags and mobile silos.

VELOSIT has optimized the procedure for international shipments. Most products can be exported within 24 hours from the reception of the order regardless if it has to leave by truck, in LCL or full container load quantities. We can arrange the whole door-to-door shipping and provide all required documents including legalization if requested.

We want to make your experience with us as pleasant as possible. There are no corporate procedures in place, you will deal with motivated people that want to get your problems solved as quick as possible.

SEMPER VELOX[1]

[1] latin: always fast

System overview

VELOSIT systems allow completion of numerous subsequent applications in a significantly shorter time. Our systems are adjusted to avoid wait times between applications allowing uninterrupted continuous work flow.

Our target is to help you complete any multi-step application in just one day. **VELOSIT** currently supplies product systems for concrete and sewage repair, water- and vapor proofing and various flooring solutions.

Concrete and sewage repair

VELOSIT concrete repair systems create new possibilities for the completion of demanding projects.

VELOSIT mortars achieve compressive strengths higher than those of the host concrete only after one day and in most cases without the requirement for any post-application water curing. We have various repair mortars available that are all in compliance with EN 1504-3.

Cosmetic concrete repairs can be finished with **VELOSIT RM 203** in minutes. The mortar allows an application thickness of up to 100 mm (4“) in one lift and is ready to receive a coating or tiles within one hour.

For structural repair our system based on **VELOSIT RM 205** gives a rapid solution with unique properties. The mortar is workable for 60 min. and develops 20 MPa (2900 psi) after only 4 hours. Unless applied in very hot conditions no curing is required and the risk of

cracks is negligible. Even ramps from 3 mm (1/8“) to 100 mm (4“) can be designed in one application without cracks.

For sewage structure we offer the spray mortar **VELOSIT RM 208** which is optimized for spray application in medium thickness of 6 to 25 mm (1/4“ to 1“). It is especially economic when used with a Spincaster spray nozzle for resurfacing of manholes.

Our bonding bridge **VELOSIT CP 201** contains a silane based active corrosion inhibitor which results in exceptional passivation of the reinforcement.

Find more information about the concrete repair products from page 35 onwards.

Water and vapor proofing

The **VELOSIT** range of waterproofing systems contains cementitious, flexible cementitious, crystalline, bituminous and polyurea based coatings. Besides that we have a complete range of joint waterproofing systems, crystalline admixtures, plug cements and a vapor barrier for concrete.

VELOSIT WP 101 is a rigid waterproofing slurry that develops 20 MPa (2900 psi) strength in as little as 4 hours. This allows you to apply further coats a lot faster compared to the actual market standard. Even the time consuming water curing has become completely obsolete with this product.

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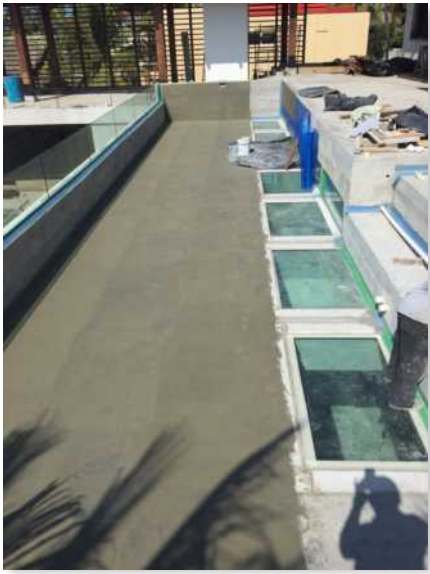

VELOSIT WP 121 is a unique crack bridging cementitious waterproofing slurry that cures in less than 3 hours. The product even develops its properties if applied in environments with high humidity or no air circulation which makes it ideal for closed water tanks.

Concrete can be treated integrally with crystalline admixtures like **VELOSIT CA 113** that gives concrete a self healing effect for cracks up to 0.4 mm width (16 mils). The same effect can be achieved with the crystalline waterproofing coating **VELOSIT CW 111** that does not require water curing after application.

Joints between concrete pours can be treated with our waterstop **VELOSIT WS 801** that swells up to 1000% in contact with water. Alternatively, joint tapes like our **VELOSIT DB 830** protect the face of a joint against water ingress.

For waterproofing and protection under harsh conditions polyurea based coating like **VELOSIT PU 400** give unsurpassed protection. With impressive flexibility and enormous abrasion resistance these coatings withstand conditions where most other materials fail.

VELOSIT PR 303 is a high performance epoxy primer and vapor barrier that works on damp substrates. It reduces the vapor transmission from up to 25 lbs./24h*1000ft^2 to less the 3 lbs./24h*1000ft^2 allowing the installation of water sensitive materials.

Find more information about the waterproofing products from page 74 onwards.

Flooring systems

VELOSIT offers a flooring program with a range of cementitious underlayments, overlayments and screeds. These products are almost zero-shrinkage and fully resistant to water, i.e. can be used on exterior applications as well. The line is completed with adhesives for various flooring materials, sealers and impregnations.

Commercial floors can be refurbished with the unique high performance self leveling overlayment **VELOSIT SL 503** in just one day. The product is ready to receive forklift traffic only 6 hours after application. This is probably the most economic and fastest way to refurbish a warehouse floor that needs to be back in service the following day.

The abrasion and chemical resistance of these floors can be significantly improved with our silicate/siliconate floor hardener **VELOSIT FH 921** which is also suitable for treatment of polished concrete floors.

Leveling of uneven concrete or asphalt substrates for subsequent flooring systems is possible in extremely short times with **VELOSIT SL 502**. Get up to 20 MPa (2,900 psi) after 4 hours which is more than enough for most adhesives or coatings.

Introduction

Combined with right choice of priming material the adhesion can be above 2 MPa (290 psi), which usually means substrate failure. For interior applications with no permanent water ingress our acrylate based primer **VELOSIT PA 911** is the most economic solution. For outside projects use **VELOSIT PR 303** in combination with a sand broadcast.

For higher application thickness on separation layer or insulation we have various screed systems available. Application can be done in semi-dry or with **VELOSIT SC 244** in a self smoothing consistency. Just pump the material in place and finish with a rake. Cementitious screed construction was never that easy before.

VELOSIT SC 245 is a special cement based on the same technology that allows production of flowable screeds in a dual chamber pump truck in combination with a suitable screed sand. This system is used for large areas where 20 or more tons screed are required. Most pump trucks will deliver in excess of 15 tons per hour of finished screed.

For the installation of tiles use our light weight tile adhesive **VELOSIT TA 703**. With only 1.3 kg/m² (3.7 ft² per lb.) with a 6 mm (1/4“) notched trowel you get an exceptional yield with this product. Besides that only 3 hours after application the floor can be opened for pedestrian traffic again.

Introduction

Find more information about the flooring products from page 167 onwards.

Application technology

Quality and productivity of the application of our systems depends strongly on the quality of the tools and machines in use. Unsuitable tools can lead to bad surface appearance, weak bond and always to extended labor cost.

Always use clean tools and have potable water available for mixing. The choice of your mixing bucket or drum in combination with the mixing paddle can have a major effect on the formation of lumps or air entrainment.

All our products are suitable for machine application. The selection of the right machine depends on the product and the size of the project. Small projects are handled with application pumps that only transport the product in 5 – 20 l/min (1 – 5 gal/min.) but mixing is done in a conventional way.

For small jobs a hopper gun can be a very effective tool. It is easy to operate and clean after use minimizing the preparation time. Anyhow, the output is limited and carrying the full hopper can become exhausting.

Auger pumps like the HighPump Small can deliver about 10 kg/min. which is a very good application speed for coatings and waterproofing materials. These products are applied in 2 mm (80 mil) thickness.

For application of repair mortars or self leveling products on jobs up to 200 m^2 (2,000 ft^2) a stronger auger pump like the HighPump Pictor is the best choice. The pump can deliver about 25 kg/min. of self leveling and has sufficient torque to pump viscous materials like a repair mortar.

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For larger applications a mixing pump like the HighComb Power works well. As these pumps need a little bit of adjustment when started there is some wastage of material. They also need be run continuously and do not tolerate long work interruptions. There is a very short but intense mixing time which may be a disadvantage with products that require a consolidation time like self levelers. This can be overcome with the use of a long hose but there are limits.

Stronger pumps like the M-tec Duomix 2000 end up with 20 - 30 sec. between the first contact of the product with water until it leaves the nozzle. The output is higher but some self levelers are not fully dispersed when they leave the nozzle.

Pumping semi-dry screeds requires a completely different type of pump as the material is almost not flowing. Screeds can be mixed and pumped with an Estrichboy DC 450 (Brinkmann GmbH).

Introduction

For flowable screeds we recommend an Estrichboy FHS 200/3 (Brinkmann GmbH). These are auger type pumps but with a very high output of up to 500 kg/min (1,100 lbs./min.).

For large projects screed logistics systems like the Transmix 3200 (Putzmeister GmbH) or the Mobileman D3 offer largest output and efficiency.

Our polyurea materials require a two component high pressure pump like the WIWA Duomix PU 460. This machine creates up to 180 bar (2,600 psi) and is capable of pumping 8 l/min. (2 gal./min.) of polyurea. To our experience smaller pumps with lower pressure will not create similar mixing results which results in rougher surface profiles and reduced mechanical properties of the cured material.

Introduction

The following chart gives some guidance in the selection of the right pumping equipment for your job.

Choosing the right pump	Hopper gun	HighPump Small	HighPump Pictor	HighComb Power	M-tec Duomix 2000	Estrichboy DC 450	Estrichboy EHS 200/3	TransMix 3200 Mobileman D3
Waterproofing slurry								
VELOSIT WP 101, 120 und 121	**< 20 sq.m**	**< 200 sq.m**	**any size**					
Self leveler								
VELOSIT SL 501 - 506		**< 30 sq.m**	**< 200 sq.m**	**> 30 sq.m**	**> 100 sq.m**			
Repair mortar								
VELOSIT RM products	**< 20 sq.m**	**< 30 sq.m**	**< 100 sq.m**	**> 30 sq.m**	**> 100 sq.m**			
Semi dry screed								
VELOSIT SC 240 - 242						**> 50 sq.m**		
Flowable screed								
VELOSIT SC 244			**< 30 sq.m**	**< 100 sq.m**	**< 200 sq.m**		**> 50 sq.m**	
VELOSIT SC 245								**> 50 sq.m**

Surface preparation

The success of all material applications which rely on the bond to the substrate is determined by a proper surface preparation. A proper adhesion can only be achieved if all bond-braking substances have been removed and the substrate has sufficient surface strength and profile to anchor the product. The optimum surface profile depends on the coating thickness, in general the rougher the better for the bond. But the surface roughness must be significantly lower for a 2 mm (80 mil) coating compared to a 25 mm (1“) concrete repair mortar application.

The choice of the surface preparation method should consider a couple of factors like:

- Hardness and soiling level
- Required adhesion of the mortar or coating
- Required surface roughness
- Sensitivity to water of the substrate material
- Surrounding area of the treated floor

Grinding

A very common and rather inexpensive method to achieve a good texture for coatings (CSP 2-4) is grinding. A grinder uses one or several rotating disks with abrasive material on their teeth. The size of these particles determine the possible material removal and roughness. Grinding is rather loud and dusty. It may be used on most substrates but there is always some remaining dust that is deposited in the substrate pores. It is very good on detailed surfaces and works on horizontal and vertical areas. Grinding is used for self leveling

underlayments, positive side waterproofing and for surface hardeners or sealers. It is not sufficient for concrete repair jobs or industrial flooring applications. We also do not recommend it for thick applications of self leveling underlayments of 6 mm (1/4“) and above.

Milling or Scarifying

Milling is used to remove large amounts of material from floors. It creates a very rough lined surface profile of CSP 4-9. Due to the aggressive method it creates significant amounts of micro-cracks and is a very dusty and loud method. Milling only works on horizontal or slightly sloped surfaces and is very suitable for bonded screeds or self leveling materials applied in higher thickness. Due to the rough surface texture it is not the right method for coatings or waterproofing materials.

Shot blasting

Another method for the preparation of floors is shot blasting. This method shoots an abrasive aggregate in an enclosed system onto the surface and extracts the removed substrate material. It is a rather mild method to create a surface profile of CSP 2 – 4 with a very open pore structure. It

is also a quite clean and noise avoiding method. Shot blasting is the method of choice for floor coatings and this self leveling applications. It only works on horizontal surfaces.

Sand blasting

For vertical surfaces sand blasting is a very good method to prepare concrete and masonry. With this method large amounts of material can removed and almost any surface profile is achievable. Unfortunately it is a very dusty method and requires to work in protective clothing. Sand blasting works exceptionally good to prepare steel.

Water blasting / water jetting

Water blasting with 200 - 400 bar (2,900 - 5,800 psi) is the most aggressive method and can be used to completely demolish concrete. It creates a very open pored structure and is the method of choice for concrete repair projects. Very often significant amounts of carbonated concrete must be removed until sound concrete is reached. The downside of this method is a lot of spray fog that contains surface material and protective clothing is absolutely mandatory.

Polishing / buffing

Concrete, screeds or self leveling overlayments can be finished to a very smooth surface pattern by polishing the surface to a very fine structure. The method is basically similar to grinding but uses a lot finer abrasive pads. Using a surface hardener like VELOSIT FH 921 after the first grinding step can further enhance appearance and mechanical resistance of the floor. Usually several steps of polishing with an increasing fineness of the abrasive pad leads to the desired grade of surface mattness or gloss.

Introduction

Selection of the proper surface preparation is the first step to a successful product application. In the next chapter you will find primer systems that complete the preparation for our coatings and mortars.

1 Primer systems

Some **VELOSIT** systems require a suitable primer to achieve the best adhesion results and avoid pinholes. We offer a range of water based, cementitious and resin based primers that can be combined with various products from our line as outlined in the respective data sheets.

VELOSIT CP 200 - Cementitious concrete primer.

VELOSIT CP 201 - Cementitious primer and corrosion protection.

VELOSIT PR 303 - Epoxy primer and vapor barrier.

VELOSIT PA 911 - Flexible acrylic primer.

VELOSIT CP 200
Cementitious concrete primer

Application fields

VELOSIT CP 200 is a cementitious primer for concrete, masonry and steel. It is designed as bonding bridge for the VELOSIT RM repair mortars on critical substrates. Typical application fields besides others are as follows:

- Priming of concrete and masonry for VELOSIT mortars and screeds
- Prime coat to fill blow holes, honeycombs and surface roughness
- Can be used for vibrated floor systems as a bonding bridge between tiles and mortar bed

Properties

VELOSIT CP 200 is a shrinkage compensated cementitious slurry with very quick strength development.

VELOSIT CP 200 can be applied by brush or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- 30 min. working time and 12 MPa compressive strength after 4 hours
- Final strength of more than 45 MPa (6525 psi) after 28 days
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT CP 200 is designed for mineralic substrates like concrete and masonry.

Concrete substrates must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances. If rebar is exposed VELOSIT CP 201 must be used instead of VELOSIT CP 200.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (225 psi) and for the compressive strength 20 MPa (2900 psi). Before the application of VELOSIT CP 200, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Avoid puddling.

2.) Processing

Mixing:
Mix VELOSIT CP 200 with 25 – 30 % potable water, i.e. 5.0 – 6.0 l (1.3 – 1.6 gal.) water per 20 kg (44 lb.) bag. Fill the 25% mixing water (5.0 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. Add up to 5 % water under stirring until the desired consistency is achieved.
The product is workable for 30 min. at 23 °C
Apply one coat with a masons brush in crossing applications to the pre-dampened substrate at the specified rate. The VELOSIT mortar or screed can be applied wet in wet onto VELOSIT CP 200.

3.) Curing

VELOSIT CP 200 does not require long term curing as it reacts relatively fast with water. Overcoat with a repair system as soon as it has gained sufficient strength.

Estimating

Brush or spray application 1 mm:

VELOSIT CP 200: 1.6 kg/m²*

* 1.6 kg VELOSIT CP 200 powder + 0,3 kg water, i.e. 1.9 kg mixed material per mm and m² (3.3 lbs per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT CP 200 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 26
Mixing ratio by volume:	100 : 38
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)

Compressive / flexural strength:

4 hours: 12 / 3 MPa (1740/433 psi)

Adhesive strength:	2.8 MPa (406 psi)
Fire rating EN13501-1:	Class $A1_{fl}$

Packaging

VELOSIT CP 200 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT CP 200 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 CP 200 is only available for professional applicators. Never add water to VELOSIT CP 200 when it has started to set. Stiffened material must be disposed. Do not use VELOSIT CP 200 on anhydrite or magnesite screeds. 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.

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VELOSIT CP 201

Cementitious corrosion protection and concrete primer

CE
EN1504-3

Application fields

VELOSIT CP 201 is a cementitious corrosion protection and primer for concrete, masonry and steel. It is designed as bonding bridge for the VELOSIT RM repair mortars on critical substrates. Typical application fields besides others are as follows:

- Priming of concrete and masonry for VELOSIT RM mortars
- Corrosion protection of concrete embedded steel like rebar
- Prime coat to fill blow holes, honeycombs and surface roughness
- Can be used for vibrated floor systems as a bonding bridge between tiles and mortar bed

Properties

VELOSIT CP 201 is a shrinkage compensated cementitious slurry with very quick strength development.

VELOSIT CP 201 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT CP 201 can be applied by brush or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- 45 min. working time and 12 MPa compressive strength after 4 hours
- Final strength of more than 45 MPa (6525 psi) after 28 days
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good sulfate resistance
- Potable water approved

Application

1.) Substrate preparation

VELOSIT CP 201 is designed for mineralic substrates like concrete, masonry and steel.

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 ideally high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT repair system.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Before the application of VELOSIT CP 201, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Avoid puddling.

2.) Processing

Mixing: Mix VELOSIT CP 201 with 27 – 30 % potable water, i.e. 5.4 – 6.0 l (1.4 – 1.6 gal.) water per 20 kg (44 lb.) bag. Fill the 27 % mixing water (5.4 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. Add more water under stirring until the desired consistency is achieved.

The product is workable for 45 – 60 min. at 23 °C.

a.) Brush application: Apply one coat with a masons brush in crossing applications to the pre-dampened substrate at the specified rate. The VELOSIT RM repair mortar can be applied after VELOSIT CP 201 has gained sufficient strength which is after 1–2 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten this time.

b.) Spray application: Suitable spray machines are for example:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product into the feed hopper of the spray machine and spray continuously.
VELOSIT CP 201 is applied in one coat. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT CP 201 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT CP 201 does not require long term curing as it reacts relatively fast with water. Overcoat with a repair system as soon as it has gained sufficient strength.

Estimating

Brush or spray application 1 mm:

VELOSIT CP 201: 1.6 kg/m²*

* 1.6 kg VELOSIT CP 201 powder + 0,4 kg water, i.e. 2.0 kg mixed material per mm and m² (3.3 lbs per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT CP 201 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 28
Mixing ratio by volume:	100 : 40
Density:	1.4 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Compressive / flexural strength:	
4 hours:	12 / 3 MPa (1740/433 psi)
24 hours:	20 / 5 MPa (2900/725 psi)
7 days:	36 / 6 MPa (5220/870 psi)

28 days:	46 / 7 MPa (6670/1015 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength:	2.8 MPa (406 psi)
Restrained shrinkage:	2.8 MPa (406 psi)

Packaging

VELOSIT CP 201 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT CP 201 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 CP 201 is only available for professional applicators.

Never add water to VELOSIT CP 201 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.

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VELOSIT PR 303

2-Component Epoxy primer and vapor barrier

CE
EN1504-2

Application fields

VELOSIT PR 303 is a universal primer for many substrates. VELOSIT PR 303 is designed for critical substrates with high moisture content or excessive water vapor emissions. Its distinguished mechanical and chemical durability makes it an ideal primer for applications with elevated requirements, especially on large slabs. Typical application fields besides others are as follows:

- Standard primer for resin flooring systems
- Moisture barrier for sensitive flooring materials and adhesives
- Primer for Polyurea coatings and joint materials
- Primer for asphalt with solvent addition
- Production of scratch coat and cove mortars

Properties

VELOSIT PR 303 is a solvent-free, 2-component epoxy resin primer.

VELOSIT PR 303 surpasses requirements of EN 1504-2 for impregnations (I) and can be used according to principle 1 acc. to EN 1504-9.

VELOSIT PR 303 can be used on horizontal and on vertical surfaces with the addition of a thixotropic agent like Cab-O-Sil M5.

- VOC and solvent free
- Low viscosity
- Very low vapor transmission rate, surpasses requirements of ASTM E96-12 for vapor retarders
- Pigmented for better visibility on the substrate
- Open to light foot traffic after 8 hours.
- Very good adhesion to metal and typical construction substrates like concrete, masonry and asphalt (with xylene addition)
- Good resistance against many chemicals, for example alkalis and diluted acids

Application

1.) Substrate preparation

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

b.) Concrete and masonry 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 open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 psi). Lower values can be tolerated if no significant requirements to the adhesion of VELOSIT PR 303 exist. Active water leaks that would affect the primer from the negative side must be treated and fully stopped. Repair blowholes, honeycombs and other surface defects with a mortar made from 1 part VELOSIT PR 303 and 2 – 3 parts suitable quartz sand ∅ 0.7 – 1.25.

VELOSIT PR 303 can be applied at almost all moisture levels even in case the moisture levels in the substrate are expected to increase. Dampen absorptive substrates before applying VELOSIT PR 303 but avoid any puddles or standing water.

c.) Asphalt must be cut and ground or sandblasted. Clean the fresh edge from any dust or debris.

2.) Processing

VELOSIT PR 303 is applied by squeegee, roller or brush.

Mixing: VELOSIT PR 303 is supplied in two packs with the A- and B-component in the correct mixing ratio. Make sure the material is between 15 and 28 °C (59 – 82 °F) before mixing. Hot material may react very fast whereas too cold material has a higher viscosity and will not penetrate into the substrate as desired.

Open the A-component and stir it with a slow speed drill to evenly distribute all fillers throughout the resin.

> *For wall applications, add 0.5 – 2 % thixotropic agent like Cab-O-Sil M5 at this stage.*
>
> *For production of a scratch coat or a cove mortar add 1 to 3 parts by weight of suitable quartz sand ∅ 0.7 – 1.25.*

Then add the full amount of B-component and continue stirring for approx. 2 min.

Fill the mixed material into a clean pail and re-stir for another 30 sec. The mix must be completely streak-free.

Substrates prepared according to section 1.) must be free from dust or any other bond breaking material at the time of application.

Apply VELOSIT PR 303 with the specified application rate.

a.) Floor application: Pour mixed VELOSIT PR 303 and distribute it over the calculated area with a squeegee. Back roll for several times with a non shed roller in a 90° angle to the squeegee application. Work in sections to ensure exact coverage rate. If required for the following coat, apply a full broadcast of VELOSIT PQ 901 into the fresh coating.

b.) Wall application: Roll Cab-O-Sil modified VELOSIT PR 303 at the specified rate onto the prepared wall surface. Work in a crossing action to force material into the pores. If required for the following coat, apply a full broadcast of suitable quartz sand ∅ 0.7 – 1.25 into the fresh coating.

c.) Mortar application: Mortars made with VELOSIT PR 303 and suitable quartz sand ∅ 0.7 – 1.25 are applied by trowel. Use a rounded cove trowel to produce concave moldings with the mortar.

3.) Curing

VELOSIT PR 303 does not require curing and can be over-coated within 6 h after application. VELOSIT PR 303 may yellow slightly under UV light, which does not impose any reduction in physical or chemical properties. As VELOSIT PR 303 receives a coating very quickly if used as intended the UV exposure is not relevant.

Estimating

Priming of concrete:

VELOSIT PR 303:	0.6 kg/m²

Priming of concrete with broadcast:

VELOSIT PR 303:	0.6 kg/m²
suitable quartz sand ∅ 0.7 – 1.25:	0.8 kg/m²

Mortar mix per liter (gal.):

VELOSIT PR 303:	0.6 kg (5 lbs.)
suitable quartz sand ∅ 0.7 – 1.25:	1.2 kg (10 lbs.)

Cleaning

VELOSIT PR 303 can be removed in the fresh state with solvents like naphta. Once it has cured only mechanical cleaning is possible.

Quality features

	Komp. A	Komp. B
Color:	silvergray	yellow
Density:	1.7 kg/l	1.0 kg/l
Viscosity mixed 23°C, mPas:	600	
Mixing ratio by weight:	100 A + 15.2 B	
Pot life, 23 °C:	35 min.	
Substrate temperature:	10 – 35 °C* (50 – 95 °F)	
	* observe dew point!	
Capillary water absorption:	< 0.01 kg/m² x $h^{0,5}$	
Adhesive strength on		
- Concrete:	2.9 MPa (420 psi) (concrete failure)	
Penetration depth:	> 5 mm	
Impact resistance:	class III	

Water vapor diffusion rate at 0.5 kg/m² acc. to ASTM E96-05, wet cup method:

Permeance:	< 0.06 g/(m² x 24 h x mm Hg)
	< 0.1 grain/(ft² x h x in. Hg)
Shore A hardness, 7d:	> 90

Chemical resistance acc. EN ISO 868

- NaCl:	28 d, class II
- Caustic potash 20 %:	28 d, class II
- Sulfuric acid, 5 %:	28 d, class II
- Hydrochloric acid, 32 %:	3 d, class I
- Diesel fuel:	28 d, class II
Fire rating EN13501-1:	Class E

Packaging

VELOSIT PR 303 is available in 25 kg (55 lb.) packs with

- A-component at 21.7 kg (47.7 lb.)
- B-component at 3.3 kg (7.3 lb.)

Storage

VELOSIT PR 303 can be stored in unopened original packs for 24 months at 15 – 25 °C. (59 – 77 °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 PR 303 is only available for professional applicators.

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.

2319

VELOSIT PA 911

Universal primer for mortars and adhesives

CE
EN1504-2

Application fields

VELOSIT PA 911 is an acrylic primer for typical construction substrates like dry wall, concrete and masonry. Typical application fields besides others are as follows:

- Priming underneath adhesives and mortars
- Dust binding
- Sealing of absorptive substrates

Properties

VELOSIT PA 911 is a fast curing acrylic primer.

VELOSIT PA 911 meets the requirements of EN 1504-2 as an impregnation (I) and can be used according to principle 1 acc. to EN 1504-9.

VELOSIT PA 911 is applied by brush or roller.

- Improved adhesion on absorptive substrates in interior applications
- Drying time of 2 – 3 hours at 23 °C (73 °F) and 60 % relative humidity
- Solvent-free, low odor

Application

1.) Substrate preparation

VELOSIT PA 911 is designed for mineralic substrates like concrete, masonry or absorptive natural stones, but also for gypsum or gypsum fiber boards.

Substrate must be prepared to remove all bond breaking substances. Detailed substrate preparation is described on the respective data sheet of the final product.

2.) Processing

Depending on substrate absorptiveness VELOSIT PA 911 can be diluted with up to 3 parts water. Product is applied by brush or roller to the substrate. Avoid puddling.

3.) Curing

VELOSIT PA 911 does not require curing.

Estimating

Consumption depends on surface roughness and absorptivity. Typical application rates are at 0.03 – 0.1 l/m² (0.7 – 2.5 gal per 1,000 ft²)

Cleaning

VELOSIT PA 911 can be removed in the fresh state with water. Once it has cured only mechanical cleaning is possible.

Quality features

Color:	white
Density:	1.01 kg/l

Substrate temperature:	5 – 35 °C (40 – 95 °F)
Capillary water absorption*:	0.1 kg/m² x $h^{0.5}$
Penetration depth**:	> 5 mm

*0.1 l/m² on concrete

Packaging

VELOSIT PA 911 is available in 25 kg (55 lb.) or 10 kg (22 lb.) plastic pails.

Storage

VELOSIT PA 911 can be stored in unopened original packs for 24 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.

2319

2 Concrete & sewage repair systems

VELOSIT offers several repair systems for many construction substrates. The systems are tailored for cosmetic repairs of masonry or concrete, structural concrete restoration or designed for the special requirements in sewage environments.

VELOSIT RM 202 - Cementitious repair mortar for surface repairs of up to 100 mm (4“).

VELOSIT RM 203 - Rapid cementitious repair mortar for surface repairs of up to 100 mm (4“).

VELOSIT RM 204 - Structural concrete repair mortar up to 50 mm (2“).

VELOSIT RM 205 - Structural concrete repair mortar 6 to 100 mm (1/4 to 4“).

VELOSIT SR 207 - Sewage repair mortar 6 to 100 mm (1/4 to 4“).

VELOSIT RM 208 - Spray mortar for sewage and concrete repair.

VELOSIT RM 210 - Universal repair mortar for vertical and overhead application 1 - 100 mm (4“)

VELOSIT RM 211 - Crystalline repair mortar up to 25 mm (1“).

VELOSIT RM 224 - Vertical and overhead finishing mortar.

VELOSIT LS 225 - Finishing mortar for concrete.

Concrete repair

Choosing the right pump	Hopper gun	HighPump Small	HighPump Pictor	HighComb Power	M-tec Duomix 2000	Estrichboy DC 450	Estrichboy EHS 200/3	TransMix 3200 Mobileman D3
Waterproofing slurry VELOSIT WP 101, 120 und 121	< 20 sq.m	< 200 sq.m	any size					
Self leveler VELOSIT SL 501 - 506		< 30 sq.m	< 200 sq.m	> 30 sq.m	> 100 sq.m			
Repair mortar VELOSIT RM products	< 20 sq.m	< 30 sq.m	< 100 sq.m	> 30 sq.m	> 100 sq.m			
Semi dry screed VELOSIT SC 240 - 242						> 50 sq.m		
Flowable screed VELOSIT SC 244 VELOSIT SC 245			< 30 sq.m	< 100 sq.m	< 200 sq.m		> 50 sq.m	> 50 sq.m

VELOSIT RM 202

Universal vertical and overhead repair mortar for 1 – 100 mm

CE
EN1504-3
Class R3

Application fields

VELOSIT RM 202 is a cementitious repair mortar for all types of construction substrates. It creates a good surface for coatings and overlays. Typical application fields besides others are as follows:

- Repair of surface defects on concrete, masonry, many natural stones and steel
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical incl. overhead areas
- Filling of blow holes, honeycombs and surface roughness
- Application thickness from feather-edge to 100 mm (4")
- Re-modeling of architectural features requiring a moldable mortar that can be shaved into shape

Properties

VELOSIT RM 202 is a shrinkage compensated cementitious repair mortar with very quick strength development. VELOSIT RM 202 binds the mixing water very fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 202 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 202 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 202 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability especially overhead
- Fiber reinforced
- 45 min. working time and 15 MPa (2175 psi) compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 3 – 4 hours
- Very good adhesion to properly prepared concrete and masonry
- Water curing only under hot and dry conditions required for max. 3 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 202 is designed for mineralic substrates like concrete, masonry or absorptive natural stones. 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. 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.) Mineralic substrates (concrete, masonry, cement compatible natural stones) must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

On reinforced concrete remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (1/4") behind rebar to fully embed the steel into VELOSIT RM 202.

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 (3625 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. Before the application of VELOSIT RM 202, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results.

2.) Processing

Mixing: Mix VELOSIT PRM 202 with 15 – 18 % potable water, i.e. 3.8 – 4.5 l (1.0 – 1.2 gal.) water per 25 kg (55 lb.) bag. Fill the 15% mixing water (3.8 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. Add more water (max. 3 %) under stirring until the desired consistency is achieved.

The product is workable for 45 – 60 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT RM 202 with a wet sponge to the pre-dampened substrate. Work approximately 0.5 – 1 kg per m^2 (1 – 2 lbs. per 10 ft^2) into the surface pores.

If working acc. to EN 1504-9 the prime coat must be applied with VELOSIT CP 201!

a.) Trowel application: Trowel VELOSIT RM 202 fresh in fresh into the prime coat. The product can be applied up to 100 mm (4") on vertical areas. Larger overhead areas may limit the thickness to max. 50 mm (2"). Make sure to work in sections that can be finished within 40 min. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25

- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT RM 202 is a fast curing material and may be hard to remove if left in the machine.

c.) Re-modeling of architectural features: Once VELOSIT RM 202 applied by trowel or spray machine has started to set it can be sculpted as needed. Shave off material in thin layers to achieve desired form. If needed finish surface with a slightly wet sponge to remove surface imperfections and air voids.

3.) Curing

VELOSIT RM 202 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 202 result in approx. 15.6 liter (0.55 ft^3) cured mortar.

Surface Coating:

10 kg (22 lbs.)* VELOSIT RM 202 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.

* 10 kg VELOSIT RM 202 powder + 1.7 kg water, i.e. 11.7 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT RM 202 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 : 17
Mixing ratio by volume:	100 : 27
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	55 min.
Final set.	120 min.
Compressive / flexural strength:	
4 hours:	15 / 2 MPa (2175/290 psi)
24 hours:	31 / 5 MPa (4495/725 psi)
7 days:	45 / 8 MPa (6525/1160 psi)

28 days:	56 / 9 MPa (8120/1305 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength*:	
- primed with VELOSIT RM 202:	1.8 MPa (261 psi)
- primed with VELOSIT CP 201:	2.2 MPa (319 psi)
Restrained shrinkage:	1.5 MPa (218 psi)

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

Packaging

VELOSIT RM 202 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 202 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

Never add water to VELOSIT RM 202 when it has started to set. Stiffened material must be disposed.

2319

VELOSIT RM 203

Rapid setting vertical and overhead repair mortar for 1 – 100 mm

CE
EN1504-3
Class R3

Application fields

VELOSIT RM 203 is a rapid setting cementitious repair mortar for various types of construction substrates. It creates a good surface for coatings and overlays. Typical application fields besides others are as follows:

- Repair of surface defects on concrete, masonry, many natural stones and steel
- Application on horizontal and vertical incl. overhead areas
- Filling of blow holes, honeycombs and surface roughness
- Application thickness from feather-edge to 100 mm (4")
- Re-modeling of architectural features requiring a moldable mortar that can be shaved into shape

Properties

VELOSIT RM 203 is a shrinkage compensated cementitious repair mortar with extremely fast strength development. VELOSIT RM 203 binds the mixing water very fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 203 creates an extremely well bonded, rigid, abrasion resistant layer on the substrate.

VELOSIT RM 203 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3.1 and 3.2 acc. to EN 1504-9.

VELOSIT RM 203 is applied by trowel and is workable for approx. 10 min.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability especially overhead
- Fiber reinforced
- 10 min. working time and 14 MPa (2030 psi) compressive strength after 2 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 1 – 1 ½ hours
- Very good adhesion to properly prepared concrete and masonry
- Water curing only under hot and dry conditions required for 3 – 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 203 is designed for mineralic substrates like concrete, masonry or absorptive natural stones. Steel may be coated with a suitable bonding bridge.

a.) Steel must be prepared to a purity of SA 2 acc. SIS 05 5900. 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.) Mineralic substrates (concrete, masonry, cement compatible natural stones) must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

On reinforced concrete remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (1/4") behind rebar to fully embed the steel into VELOSIT RM 203.

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 (3625 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. Before the application of VELOSIT RM 203, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair acc. EN 1504-9 principle 3.1 or 3.2 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results. The prime coat must have set before the application of VELOSIT RM 203.

2.) Processing

Mixing: Mix VELOSIT RM 203 with 15 – 18 % potable water, i.e. 3.8 – 4.5 l (1.0 – 1.2 gal.) water per 25 kg (55 lb.) bag. Fill the 15 % mixing water (3.8 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. Add more water (max. 3 %) under stirring until the desired consistency is achieved. Only mix as much material as can be used in 10 min. Clean mixing paddle immediately after mixing.

The product is workable for 10 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT RM 203 with a wet sponge to the pre-dampened substrate. Work approximately 0.5 – 1 kg per m^2 (1 – 2 lbs. per 10 ft^2) into the surface pores.

If working acc. to EN 1504-9 the prime coat must be applied with VELOSIT CP 201!

a.) Trowel application: Trowel VELOSIT RM 203 fresh in fresh into the prime coat of VELOSIT RM 203. The product can be applied up to 100 mm (4") on vertical areas. Larger overhead areas may limit the thickness to max. 50 mm (2"). Make sure to work in sections that can be finished within 10 min. Rebars and other penetrations must be fully embedded into the mortar.

b.) Re-modeling of architectural features: Once VELOSIT RM 203 has started to set it can be sculpted as needed. Shave off material in thin layers to achieve desired form. If needed finish surface with a slightly wet sponge to remove surface imperfections and air voids.

3.) Curing

VELOSIT RM 203 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3-4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 203 result in approx. 15.6 liter (0.55 ft^3) cured mortar.

Surface Overlay:

10 kg (22 lbs.)* VELOSIT RM 203 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. Only use on areas that can be covered in 10 min. For larger areas use VELOSIT RM 202 or concrete repair mortars RM 204 and RM 205.

* 10 kg VELOSIT RM 203 powder + 1.7 kg water, i.e. 11.7 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT RM 203 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 : 17
Mixing ratio by volume:	100 : 27
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	15 min.
Final set.	40 min.
Compressive / flexural strength:	
2 hours:	14 / 2 MPa (2030/290 psi)
24 hours:	36 / 6 MPa (5220/870 psi)
7 days:	48 / 8 MPa (6690/1160 psi)
28 days:	54 / 9 MPa (7830/1305 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x $h^{0.5}$
Adhesive strength*:	
- primed with RM 203:	1.6 MPa (218 psi)
- primed with CP 201:	2.1 MPa (305 psi)
Restrained shrinkage*:	1.6 MPa (218 psi)
Length change after 56 days:	
- dry storage:	- 0.4 mm/m (- 0.04 %)

- water storage: + 0.1 mm/m (+ 0.01 %)

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

Packaging

VELOSIT RM 203 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 203 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

Never add water to VELOSIT RM 203 when it has started to set. Stiffened material must be disposed.

VELOSIT RM 203 creates a significant heat of hydration. Avoid thick layers in hot temperatures as the product may create cracks. Work in layers.

2319

VELOSIT RM 204

Vertical and overhead structural concrete repair mortar for 1 – 50 mm

CE
EN1504-3
Class R4

Application fields

VELOSIT RM 204 is a cementitious repair mortar for concrete restoration acc. to EN 1504-9. It creates a very smooth surface for coatings and overlays. Typical application fields besides others are as follows:

- Repair of surface defects on concrete
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical incl. overhead areas
- Filling of blow holes, honeycombs and surface roughness
- Application thickness from feather-edge to 50 mm (2")

System components:

Corrosion primer: VELOSIT CP 201

Structural repair mortar: VELOSIT RM 205

Structural finish mortar: **VELOSIT RM 204**

Properties

VELOSIT RM 204 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT RM 204 binds the mixing water fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 204 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 204 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 204 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability especially overhead
- Fiber reinforced
- Hydrophobic
- 60 min. working time and 10 MPa (1450 psi) compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 3 – 4 hours
- Excellent adhesion to properly prepared concrete
- Water curing only under hot and dry conditions required for 3 –4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance

- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 204 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

a.) Steel must be prepared to a purity of SA 2.5 acc. SIS 05 5900. Apply a corrosion protection coat on rebar with VELOSIT CP 201.

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

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (1/4") behind rebar to fully embed the steel into VELOSIT RM 204.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Before the application of VELOSIT RM 204, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results. VELOSIT RM 204 can be coated without prime coat within 14 days of application.

2.) Processing

Mixing: Mix VELOSIT RM 204 with 15 – 18 % potable water, i.e. 3.8 – 4.5 l (1.0 – 1.2 gal.) water per 25 kg (55 lb.) bag. Fill 15 % mixing water (3.8 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. Add max. 3 % additional water under stirring to adjust desired consistency.

The product is workable for 60 min. at 23 °C. Add more water under stirring to adjust desired consistency is.

The product is workable for 60 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT RM 204 onto concrete.

a.) Trowel application: Trowel VELOSIT RM 204 can be applied fresh in fresh into the prime coat. The product can be applied up to 50 mm (2") on vertical areas. Larger overhead areas may limit the thickness to max. 25 mm (1"). Make sure to work in sections that can be finished within 60 min. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT RM 204 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT RM 204 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 204 result in approx. 15.6 liter (0.55 ft^3) cured mortar.

Surface Coating:

10 kg (22 lbs.)* VELOSIT RM 204 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.

* 10 kg VELOSIT RM 204 powder + 1.7 kg water, i.e. 11.7 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT RM 204 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 : 17
Mixing ratio by volume:	100 : 27
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	90 min.
Final set.	150 min.
Compressive / flexural strength:	
4 hours:	10 / 3 MPa (1450/335 psi)
24 hours:	28 / 6 MPa (4060/870 psi)
7 days:	42 / 8 MPa (6090/1160 psi)
28 days:	53 / 9 MPa (7685/1305 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:	2.4 MPa (348 psi)
Restrained shrinkage**:	2.1 MPa (305 psi)

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

Packaging

VELOSIT RM 204 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 204 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

Never add water to VELOSIT RM 204 when it has started to set. Stiffened material must be disposed.

2319

VELOSIT RM 205

Structural concrete repair mortar R4 for 6 – 100 mm

CE
EN1504-3
Class R4

Application fields

VELOSIT RM 205 is a cementitious repair mortar for concrete restoration acc. to EN 1504-9. It is used to fill large voids or build up larger cross-sections up to 100 mm (4”). Typical application fields besides others are as follows:

- Repair of large surface defects on concrete
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical incl. overhead areas
- Application thickness from 6 mm (¼“) to 100 mm (4”)
- Used as micro-concrete

System components:

Corrosion primer: VELOSIT CP 201

Structural repair mortar: **VELOSIT RM 205**

Structural finish mortar: VELOSIT RM 204

Properties

VELOSIT RM 205 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT RM 205 binds the mixing water fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 205 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 205 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 205 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Wide range of water addition
- Fiber reinforced
- Hydrophobic
- Advanced corrosion inhibitor technology
- 60 min. working time and 12 MPa (1740 psi) compressive strength after 4 hours
- Final strength of more than 45 MPa (6525 psi) after 28 days
- Open to foot traffic after 3 – 4 hours
- Excellent adhesion to properly prepared concrete
- Water curing only under hot and dry conditions required for 3 – 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure

- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 205 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

a.) Steel must be prepared to a purity of SA 2.5 acc. SIS 05 5900. Apply a corrosion protection coat on rebar with VELOSIT CP 201.

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

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 25 mm (1“) behind rebar to fully embed the steel into VELOSIT RM 205.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Before the application of VELOSIT RM 205, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results.

2.) Processing

Mixing: Mix VELOSIT RM 205 with 11 – 16 % potable water, i.e. 2.8 – 4.0 l (0.7 – 1.0 gal.) water per 25 kg (55 lb.) bag. Fill the 11% mixing water (2.8 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. Add more water (max. 5 %) under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT RM 205 onto concrete.

a.) Trowel application: Trowel VELOSIT RM 205 can be applied fresh in fresh into the prime coat. The product can be applied up to 100 mm (4”) on vertical areas. Make sure to work in sections that can be finished within 60 min. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT RM 205 is a fast curing material and may be hard to remove if left in the machine.

c.) VELOSIT RM 205 can be mixed to a very plastic consistency and used as a micro-concrete. Pour the product into the shuttering and make sure to compact the pour properly for example with suitable vibration equipment.

3.) Curing

VELOSIT RM 205 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 205 result in approx. 13.3 liter (0.46 ft^3) cured mortar.

Surface Coating:

45 kg (100 lbs.)* VELOSIT RM 205 per m^2 (10.7 ft^2) for 25 mm (1”) dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 45 kg VELOSIT RM 205 powder + 5.4 kg water, i.e. 50.4 kg mixed material per 25 mm and m^2

Cleaning

VELOSIT RM 205 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 : 12
Mixing ratio by volume:	100 : 20
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set.	200 min.
Compressive / flexural strength:	
4 hours:	12 / 3 MPa (1740/335 psi)
24 hours:	27 / 6 MPa (4785/870 psi)
7 days:	41 / 8 MPa (6960/1160 psi)
28 days:	50 / 8 MPa (7250/1160 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:	2.2 MPa (319 psi)
Restrained shrinkage*:	2.1 MPa (305 psi)

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

Packaging

VELOSIT RM 205 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 205 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

Never add water to VELOSIT RM 205 when it has started to set. Stiffened material must be disposed.

VELOSIT RM 205 creates significant heat of hydration. Especially in warm conditions and high application thickness sufficient heat exchange must be possible. Never encase large bodies of VELOSIT RM 205 in thermal insulation during curing.

2319

VELOSIT SR 207

Sulphate resistant high build structural concrete repair mortar R4

CE
EN1504-3
Class R4

Application fields

VELOSIT SR 207 is a Sulphate-resistant, structural grade cementitious repair mortar for concrete restoration acc. to EN 1504-9. It is used to fill large voids or build up larger cross-sections up to 100 mm (4") specifically designed for repairs in sewage and waste water structures. Typical application fields besides others are as follows:

- Repair of large surface defects on in concrete manholes, primary & secondary sewage treatment basins and waste water treatment plants
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application Suitable on horizontal, and vertical incl. overhead applications
- Application thickness from 6 mm (¼") to 100 mm (4")
- Used as micro-concrete

System components:

Corrosion inhibiting pimer: VELOSIT CP 201

Structural repair mortar: VELOSIT SR 207

Properties

VELOSIT SR 207 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT SR 207 binds the mixing water fast reducing or completely eliminating the need for water curing and protection after application. VELOSIT SR 207 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT SR 207 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT SR 207 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Wide range of water addition to meet different workability requirements
- Fiber reinforced with grain sizes reaching 4mm
- Hydrophobic
- Advanced corrosion inhibitor technology
- 30 min. working time and 12 MPa (1740 psi) compressive strength after 4 hours
- Final strength exceeds 45 MPa (6525 psi) after at 28 days
- Open to foot traffic after 3 – 4 hours
- Excellent adhesion to properly prepared concrete
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure

- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate sulphate resistance
- Light gray grey colour close to that of concrete

Application

1.) Substrate preparation

VELOSIT SR 207 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 as a bridging primer.

a.) Steel must be prepared to a purity of SA 2.5 acc. SIS 05 5900. Apply a corrosion protection coat on rebar with VELOSIT CP 201.

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

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT SR 207.

Substrate must be rough, pore-open and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and 30 MPa (4350 psi) for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Before the application of VELOSIT SR 207, dampen the substrate with plenty of clean water to a saturated surface dry (SSD) condition. This is a precautionary measure to prevent pre-mature water loss.

c.) Concrete repair acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results.

2.) Processing

Mixing: Mix VELOSIT SR 207 with 12 % potable water, i.e. 3 l (0.8 gal.) water per 25 kg (55 lb.) bag. Fill the 12 % mixing water (3 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.

The product is workable for 30 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT SR 207 onto concrete.

a.) Trowel application: Trowel VELOSIT SR 207 can be applied fresh -in -fresh into the prime coat. The product can be applied up to 100 mm (4”) on vertical areas in a single application. Make sure to work in sections that can be finished within 30 min. at 23 °C. Higher temperatures reduce, lower temperatures increase the required wait times. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after spraying. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT SR 207 is a fast curing material and may be hard to remove if left in the machine. Once cured, VELOSIT SR 207 can only be removed mechanically.

Never overcoat joints or underrated cracks as this will most likely result in surface cracks!

c.) VELOSIT SR 207 can be mixed to a very plastic consistency and used as a micro-concrete. Pour the product into the shuttering and make sure to compact the pour properly for example with suitable vibration equipment.

3.) Curing

VELOSIT SR 207 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3-4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT SR 207 result in approx. 13.3 liter (0.46 ft^3) cured mortar.

Surface Coating:

45 kg (100 lbs.)* VELOSIT SR 207 per m^2 (10.7 ft^2) for 25 mm (1”) dry mortar thickness on smooth & level substrates. Consumption will increase proportionately to roughness of substrate surfaces.Depending on surface roughness application rates can be significantly higher.

* 45 kg VELOSIT SR 207 powder + 5.4 kg water, i.e. 50.4 kg mixed material per 25 mm and m^2

Cleaning

VELOSIT SR 207 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 : 12
Mixing ratio by volume:	100 : 20
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	50 min.
Final set.	70 min.

Compressive / flexural strength:

4 hours: 12 / 3 MPa (1740/335 psi)

24 hours: 30 / 6 MPa (4350/870 psi)

7 days: 40 / 7 MPa (5800/1015 psi)

28 days: 45 / 7 MPa (6525/1015 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:	2.2 MPa (319 psi)
Restrained shrinkage*:	2.1 MPa (305 psi)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT SR 207 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SR 207 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 SR 207 is only available for professional applicators.

Never add water to VELOSIT SR 207 when it has started to set. Stiffened material must be disposed.

VELOSIT SR 207 can be mixed with up to 16% water. But the increased water leads to significantly lower final strength values.

VELOSIT SR 207 creates significant heat of hydration. Especially in warm conditions and high application thickness sufficient heat exchange must be possible. Never encase large bodies of VELOSIT SR 207 in thermal insulation during curing.

2319

VELOSIT RM 208
Structural concrete repair mortar R4

CE
EN1504-3
Class R4

Application fields

VELOSIT RM 208 is a microsilica enhanced cementitious repair mortar for concrete restoration acc. to EN 1504-9. It is used to fill large voids or build up larger cross-sections up to 50 mm (2”). Typical application fields besides others are as follows:

- Repair of large surface defects on concrete
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical incl. overhead areas
- Application thickness from 6 mm (¼“) to 50 mm (2”)
- Used as micro-concrete

Properties

VELOSIT RM 208 is a shrinkage compensated cementitious repair mortar with quick strength development. VELOSIT RM 208 is based on a complex formulation of mineral and organic identifiers and additives. It’s optimized grading allows for a very dense packing, which improves the cohesiveness and watertightness. VELOSIT RM 208 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 208 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 208 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Wide range of water addition
- Fiber reinforced
- Corrosion protection
- 60 min. working time and extended finishing window
- Final strength of more than 65 MPa (9425 psi) after 28 days
- Excellent adhesion to properly prepared concrete
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 208 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

a.) Steel must be prepared to a purity of SA 2&1/2 acc. SIS 05 5900. Apply a corrosion protection coat on rebar with VELOSIT CP 201.

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

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 25 mm (1“) behind rebar to fully embed the steel into VELOSIT RM 208.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Before the application of VELOSIT RM 208, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

c.) Concrete repair acc. EN 1504-9 principle 3, 4 or 7 requires a prime coat with VELOSIT CP 201 on concrete and rebar surface to ensure best adhesion strength results.

2.) Processing

Mixing: Mix VELOSIT RM 208 with 15.5 – 18 % potable water, i.e. 3.9 – 4.5 l (1.0 – 1.15 gal.) water per 25 kg (55 lb.) bag. Fill the 15.5% mixing water (3.9 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. Add more water under stirring until the desired consistency is achieved.

The product is workable for 40 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT CP 201 before applying VELOSIT RM 208 onto concrete.

a.) Trowel application: Trowel VELOSIT RM 208 can be applied fresh in fresh into the prime coat. The product can be applied up to 50 mm (2”) on vertical areas. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described above into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying

or before long spray interruptions. VELOSIT RM 208 is a fast curing material and may be hard to remove if left in the machine.

c.) VELOSIT RM 208 can be mixed to a very plastic consistency and used as a micro-concrete. Pour the product into the shuttering and make sure to compact the pour properly for example with suitable vibration equipment.

3.) Curing

VELOSIT RM 208 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 24 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 208 result in approx. 14 liter (0.48 ft^3) cured mortar.

Surface Coating:

45 kg (102 lbs.)* VELOSIT RM 208 per m^2 (10.7 ft^2) for 25 mm (1") dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 45 kg VELOSIT RM 208 powder + 7.2 kg water, i.e 52.2 kg mixed material per 25 mm and m^2

Cleaning

VELOSIT RM 208 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 : 16
Mixing ratio by volume:	100 : 27
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set.	240 min.
Compressive / flexural strength:	
24 hours:	21 / 3 MPa (3770/870 psi)
28 days:	69 / 10 MPa (10005/1450 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
Adhesive strength*:	
- primed with CP 201:	> 2.0 MPa (319 psi)
Restrained shrinkage*:	> 2.0 MPa (305 psi)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT RM 208 is available in 20 kg (44 lb.) and 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 208 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

Never add water to VELOSIT RM 208 when it has started to set. Stiffened material must be disposed.

0619

VELOSIT RM 210

Universal Repair Mortar For Vertical and Overhead Application 1 – 100 mm

Application fields

VELOSIT RM 210 is a quick setting cementitious repair mortar for various types of construction substrates. It creates a good surface for coatings and overlays. Typical application fields besides others are as follows:

- Leveling of floor and wall surfaces
- Repair of surface defects on concrete, masonry, many natural stones and steel
- Application on horizontal and vertical incl. overhead areas
- Filling of blow holes, honeycombs and surface roughness
- Application thickness from feather-edge to 100 mm (4”)
- Re-modeling of architectural features requiring a moldable mortar that can be shaved into shape

Properties

VELOSIT RM 210 is a shrinkage compensated cementitious repair mortar with rapid strength development. VELOSIT RM 210 binds the mixing water very fast reducing or completely eliminating the need for water curing and protection.

VELOSIT RM 210 surpasses the requirements of EN 1504-3 class R2 for concrete repair (CR) and can be used according to the principles 3.1 and 3.2 acc. to EN 1504-9.

VELOSIT RM 210 is applied by trowel and is workable for approx. 25 min.

- Excellent workability especially overhead
- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- High yield
- 25 min. working time and ready to receive coatings after 90 min.
- Final strength of more than 25 MPa (3626 psi) after 28 days
- Open to foot traffic after 1 ½ hours
- Very good adhesion to properly prepared concrete and masonry
- Water curing only under hot and dry conditions required for 2 hours
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 210 is designed for mineralic substrates like concrete, masonry or absorptive natural stones. 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. 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.) Mineralic substrates (concrete, masonry, cement compatible natural stones) must be prepared with a wire brush, sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/ 1450 psi) to remove all bond breaking substances.

On reinforced concrete remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient

alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (1/4") behind rebar to fully embed the steel into VELOSIT RM 210.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive

strength is 0.8 MPa (116 psi) and for the compressive strength 10 MPa (1450 psi). Lower strength values can be accepted if lower adhesive strength is acceptable. Before the application of VELOSIT RM 210, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

Mixing: Mix VELOSIT RM 210 with 23 – 25 % potable water, i.e. 5.8 – 6.3 l (1.5 – 1.7 gal.) water per 25 kg (55 lb.) bag. Fill the 23 % mixing water (5.8 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. Add more water (max. 2 %) under stirring until the desired consistency is achieved. Let the material mature for 2 min. and stir another 30 seconds. Only mix as much material as can be used in 25 min. Clean mixing paddle immediately after mixing.

The product is workable for 25 min. at 23 °C.

Priming: If required apply a prime coat of VELOSIT RM 210 with a wet sponge to the pre-dampened substrate. Work approximately 0.5-1 kg per m^2 (1-2 lbs. per 10 ft^2) into the surface pores.

a.) Trowel application:

Trowel VELOSIT RM 210 onto the predampened substrate or fresh in fresh into the prime coat of VELOSIT RM 210. The product can be applied up to 100 mm (4") on vertical areas. Larger overhead areas may limit the thickness to max. 50 mm (2"). A splatter dash coat is recommended for larger thick applications. Make sure to work in sections that can be finished within 25 min. Rebars and other penetrations must be fully embedded into the mortar. Rebar and other exposed metal parts must be embedded with a suitable cover into the mortar.

If required VELOSIT RM 210 can receive a sponge finish after it has started to set (30-45 min.)

b.) Re-modeling of architectural features:

Once VELOSIT RM 210 has started to set it can be sculpted as needed. Shave off material in thin layers to achieve desired form. If needed finish surface with a slightly wet sponge to remove surface imperfections and air voids.

3.) Curing

VELOSIT RM 210 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 2 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 210 result in approx. 17.5 liter (0.62 ft^3) cured mortar.

Surface Overlay:

4 kg (9 lbs.)* VELOSIT RM 210 per m^2 (10.7 ft^2) for 3 mm (1/8") dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 4 kg VELOSIT RM 210 powder + 1.0 kg water, i.e. 5.0 kg mixed material per 3 mm and m^2

Cleaning

VELOSIT RM 210 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 : 24
Mixing ratio by volume:	100 : 36
Density:	1.5 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	50 min.
Final set.	70 min.

Compressive / flexural strength:

28 days: > 25 / 5 MPa (3625/725 psi)

Adhesive strength*: 1.0 MPa (145 psi)

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

Packaging

VELOSIT RM 210 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 210 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 RM 210 is only available for professional applicators.

Never add water to VELOSIT RM 210 when it has started to set. Stiffened material must be disposed.

VELOSIT RM 210 may stiffen after 2-4 min. Re-stir the mix to achieve a good working consistency.

4519

VELOSIT RM 211
Crystalline concrete repair mortar R3

CE
EN1504-3
Class R3

Application fields

VELOSIT RM 211 is a crystalline cementitious repair mortar for concrete restoration acc. to EN 1504-9. It creates a smooth surface for crystalline waterproof coatings. Typical application fields besides others are as follows:

- Repair of surface defects on concrete
- Overlays and repairs on concrete structures like dams, bridges, beams, balconies, facades
- Application on horizontal and vertical
- Filling of blow holes, honeycombs and surface roughness
- Application thickness from feather-edge to 25 mm (1")

System components:

Crystalline plug cement: VELOSIT PC 222

Structural repair mortar: **VELOSIT RM 211**

Waterproofing: VELOSIT CW 111

Properties

VELOSIT RM 211 is a shrinkage compensated crystalline cementitious repair mortar with quick strength development. VELOSIT RM 211 binds the mixing water fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 211 creates an extremely well bonded, rigid abrasion resistant layer on the substrate.

VELOSIT RM 211 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT RM 211 can be applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Fiber reinforced
- 45 min. working time and 12 MPa (1740 psi) compressive strength after 4 hours
- Final strength of more than 40 MPa (5800 psi) after 28 days
- Open to foot traffic after 3 – 4 hours
- Excellent adhesion to properly prepared concrete
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Good sulfate resistance
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 211 is designed for concrete substrates. Steel may be coated with a VELOSIT CP 201 bonding bridge.

a.) Steel must be prepared to a purity of SA 2.5 acc. SIS 05 5900. 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 prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (1/4") behind rebar to fully embed the steel into VELOSIT RM 211.

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 (3625 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. Before the application of VELOSIT RM 211, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

Mixing: Mix VELOSIT RM 211 with 17 – 20 % potable water, i.e. 4.3 – 5.0 l (1.1 – 1.3 gal.) water per 25 kg (55 lb.) bag. Fill 17 % mixing water (4.3 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. Add up to 3 % water under stirring to adjust desired consistency is. Clean mixing paddle immediately after mixing.

The product is workable for 45 min. at 23 °C.

a.) Trowel application: Apply a slurry coat of VELOSIT RM 211 by scrubbing material with a wet sponge into the concrete surface. Trowel VELOSIT RM 211 fresh in fresh into the slurry coat. The product can be applied up to 25 mm (1") on vertical areas. Make sure to work in sections that can be finished within 30 min. Rebars and other penetrations must be fully embedded into the mortar.

b.) Spray application: Use suitable spray machines such as:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25
- Inotec GmbH: INOMAT-M8

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With mortar pumps add the mixed product as described above into the feed hopper of the spray machine and spray continuously.

If a smooth surface is required, follow with a trowel shortly after material is sprayed. Work in sections.

Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT RM 211 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT RM 211 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.) VELOSIT RM 211 result in approx. 15.2 liter (0.53 ft^3) cured mortar.

Surface Coating:

10 kg (22 lbs.)* VELOSIT RM 211 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.

* 10 kg VELOSIT RM 211 powder + 1.8 kg water, i.e. 11.8kg mixed material per 6 mm and m^2

Cleaning

VELOSIT RM 211 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 : 18
Mixing ratio by volume:	100 : 28
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	75 min.
Final set.	120 min.
Compressive / flexural strength:	
4 hours:	12 / 3 MPa (1740/335 psi)
24 hours:	22 / 4 MPa (3190/580 psi)
7 days:	28 / 6 MPa (4060/870 psi)
28 days:	40 / 8 MPa (5800/1160 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x $h^{0.5}$
Adhesive strength*:	2.0 MPa (290 psi)
Restrained shrinkage*:	2.0 MPa (290 psi)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT RM 211 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT RM 211 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

Never add water to VELOSIT RM 211 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT RM 224
Vertical and overhead finishing mortar

CE
EN1504-3
Class R3

Application fields

VELOSIT RM 224 is a cementitious finishing mortar for various types of construction substrates. It creates a very fine surface texture and is especially suitable for fair-faced concrete. Typical application fields besides others are as follows:

- Finishing of surface defects on concrete, masonry and many natural stones
- Application on horizontal and vertical incl. overhead areas
- Filling of blow holes, honeycombs and surface roughness
- As a finish on concrete repair systems
- Application thickness from feather-edge to 10 mm (3/8")

Properties

VELOSIT RM 224 is a shrinkage compensated cementitious finish mortar with fast strength development. VELOSIT RM 224 binds the mixing water very fast reducing or completely eliminating the need for water curing and protection. VELOSIT RM 224 creates an extremely well bonded, rigid, abrasion resistant layer on the substrate.

VELOSIT RM 224 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principle 3.1 acc. to EN 1504-9.

VELOSIT RM 224 is applied by trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability especially overhead
- 30 min. working time and 15 MPa (2175 psi) compressive strength after 4 hours
- Final strength of more than 35 MPa (5075 psi) after 28 days
- Open to foot traffic after 2 – 3 hours
- Very good adhesion to properly prepared concrete and masonry
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure
- Good weathering resistance
- Good sulfate resistance
- Medium gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT RM 224 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Mineralic substrates (concrete, masonry, cement compatible natural stones) must be free from all bond breaking substances.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 0.7 MPa (100 psi) and for the compressive strength 20 MPa (2900 psi). Lower strength values can be accepted if lower adhesive strength is acceptable. Before the application of VELOSIT RM 224, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

Mixing: Mix VELOSIT RM 224 with 27 – 32 % potable water, i.e. 5.4 – 6.2 l (1.4 – 1.7 gal.) water per 20 kg (44 lb.) bag. Fill the 27% mixing water (5.4 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. Add more water under stirring until the desired consistency is achieved. Clean mixing paddle immediately after mixing.

The product is workable for 30 min. at 23 °C.

Priming: Apply a prime coat of VELOSIT RM 224 with a wet sponge to the pre-dampened substrate. Work approximately 0.3-1 kg per m^2 (1 – 2 lbs. per 10 ft^2) into the surface pores.

a.) Trowel application: Trowel VELOSIT RM 224 fresh in fresh into the prime coat or clean surface. The product can be applied up to 10 mm (3/8") on vertical areas. Make sure to work in sections that can be finished within 30 min.

b.) Re-modeling of architectural features: Once VELOSIT RM 224 has started to set it can be sculpted as needed. Shave off material in thin layers to achieve desired form. If needed finish surface with a slightly wet sponge to remove surface imperfections and air voids.

3.) Curing

VELOSIT RM 224 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Repair of surface defects:

20 kg (44 lbs.) VELOSIT RM 224 result in approx. 13.7 liter (0.5 ft^3) cured mortar.

Surface Overlay:

1.5 kg (3.3 lbs.)* VELOSIT RM 224 per m^2 (10.7 ft^2) for 1 mm (40 mils) dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 1.5 kg VELOSIT RM 224 powder + 0.4 kg water, i.e. 1.9 kg mixed material per 1 mm and m^2

Cleaning

VELOSIT RM 224 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:	medium gray
Mixing ratio by weight:	100 : 28
Mixing ratio by volume:	100 : 36
Density:	1.3 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	55 min.
Final set:	85 min.

Compressive / flexural strength:

4 hours:	13 / 2 MPa (1885/290 psi)
24 hours:	20 / 5 MPa (2900/725 psi)
7 days:	33 / 7 MPa (4785/1015 psi)
28 days:	36 / 8 MPa (5220/1160 psi)
Chloride ions:	< 0.05%
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength*:	1.5 MPa (218 psi)
Restrained shrinkage*:	1.5 MPa (218 psi)
Fire rating EN13501-1:	Class A1

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

Packaging

VELOSIT RM 224 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT RM 224 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 RM 224 is only available for professional applicators.

Never add water to VELOSIT RM 224 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT LS 225
Rapid hardening floor patching mortar

CE
EN1504-3
Class R3

Application fields

VELOSIT LS 225 is a cementitious leveling mortar for concrete floors. It is used to create a smooth surface profile for thin floor coverings and coatings. Typical application fields besides others are as follows:

- Interior and exterior floors
- Fairing of concrete slabs and screeds
- Repair of surface defects like blow holes and honey combs on concrete floors
- Application thickness from feather edge to 30 mm (1 1/4“)

Properties

VELOSIT LS 225 is a shrinkage compensated smoothing compound based on a special cement with very quick strength development. VELOSIT LS 225 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. VELOSIT LS 225 creates a well bonded and very smooth layer on the substrate.

VELOSIT LS 225 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3 and 7 acc. to EN 1504-9.

VELOSIT LS 225 can be applied by rake or suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Creamy working consistency
- Smooth surface profile
- Fast air release with minimal requirement for agitation
- Ready for foot traffic and application of further coatings and adhesives after 60 min.
- 15 – 20 min. working time and 20 MPa (2900 psi) compressive strength after 4 hours
- Final strength of more than 0.5 MPa (73 psi) adhesive strength after 1 hour
- Excellent adhesion to properly prepared concrete
- Excellent water resistance, no strength loss under water
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT LS 225 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 can be primed with VELOSIT PA 911 (Acrylic Primer). VELOSIT PA 911 is ready to receive the leveler usually after 2 – 3 h curing.

c.) At lower requirements for the adhesive strength VELOSIT LS 225 may be applied directly onto the clean and load bearing substrate. Dampen the surface to a saturated surface dry (SSD) appearance and avoid puddling water.

2.) Processing

Mixing: Mix VELOSIT LS 225 with 22 – 26 % potable water, i.e. 4.4 – 5.2 l (1.2 – 1.4 gal.) water per 20 kg (44 lb.) bag. Fill 22 % (4.4 l per bag) mixing water 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 up to 4 % water under stirring until the desired consistency is achieved. The product is workable for 15 – 20 min. at 23 °C. Do not mix more material than can be processed in 15 – 20 minutes.

Rake application: Pour VELOSIT LS 225 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 30 mm (1 1/4 ”) in one application. Make sure to work in sections that can be finished within 15 min. Cooler temperatures extend, warmer temperatures reduce the working time.

Never overcoat joints or untreated cracks as this will most likely result in surface cracks!

3.) Curing

VELOSIT LS 225 does not require curing. Breathable flooring materials can be applied immediately after VELOSIT LS 225 has sufficiently cared.

Estimating

Volume yield:

20 kg (44 lbs.) VELOSIT LS 225 result in approx. 12.8 liter (0.45 ft^3) cured mortar.

Cleaning

VELOSIT LS 225 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 : 25
Mixing ratio by volume:	100 : 38
Density:	1.5 kg/l
Substrate temperature:	10 – 35° C (50 – 95 °F)

Initial set:	30 min.
Final set.	50 min.
Compressive / flexural strength:	
24 hours:	40 / 5 MPa (5800/725 psi)
Chloride ions:	< 0.05%
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength*:	
- primed with PA 911:	1.8 MPa 261 psi)
Restrained shrinkage:	1.5 MPa (232 psi)

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

Packaging

VELOSIT LS 225 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT LS 225 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

Never add water to VELOSIT LS 225 when it has started to set. Stiffened material must be disposed.

3519

3 Waterproofing and protective coatings

VELOSIT offers several different waterproofing systems based on cementitious, bituminous and polyurea based materials. The selection of the best solution depends on various factors like positive or negative side water ingress, cracks or joints, water pressure, UV exposure, chemical exposure or abrasion. The following products are explained in this chapter.

VELOSIT WP 100 - Standard rigid cementitious waterproofing.

VELOSIT WP 101 - Rigid cementitious waterproofing, normal curing.

VELOSIT CW 111 - Crystalline waterproofing slurry.

VELOSIT WP 120 - Flexible cementitious waterproofing, normal curing.

VELOSIT WP 121 - Rapid setting flexible cementitious waterproofing.

VELOSIT WP 124 - Economic flexible cementitious waterproofing.

VELOSIT BL 151 - Bitumen latex.

VELOSIT PC 221 - Crystalline plug cement.

VELOSIT PC 222 - Flash setting plug cement.

VELOSIT PU 400 - Polyurea coating.

Product selector:

Product selector sealing systems														
	ground moisture	hydrostatic pressure	negative side	potable	sewage	pipe	canal	exposed	green roof	inverted	water	mild acids/ bases	solvents	
VELOSIT-	**Basement**			**Water tank**				**Roof**			**Secondary containment**			
WP 101	✔		✔	✔	O	✔	✔							
CW 111	✔	✔	✔	✔	✔	✔	✔							
WP 120/121	✔	✔	O	✔	✔	O	✔	O	✔	✔	✔	O		
BL 151	✔				O									
PC 221/223			✔											
PU 400	✔	✔			✔	✔	✔	✔	✔	✔	✔	✔		

✔ Recommended
O With restriction suitable

VELOSIT WP 100
Standard rigid cementitious waterproofing slurry

Application fields

VELOSIT WP 100 is an economic cementitious waterproofing slurry for concrete and masonry. It is a good substrate for coatings and overlays. It is a good barrier against negative side water pressure. Typical application fields besides others are as follows:

- Waterproofing of basements and below grade parking structures
- Waterproofing of potable water structures
- Waterproofing of elevator pits
- Waterproofing against rising dampness in walls
- Negative side waterproofing underneath flexible waterproofing membranes
- Prime coat to fill blow holes, honeycombs and surface roughness

Properties

VELOSIT WP 100 is a shrinkage compensated cementitious waterproofing slurry with quick strength development. VELOSIT WP 100 gains strength faster than conventional products reducing the need for water curing and protection to one day. VELOSIT WP 100 creates a rigid waterproof layer with good abrasion resistance on the substrate.

VELOSIT WP 100 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT WP 100 can be applied by brush, trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- Hydrophobic
- Resists 50 m (160 ft.) water pressure acc. to EN 12390-8
- 45 min. working time and 15 MPa compressive strength after 24 hours
- Final strength of 30 MPa (4351 psi) after 28 days
- Open to foot traffic after 4 – 6 hours
- Ready for water pressure after 3 days
- Good adhesion to concrete and masonry
- Water curing may be required for first 24 hours at hot and dry temperatures
- No cracking if applied too thick
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT WP 100 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances. Substrate must be open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 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. Blowholes, honeycombs or other surface defects can be filled with VELOSIT WP 100 or the repair mortar VELOSIT RM 202. Before the application of VELOSIT WP 100, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

Mixing: Mix VELOSIT WP 100 with 21 – 26 % potable water, i.e. 5.0 – 5.2 l (1.3 – 1.4 gal.) water per 20 kg (44 lb.) bag. Fill 21 % mixing water (5.0 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. Add up to 5 % water under stirring to adjust the desired consistency.

The product is workable for 45 – 60 min. at 23 °C.

a.) Brush application: Apply the first coat with a masons brush in crossing applications to the pre-dampened substrate at the specified rate. Second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten the recoat time.

b.) If building code or specification does not require two coats, VELOSIT WP 100 can be applied in one coat by trowel. Make sure to adjust the consistency to a thixotropic workability. Apply a scratch coat of VELOSIT WP 100 to the damp substrate to fill surface irregularities. Immediately apply the desired material amount with a notched trowel to the substrate. 2 mm (80 mils) dry film thickness can be achieved with a 6 mm (1/4 inch) notch size and application at a 45° angle. Finish the surface immediately afterwards. Make sure all grooves are completely closed without air entrapment.

c.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously. VELOSIT WP 100 can be applied in one lift if specification allows. Otherwise spray in two layers with a wait time of approx. 60 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT WP 100 is a fast curing material and may be difficult to remove if left in the machine.

3.) Curing

VELOSIT WP 100 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 24 hours is required.

Estimating

Brush application 2 mm:

1st coat VELOSIT WP 100: 1.7 kg/m²

2nd coat VELOSIT WP 100: 1.7 kg/m²

Trowel application 2 mm

Scratch coat VELOSIT WP 100: 0 – 0.5 kg/m²

2nd coat VELOSIT WP 100: 2.7 – 3.4 kg/m²

Spray application 2 mm:

VELOSIT WP 100: 3.4 kg/m²*

Other thickness requirements: 1.7 kg* VELOSIT WP 100 per m² for 1 mm dry film thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 1.70 kg VELOSIT WP 100 powder + 0.35 kg water, i.e. 2.05 kg mixed material per mm and m² (3.2 lbs per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT WP 100 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 22
Mixing ratio by volume:	100 : 34
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	5.0 bar (72.5 psi)
- Negative side:	1.5 bar (14.5 psi)
Compressive / flexural strength:	
4 hours:	7 / 2 MPa (1015/290 psi)
24 hours:	15 / 4 MPa (2176/580 psi)
7 day:	21 / 4.3 MPa (3045/624 psi)
28 days:	30 / 5 MPa (4351/725 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m² x h 0,5
Adhesive strength:	1.0 MPa (232 psi)
Restrained shrinkage:	1.0 MPa (218 psi)
Fire rating EN13501-1:	Class A1

Packaging

VELOSIT WP 100 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT WP 100 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 WP 100 is only available for professional applicators.

Never add water to VELOSIT WP 100 when it has started to set.

Stiffened material must be disposed of in accordance with local regulations.

3219

VELOSIT WP 101
High strength cementitious waterproofing slurry

Application fields

VELOSIT WP 101 is a cementitious waterproofing slurry for concrete and masonry. It is a good substrate for coatings and overlays. It is especially strong against negative side water pressure. Typical application fields besides others are as follows:

- Waterproofing of basements and below grade parking structures
- Waterproofing of potable water structures
- Waterproofing of elevator pits
- Waterproofing against rising dampness in walls
- Negative side waterproofing underneath flexible waterproofing membranes
- Prime coat to fill blow holes, honeycombs and surface roughness

Properties

VELOSIT WP 101 is a shrinkage compensated cementitious waterproofing slurry with very quick strength development. VELOSIT WP 101 gains strength a lot faster than the current standard products reducing or completely eliminating the need for days of water curing and protection. VELOSIT WP 101 creates a rigid abrasion resistant coating layer on the substrate.

VELOSIT WP 101 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT WP 101 can be applied by brush, trowel or suitable spray equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- Hydrophobic
- Resists 130 m (400 ft.) water pressure acc. to EN 12390-8
- 45 min. working time and 12 MPa compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Unsurpassed strength development with 20 MPa (2900 psi) after 24 h and 50 MPa after 28 d
- Open to foot traffic after 3 – 4 hours
- Ready for water pressure after 24 h
- Very good adhesion to concrete and masonry
- Water curing only under hot and dry conditions required for max. 4 hours
- No cracking if applied too thick
- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT WP 101 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances. Substrate must be open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 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. Blowholes, honeycombs or other surface defects can be filled with VELOSIT WP 101 or the repair mortar VELOSIT RM 202. Before the application of VELOSIT WP 101, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

Mixing: Mix VELOSIT WP 101 with 17 – 20 % potable water, i.e. 4.3 – 5.0 l (1.1 – 1.3 gal.) water per 25 kg (55 lb.) bag. Fill 17 % mixing water (4.3 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. Add up to 3 % water under stirring to adjust the desired consistency.

The product is workable for 45 – 60 min. at 23 °C.

a.) Brush application: Apply the first coat with a masons brush in crossing applications to the pre-dampened substrate at the specified rate. Second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten the recoat time.

b.) If building code or specification does not require two coats, VELOSIT WP 101 can be applied in one coat by trowel. Make sure to adjust the consistency to a thixotropic workability. Apply a scratch coat of VELOSIT WP 101 to the damp substrate to fill surface irregularities. Immediately apply the desired material amount with a notched trowel to the substrate. 2 mm (80 mils) dry film thickness can be achieved with a 6 mm (1/4 inch) notch size and application at a 45° angle. Finish the surface immediately afterwards. Make sure all grooves are completely closed without air entrapment.

c.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product as described under „Mixing“ into the feed hopper of the spray machine and spray continuously. VELOSIT WP 101 can be applied in one lift if specification allows. Otherwise spray in two layers with a wait time of approx. 60 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT WP 101 is a fast curing material and may be difficult to remove if left in the machine.

d.) VELOSIT WP 101 can be used as a repair mortar for small repairs and especially as a cove mortar. Apply a slurry coat of VELOSIT WP 101 to at on the slab and approx. 25 cm (10”) on the

lower section of the wall. The cove mortar can be produced with less water addition and can be applied wet in wet onto the slurry coat.

3.) Curing

VELOSIT WP 101 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours is required.

Estimating

Brush application 2 mm:

1st coat VELOSIT WP 101: 1.6 kg/m²

2nd coat VELOSIT WP 101: 1.6 kg/m²

Trowel application 2 mm

Scratch coat VELOSIT WP 101: 0-0.5kg/m²

2nd coat VELOSIT WP 101: 2.7-3.2kg/m²

Spray application 2 mm:

VELOSIT WP 101: 3.2 kg/m²

Other thickness requirements: 1.6 kg* VELOSIT WP 101 per m² for 1 mm dry film thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 1.6 kg VELOSIT WP 101 powder + 0.3 kg water, i.e. 1.9 kg mixed material per mm and m² (3.3 lbs per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT WP 101 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 18
Mixing ratio by volume:	100 : 28
Density:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	13 bar (190 psi)
- Negative side:	5 bar (72 psi)
Compressive / flexural strength:	
4 hours:	12 / 2 MPa (1740/290 psi)
24 hours:	24 / 5 MPa (3480/725 psi)
7 days:	38 / 6 MPa (5510/870 psi)
28 days:	53 / 7 MPa (7685/1015 psi)
Chloride ions:	≤ 0.05 %
Carbonation resistance:	passed

Adhesive strength:	1.6 MPa (232 psi
Restrained shrinkage:	1.5 MPa (218 psi)

Packaging

VELOSIT WP 101 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT WP 101 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

Never add water to VELOSIT WP 101 when it has started to set. Stiffened material must be disposed.

3119

VELOSIT CW 111
High strength crystalline waterproofing slurry

Application fields

VELOSIT CW 111 is a crystalline waterproofing slurry for concrete substrates. It is very economic and easy to apply. VELOSIT CW 111 becomes part of the concrete and creates a waterproof layer inside the concrete itself. It is especially strong against negative side water pressure. Typical application fields besides others are as follows:

- Waterproofing of basements and below grade parking structures
- Waterproofing of potable water structures
- Protection of dams and spill-ways
- Waterproofing of sewage structures
- Waterproofing of tunnels and pipelines
- Slab waterproofing (dry shake application)
- Waterproofing of elevator pits

Properties

VELOSIT CW 111 is a crystalline waterproofing slurry with unsurpassed strength development. VELOSIT CW 111 cures a lot faster than the current standard products eliminating the need for days of water curing and protection. VELOSIT CW 111 creates a reactive layer inside the concrete that allows the structure to self-heal shrinkage cracks under contact with water.

VELOSIT CW 111 surpasses the requirements of EN 1504-3 for concrete repair (CR) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT CW 111 can be applied by brush, dry-shake or suitable spray equipment.

- Self healing properties of up to 0.4 mm static cracks
- Unsurpassed strength development with more than 20 MPa (2900 psi) after 24 h and more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 4 hours
- Extreme adhesive strength (concrete failure)
- Shrinkage compensated, no spider-web cracking
- Water curing only under hot and dry conditions required for 4 hours
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Good sulfate resistance

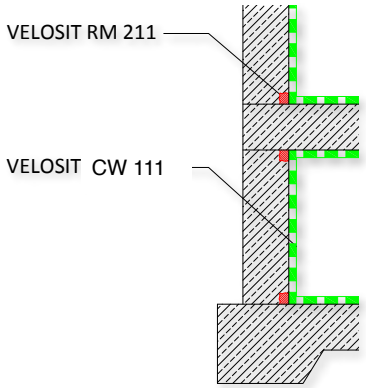
Application

1.) Substrate preparation

VELOSIT CW 111 can only be used on concrete substrates.

a.) Hardened concrete must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances. Substrate must be pore open and load bearing. The minimum requirement for adhesive strength is 1 MPa (145 psi) and for the compressive strength 20 MPa (2900 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Fill all blowholes, honeycombs or other surface defects with VELOSIT RM 211. Before the application of VELOSIT CW 111, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

b.) Cold joints can be treated by chiseling out approx. 5 cm (2“) concrete in a U shape around the joint. Fill the opening with VELOSIT RM 211 and finish with VELOSIT CW 111.



c.) Fresh concrete can be treated with VELOSIT CW 111 in a dry-shake application. The concrete must have sufficiently stiffened that a helicopter trowel can work on it. Do not use any curing compounds or other bond breaking materials before applying VELOSIT CW 111.

2.) Processing

a.) Brush application: Mix VELOSIT CW 111 with 22 – 23 % potable water, i.e. 5.50 – 5.75 l (1.45 – 1.5 gal.) water per 25 kg (55 lb.) bag. Fill the complete mixing water into a suitable bucket and mix the powder with a slow speed drill (300 – 600 rpm) into the water until a lump-free mix with a consistency of an oil paint is achieved. With hard water (high Calcium content) a slight false setting within the first 2 min. after mixing is possible. In such case, re-mix for another 30 seconds. Do not add water!

The product is workable for 30 – 45 min. at 23 °C. Apply the first coat with a masons brush in crossing applications to the pre-dampened substrate at the specified rate. The second coat must be applied within the recoat time, which is 60 – 90 min. at 23 °C. If too much time elapses after application of the first coat, a reduced bond between the layers may be the result

b.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Prepare the product as described for the brush application under a.). The water addition may be reduced slightly to get a more thixotropic mix. Fill the product into the feed hopper of the spray machine and spray continuously. If less water is used the whole specified amount of VELOSIT CW 111 may be applied in one lift. Otherwise spray in two layers with a wait time of approx. 30 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions. VELOSIT CW 111 is a fast curing material and may be hard to remove if left in the machine.

c.) Dry-shake application: VELOSIT CW 111 can be applied in powder form onto fresh concrete before finishing the surface. The product is applied uniformly onto the concrete and then finished with a helicopter trowel. Make sure that the trowel forces sufficient moisture to the surface to completely wet and embed the powdered VELOSIT CW 111.

3.) Curing

VELOSIT CW 111 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3-4 hours is required.

Please consider for the dry shake application that the concrete may require curing. Take the required steps by either water curing as specified or applying a curing compound.

Estimating

Waterproofing concrete:

Brush application

1st coat VELOSIT CW 111: 0.8 kg/m²

2nd coat VELOSIT CW 111: 0.7 kg/m²

Spray application

VELOSIT CW 111: 1.5 kg/m²

Dry-Shake application

VELOSIT CW 111: 1.2 kg/m²

Cleaning

VELOSIT CW 111 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 23
Mixing ratio by volume:	100 : 28
Density:	1.2 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)

Water impermeability acc. EN 12390-8:

- Positive side:	13 bar (190 psi)
- Negative side:	13 bar (190 psi)

Compressive / flexural strength:

4 hours:	8 / 1 MPa (1160/145 psi)

24 hours:	21 / 4 MPa (3045/580 psi)	
7 days:	35 / 5 MPa (5075/725 psi)	
28 days:	51 / 7 MPa (7395/1015 psi)	
Chloride ions:	< 0.05 %	
Carbonation resistance:	passed	
Capillary water absorption:	0.4 kg/m^2 x h$^{0.5}$	
Adhesive strength:	2.8 MPa (406 psi)	(concrete failure)
Restrained shrinkage:	2.8 MPa (406 psi)	(concrete failure)
Fire rating EN13501-1:	Class A1	

Packaging

VELOSIT CW 111 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT CW 111 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

The crystalline waterproofing principle requires several days of water contact to develop its full effect.

VELOSIT CW 111 may discolor or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

2319

VELOSIT WP 120
Highly flexible cementitious waterproofing slurry

Application fields

VELOSIT WP 120 is a polymer modified cementitious waterproofing slurry for concrete and masonry. It is a good substrate for coatings and overlays. It is crack bridging and a good barrier against carbon dioxide. Typical application fields besides others are as follows:

- Waterproofing of basements and below grade parking structures
- Waterproofing of potable water structures
- Protective coating on dams and spillways
- Waterproofing acc. DIN 18533
- Coating of tanks for manure and sewage
- Waterproofing of swimming pools
- Waterproofing underneath tiles and natural stones
- Protection against rising dampness
- Waterproofing of green roofs
- Coating of trafficable flat roofs
- Also available in white as VELOSIT WP 120 white or with increased abrasion resistance as VELOSIT WP 120 HD

Properties

VELOSIT WP 120 is a highly flexible cementitious waterproofing slurry with quick curing. VELOSIT WP 120 creates a crack bridging and abrasion resistant coating on the substrate.

VELOSIT WP 120 surpasses the requirements of EN 1504-2 for coatings (C) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT WP 120 can be applied by brush, trowel or suitable spray equipment.

- Crack bridging
- Highly flexible, tensile elongation > 100 %
- Easy to apply
- Resists 50 m (160 ft.) water pressure acc. to EN 12390-8
- 60 min. working time
- Final strength is achieved within 5 – 7 days
- Open to foot traffic after 3 – 4 hours (23 °C / 60 % r.h.)
- Ready for water pressure after 5 days
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering and UV resistance
- Potable water approved

- Good sulfate resistance

Application

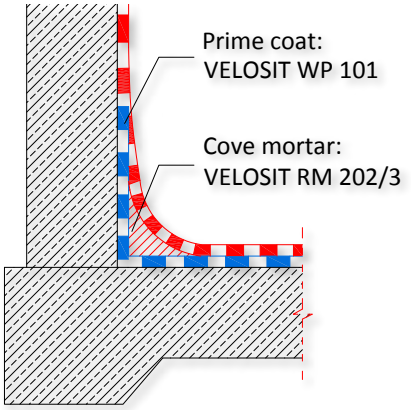
1.) Substrate preparation

VELOSIT WP 120 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances. Substrate must be pore open and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 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. Blowholes, honeycombs or other surface defects can be filled with VELOSIT WP 101 or the repair mortar VELOSIT RM 202. Before the application of VELOSIT WP 120, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

Details:

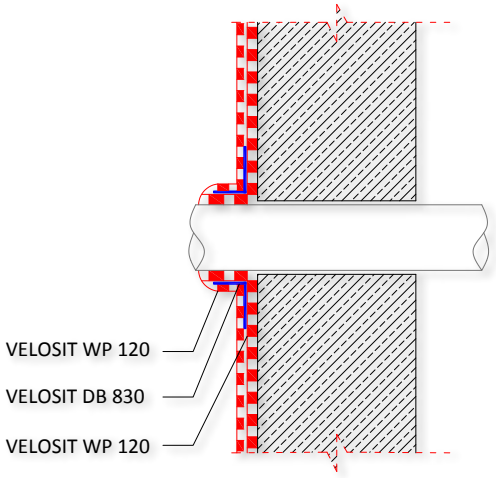
a.) The wall-slab-detail can be solved with a cove made with VELOSIT WP 101 or RM 202 or alternatively with a joint tape VELOSIT DB 830. The joint tape can be applied with VELOSIT WP 120.



b.) Negative waterproofing: In case hydrostatic pressure effects VELOSIT WP 120 or may effect in the future from the reverse side a negative side waterproofing must be applied with at least 1 mm (40 mils) VELOSIT WP 101.

c.) Joints and dynamic cracks must be waterproofed with VELOSIT DB 830. The joint tape may be applied with VELOSIT WP 120.

d.) Pipe penetrations are waterproofed with a sleeve made from VELOSIT DB 830. Cut a hole into the sleeve with a diameter approx. 6 mm (¼") smaller than the pipe. The sleeve is made from a 12 cm (5") piece of VELOSIT DB 830. Brush plenty of VELOSIT WP 120 onto the pipe and the



surrounding area. Pull the sleeve over the pipe push it with a trowel into the material. Work away from the pipe and take care not to entrap air or create wrinkles.

2.) Processing

Mixing: Pour the B-component of VELOSIT WP 120 into a suitable bucket and mix the powder with a slow speed drill (300-600 rpm) into the dispersion until a lump-free mix is achieved. Add up to 1 l (0.3 gal) water under stirring to adjust the desired consistency. Water addition extends the cure time and should be kept as low as possible.

The product is workable for 45 – 60 min. at 23 °C.

a.) Brush application: Apply the first coat with a masons brush in a crossing applications to the pre-dampened substrate at the specified rate. Second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23°C. Colder temperatures extend, warmer temperatures shorten this time.

b.) If building code or specification does not require two coats, VELOSIT WP 120 can be applied in one coat by trowel. Make sure to adjust the consistency to a thixotropic workability without water addition. Apply a scratch coat of VELOSIT WP 120 to the damp substrate to fill surface irregularities. Immediately apply the desired material amount with a notched trowel to the substrate. 2 mm (80 mils) dry film thickness can be achieved with a 6 mm (¼") notch size and application at a 45° angle. Finish the surface immediately afterwards. Make sure all grooves are completely closed without air entrapment.

c.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product into the feed hopper of the spray machine and spray continuously.
VELOSIT WP 120 can be applied in one lift if specification allows. Otherwise spray in two layers with a wait time of approx. 60 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight.
Always empty and flush the machine after spraying or before long spray interruptions.
VELOSIT WP 120 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT WP 120 does not require long term curing as it reacts relatively fast with water from the B-component. Avoid direct sun light or wind or air flow after the application. Otherwise it is mandatory to work in two coats to avoid shrinkage cracks.

Estimating

Brush application 2 mm:

1st coat VELOSIT WP 120:	1.7 kg/m²
2nd coat VELOSIT WP 120:	1.7 kg/m²

Trowel application 2 mm

Scratch coat VELOSIT WP 120:	0 – 0.5 kg/m²
2nd coat VELOSIT WP 120:	2.9 – 3.4 kg/m²

Spray application 2 mm:

VELOSIT WP 120:	3.4 kg/m²

Other thickness requirements: 1.7 kg VELOSIT WP 120 per m² (3.5 lbs. per 10 ft²) for 1 mm (40 mils) dry film thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

Recommended thickness:

Dampproofing:	1.25 mm (50 mils)
< 25 cm (5") water:	1.5 mm (60 mils)
Hydrostatic pressure:	2.0 mm (80 mils)

Hydrostatic pressure and water flow or light mechanical abrasion: 2.5 mm (100 mils)

Always observe building code or specification requirements!

Cleaning

VELOSIT WP 120 can be removed in the fresh state with water. Once it has cured mechanical cleaning is required.

Quality features

Colors:	gray / white
Mixing ratio by weight:	100 : 50
Mixing ratio by volume:	100 : 65
Density A-comp.:	1.6 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)

Water impermeability acc. EN 12390-8:

- Positive side:	5 bar (73 psi)

- Negative side:	1.5 bar (22 psi)
Tensile strength:	1.2 MPa (174 psi)
Tensile elongation:	105 %
Crack bridging:	
Acc. DIN 28052-6:	0.4 mm (16 mils)/24h
Acc. ASTM C836:	2.8 mm (112 mils)
S_D-value$_{water}$, 2 mm (80 mils):	2.5 m (8'4")
S_D-value$_{CO2}$, 2 mm (80 mils):	230 m (750')
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.02 kg/m^2 x h$^{0.5}$
Adhesive strength:	1.1 MPa (160 psi)

Packaging

The A-component of VELOSIT WP 120 is available in 20 kg (44 lb.) watertight plastic bags. The B-component is packaged in 10 l (2.6 gal) plastic pails.

Storage

VELOSIT WP 120 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

Never add water to VELOSIT WP 120 when it has started to set. Stiffened material must be disposed.

0519

VELOSIT WP 121
Rapid flexible cementitious waterproofing slurry

Application fields

VELOSIT WP 121 is a polymer modified cementitious waterproofing slurry for concrete and masonry. Due to its fast curing characteristics it is especially suitable in cool and humid environments. It is a good substrate for coatings and overlays. It is crack bridging and a good barrier against carbon dioxide. Typical application fields besides others are as follows:

- Waterproofing of basements and below grade parking structures
- Waterproofing of potable water structures
- Protective coating on dams and spillways
- Waterproofing acc. DIN 18533
- Coating of tanks for manure and sewage
- Waterproofing of swimming pools
- Waterproofing underneath tiles and natural stones
- Protection against rising dampness
- Waterproofing of green roofs
- Coating of trafficable flat roofs

Properties

VELOSIT WP 121 is a highly flexible cementitious waterproofing slurry with rapid curing. VELOSIT WP 121 creates a crack bridging and abrasion resistant coating on the substrate.

VELOSIT WP 121 surpasses the requirements of EN 1504-2 for coatings (C) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT WP 121 can be applied by brush, trowel or suitable spray equipment.

- Crack bridging
- Highly flexible, tensile elongation > 60 %
- Easy to apply
- Resists 50 m (160 ft.) water pressure acc. to EN 12390-8
- 30 min. working time
- Final strength is achieved within 2 – 3 days
- Open to foot traffic after 2 – 3 hours (23°C/60% r.h.)
- Ready for water pressure after 1 day
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Good weathering and UV resistance
- Potable water approved
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT WP 121 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances. Substrate must be pore open and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 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. Blowholes, honeycombs or other surface defects can be filled with VELOSIT WP 101 or the repair mortar VELOSIT RM 202. Before the application of VELOSIT WP 121, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

Details:

a.) The wall-slab-detail can be solved with a cove made with VELOSIT WP 101 or RM 202 or alternatively with a joint tape VELOSIT DB 830. The joint tape can be applied with VELOSIT WP 121.

b.) Negative waterproofing: In case hydrostatic pressure effects VELOSIT WP 121 or may effect in the future from the reverse side a negative side waterproofing must be applied with at least 1 mm (40 mils) VELOSIT WP 101.

c.) Joints and dynamic cracks must be waterproofed with VELOSIT DB 830. The joint tape may be applied with VELOSIT WP 121.

d.) Pipe penetrations are waterproofed with a sleeve made from VELOSIT DB 830. Cut a hole into the sleeve with a diameter approx. 6 mm (¼") smaller than the pipe. The sleeve is made from a 12 cm (5") piece of VELOSIT DB 830. Brush plenty of VELOSIT WP 121 onto the pipe and the surrounding area. Pull the sleeve over the pipe push it with a trowel into the material. Work away from the pipe and take care not to entrap air or create wrinkles.

2.) Processing

Mixing: Pour the B-component of VELOSIT WP 121 into a suitable bucket and mix the powder with a slow speed drill (300-600 rpm) into the dispersion until a lump-free mix is achieved. Add up to 1 l (0.3 gal) water under stirring to adjust the desired consistency. Water addition extends the cure time and should be kept as low as possible.

The product is workable for 30 – 40 min. at 23 °C.

a.) Brush application: Apply the first coat with a masons brush in a crossing applications to the pre-dampened substrate at the specified rate. Second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten this time.

b.) If building code or specification does not require two coats, VELOSIT WP 121 can be applied in one coat by trowel. Make sure to adjust the consistency to a thixotropic workability without water addition. Apply a scratch coat of VELOSIT WP 121 to the damp substrate to fill surface irregularities. Immediately apply the desired material amount with a notched trowel to the substrate. 2 mm (80 mils) dry film thickness can be achieved with a 6 mm (¼") notch size and application at a 45° angle. Finish the surface immediately afterwards. Make sure all grooves are completely closed without air entrapment.

c.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product into the feed hopper of the spray machine and spray continuously.
VELOSIT WP 121 can be applied in one lift if specification allows. Otherwise spray in two layers with a wait time of approx. 60 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight.
Always empty and flush the machine after spraying or before long spray interruptions.
VELOSIT WP 121 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT WP 121 does not require curing as it reacts very fast with water from the B-component. Avoid direct sun light or wind or air flow after the application. Otherwise it is mandatory to work in two coats to avoid shrinkage cracks.

Estimating

Brush application 2 mm:

1st coat VELOSIT WP 121: 1.6 kg/m²

2nd coat VELOSIT WP 121: 1.6 kg/m²

Trowel application 2 mm

Scratch coat VELOSIT WP 121: 0 – 0.5 kg/m²

2nd coat VELOSIT WP 121: 2.7 – 3.2 kg/m²

Spray application 2 mm:

VELOSIT WP 121: 3.2 kg/m²

Other thickness requirements: 1.6 kg VELOSIT WP 121 per m² (3.5 lbs. per 10 ft²) for 1 mm (40 mils) dry film thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

Recommended thickness:

Dampproofing:	1.25 mm (50 mils)
< 25cm (5”) water:	1.5 mm (60 mils)
Hydrostatic pressure:	2.0 mm (80 mils)

Hydrostatic pressure and water flow or light mechanical abrasion: 2.5 mm (100 mils)

Always observe building code or specification requirements!

Cleaning

VELOSIT WP 121 can be removed in the fresh state with water. Once it has cured mechanical cleaning is required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 56
Mixing ratio by volume:	100 : 80

Density A-comp.:	1.5 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	5 bar (73 psi)
- Negative side:	1.5 bar (22 psi)
Tensile strength:	2.0 MPa (290 psi)
Tensile elongation:	65 %
Crack bridging:	
Acc. DIN 28052-6:	0.4 mm (16 mils)/24h
Acc. ASTM C836:	2.4 mm (96 mils)
S_D-value$_{water}$, 2mm (80 mils):	3 m (10')
S_D-value$_{CO2}$, 2mm (80 mils):	250 m (820')
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.02 kg/m^2 x h$^{0.5}$
Adhesive strength:	1.7 MPa (247 psi)

Packaging

The A-component of VELOSIT WP 121 is available in 18 kg (40 lb.) watertight plastic bags. The B-component is packages in 10 l (2.6 gal) plastic pails.

Storage

VELOSIT WP 121 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

Never add water to VELOSIT WP 121 when it has started to set. Stiffened material must be disposed.

0519

VELOSIT WP 124
Flexible cementitious waterproofing slurry

Application fields

VELOSIT WP 124 is a polymer modified cementitious waterproofing slurry for concrete, stone and masonry. VELOSIT WP 124 creates a good barrier against water and carbon dioxide whilst maintaining good crack bridging capabilities. VELOSIT WP 124 is a good substrate for coatings and overlays with good abrasion resistance. VELOSIT WP 124 can be processed to a flexible or semi-flexible product depending on the polymer addition.

Typical applications include waterproofing and protection of:

- Basements and below grade structures
- Potable water structures
- Dams and spillways
- Covered roofs
- Terraces and balconies below tiles and natural stone
- Small & medium sized swimming pools
- Inaccessible and lightly trafficked roofs
- Planted roofs of residential villas

Properties

VELOSIT WP 124 is a flexible cementitious waterproofing slurry with quick curing and waterproofing in accordance with DIN 18533. VELOSIT WP 124 creates a crack bridging and abrasion resistant coating on substrate.

VELOSIT WP 124 surpasses the requirements of EN 1504-2 for coatings (C) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT WP 124 can be easily applied by brush, trowel or suitable spray equipment.

- Crack bridging
- High flexibility, tensile elongation > 60 % (25A+8B)
- Resists 50 m (160 ft.) water pressure according to EN 12390-8
- 60 min. working time
- Final strength is achieved within 7 days
- Open to foot traffic after 5 hours (23 °C/RH 60 %)
- Ready for water pressure after 5 days
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Improved sulphate resistance

Application

1.) Substrate preparation

VELOSIT WP 124 is designed for substrates like concrete, masonry or absorptive natural stones.

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

Substrate must be pore open and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 psi). Lower strength values can be accept 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. Blowholes, honeycombs orother surface defects can be filled with VELOSIT WP 101 or the repair mortar VELOSIT RM 202. Before application, pre-dampen the substrate with plenty of clean water to a saturated surface dry (SSD) condition.

Details:

a.) The wall-slab-detail can be solved with a hand applied cove using VELOSIT WP 101 or RM 202.

Alternatively use VELOSIT DB 830 joint tape which can be fixed in place with VELOSIT WP 124.

b.) Negative waterproofing: In case of expected negative hydrostatic pressure effects, apply VELOSIT WP 101 at a minimum thickness of 1 mm (40 mils) prior to the application of VELOSIT WP 124.

c.) Joints and dynamic cracks must be sealed with VELOSIT DB 830 joint tape. This is carried out using VELOSIT WP 124.

d.) Pipe penetrations are waterproofed with a VELOSIT DB 830 sleeve. Cut a hole into the sleeve with a diameter approx. 6 mm (¼") smaller than the pipe.

The sleeve is made from a 12 cm (5") piece of VELOSIT DB 830. Thoroughly abrade and clean a 20mm strip of the pipe where it penetrates the substrate. Brush plenty of VELOSIT WP 124 onto the abraded pipe and the surrounding area. Pull the sleeve over the pipe push it with a trowel into the material. Work away from the pipe and take care not to entrap air or create wrinkles.

2.) Processing

Mixing:

Flexible coating: Pour 8 kg B-component of VELOSIT WP 124 into a suitable bucket and mix 25 kg powder with a slow speed drill (300-600 rpm) into the dispersion until a lump-free mix is achieved. Add up to 1 l (0.3 gal) water under stirring to adjust the desired consistency.

Semi-flexible coating: Pour 4 kg B-component of VELOSIT WP 124 into a suitable bucket and mix 25 kg powder with a slow speed drill (300-600 rpm) into the dispersion until a lump-free mix is achieved. Add 1.5-2.5 l (0.4-0.7 gal) water under stirring to adjust the desired consistency.

Water addition extends the cure time and should be kept as low as possible.

The product is workable for 45 – 60 min. at 23 °C.

a.) Brush application: Apply the first coat with a masons brush in a crossing applications to the pre-dampened substrate at the specified rate. Second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten this time.

b.) If building code or specification does not require two coats, VELOSIT WP 124 can be applied in one coat by trowel. Make sure to adjust the consistency to a thixotropic workability without water addition. Apply a scratch coat of VELOSIT WP 124 to the damp substrate to fill surface irregularities. Immediately apply the desired material amount with a notched trowel to the substrate. 2 mm (80 mils) dry film thickness can be achieved with a 6 mm (¼") notch size and application at a 45° angle. Finish the surface immediately afterwards. Make sure all grooves are completely closed without air entrapment.

c.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small
- Desoi GmbH: Desoi SP-Y

Fill the product into the feed hopper of the spray machine and spray continuously.
VELOSIT WP 124 can be applied in one lift if specification allows. Otherwise spray in two layers with a wait time of approx. 60 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after spraying or before long spray interruptions.
VELOSIT WP 124 is a fast curing material and may be hard to remove if left in the machine.

3.) Curing

VELOSIT WP 124 does not require long term curing as it reacts relatively fast with water from the B-component. Avoid direct sun light or wind or air flow after the application. Otherwise it is mandatory to work in two coats to avoid shrinkage cracks.

Estimating

Brush application 2 mm:

1st coat VELOSIT WP 124:	1.9 kg/m²
2nd coat VELOSIT WP 124:	1.9 kg/m²

Trowel application 2 mm

Scratch coat VELOSIT WP 124:	0-0.5kg/m²
2nd coat VELOSIT WP 124:	3.5-3.8kg/m²

Spray application 2 mm:

VELOSIT WP 124:	3.4 kg/m²

Other thickness requirements: 1.9 kg VELOSIT WP 124 per m² (3.9 lbs. per 10 ft2) for 1 mm (40 mils) dry film thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

Recommended thickness:

Dampproofing:	1.25 mm (50 mils)
< 25cm (5") water:	1.5 mm (60 mils)
Hydrostatic pressure:	2.0 mm (80 mils)

Hydrostatic pressure and water flow or light mechanical abrasion: 2.5 mm (100 mils)

Always observe building code or specification requirements!

Cleaning

VELOSIT WP 124 can be removed in the fresh state with water. Once it has cured mechanical cleaning is required.

Quality features

Flexible Coating:	
Color:	Gray
Mixing ratio by weight:	100 : 32
Bulk density-Comp.A:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability:	EN 12390-8
- Positive side:	5 bar (73 psi)
- Negative side:	1.5 bar (22 psi)
Tensile strength:	1.0 MPa (145 psi)
Tensile elongation:	60 %
Crack bridging:	
Acc. ASTM C836:	2.4 mm (96 mils)
S_D-value$_{water}$, 2mm (80 mils):	3 m (10')
S_D-value$_{CO2}$, 2mm (80 mils):	250 m (820')
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.02 kg/m² x $h^{0.5}$
Adhesive strength:	1.0 MPa (145 psi)
Semi-flexible coating	
Color:	Gray
Mixing ratio by weight:	100 : 16
Bulk density-Comp.A:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability:	EN 12390-8
- Positive side:	5 bar (73 psi)
- Negative side:	5 bar (73 psi)
Tensile strength:	2.0 MPa (290 psi)
Tensile elongation:	8 %
Crack bridging (ASTM C836):	0.6 mm (24 mils)
Adhesive strength:	2.0 MPa (290 psi)

Packaging

The components of VELOSIT WP 124 are supplied separately. The A-component is available in 25 kg (55 lb.) watertight plastic bags. The B-component is available in 8 Litre (2.08 gal) or 4 liter (1.04 gal.) plastic pails.

Storage

VELOSIT WP 124 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

Never add water to VELOSIT WP 124 when it has started to set. Stiffened material must be disposed.

0519

VELOSIT BL 151
Bitumen Latex

Application fields

VELOSIT BL 151 is a bituminous waterproofing for concrete and masonry. Typical application fields besides others are as follows:

- Dampproofing of basements
- Waterproofing against rising dampness in walls
- Protection of foundations
- Protection of in ground water tanks

Properties

VELOSIT BL 151 is a elastomeric, crack bridging polymer enhanced bitumen emulsion. VELOSIT BL 151 creates a very flexible coating on the substrate.

VELOSIT BL 151 can be applied by brush, roller or suitable spray equipment.

- Resists 15 m (40 ft.) water pressure acc. to EN 12390-8
- Easy to apply
- Ready for water pressure after 24 h
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT BL 151 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances. Substrate must be open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 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. Blowholes, honeycombs or other surface defects can be filled with the repair mortar VELOSIT RM 202.

2.) Processing

a.) Brush application: Apply one coat of VELOSIT BL 151 with a masons brush or roller in crossing applications to the dry substrate at the specified rate. A second coat can be applied after the first one has gained sufficient strength which is after 3 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten the recoat time.

b.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- HighTech GmbH: HighPump Small

- Desoi GmbH: Desoi SP-Y

Fill the product into the feed hopper of the spray machine and spray continuously.
VELOSIT BL 151 can be applied in one lift if specification allows.

3.) Curing

VELOSIT BL 151 does not require curing as it dries relatively fast on the substrate. Protect against rain or condensation until it has fully cured.

Estimating

Brush application 0.6 mm:

VELOSIT BL 151: 1.0 kg/m^{2*}

Spray application 0.6 mm:

VELOSITBL 151: 1.0 kg/m^{2*}

Cleaning

VELOSIT BL 151 can be removed in the fresh state with water. Once it has cured solvents like naphtha are required.

Quality features

Color:	brown
Density:	1.0 kg/l
Substrate temperature:	5 – 50 °C* (40 – 120 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	1.5 bar (22 psi)
- Negative side:	not suitable
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h^{0,5}
Fire rating EN13501-1:	Class E

Packaging

VELOSIT BL 151 is available in 30 kg (66 lb.) pails or 1000 kg IBC containers.

Storage

VELOSIT BL 151 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.

5015

VELOSIT PC 221
Plug Cement

Application fields

VELOSIT PC 221 is a rapid setting cement for concrete and masonry. The product is used to waterproof water leakages, as an anchoring mortar and as an accelerator for other VELOSIT mortars. It is especially strong against negative side water pressure. Typical application fields besides others are as follows:

- Waterproofing of punctual water leakages for example in concrete pipes, water tanks and basement walls
- Mortar for anchoring of starter bars, radiator mountings and similar
- Repair mortar for small surface repairs
- Set accelerator for VELOSIT repair mortars

Properties

VELOSIT PC 221 is a shrinkage compensated plug cement with very fast strength development. VELOSIT PC 221 sets within 1 – 2 minutes. VELOSIT PC 221 is immediately waterproof and anchors itself into the concrete surface.

VELOSIT PC 221 surpasses the requirements of EN 1504-3 class R2 for concrete repair (CR) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT PC 221 can be applied by hand or trowel.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- Fast strength development with 12 MPa compressive strength after 1 hours and final strength of more than 40 MPa (5800 psi) after 28 days
- Resists 130 m (400 ft.) water pressure acc. to EN 12390-8
- 1 min. working time
- Ready to receive top coat after 10 min.
- Ready for water pressure after a few minutes
- Very good adhesion to concrete and masonry
- No cracking
- No curing required
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Good sulfate resistance

Application

1.) Substrate preparation

VELOSIT PC 221 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

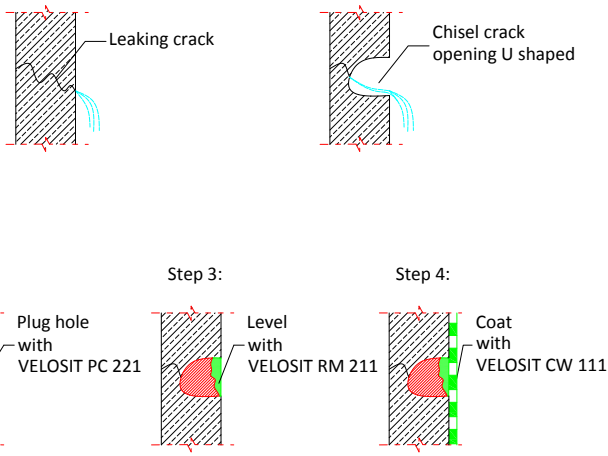
Chisel defective area or water leakage open achieving a U-shaped profile. Drill holes for starter bars and radiator mountings. Remove all dust and debris from areas to be treated. Dampen the surface with water to a saturated surface dry (SSD) condition before application of VELOSIT PC 221.

2.) Processing

Mix 3 volume parts VELOSIT PC 221 with 1 part potable water in a small mixing vessel by hand (for example with a spatula). Make sure that a lump-free mix with the desired consistency is achieved.

The product is workable for 1 min. at 23 °C. Only mix as much material as can be applied immediately!

a.) Plugging of water leakages: Form mixed material by hand (wear protective gloves!) to a ball shape and push immediately into the prepared leakage. Hold for 1 to 2 minutes until the product has sufficiently hardened. Immediately shave the surface flush with the substrate. After a short waiting time the area waterproofing with VELOSIT WP 101, WP 102 or CW 111 can be applied.



b.)
Application as repair mortar: Mix VELOSIT PC 221 to the required consistency and fill immediately into the prepared defective area and smoothen with a trowel. Excessive material can be shaved off after 3 – 5 min.

c.) Use as anchoring mortar: Mix VELOSIT PC 221 to a slightly thinner consistency and immediately fill into the prepared anchor holes. Push starter bars immediately into the holes and adjust direction. Remove excess material as soon as possible.

d.) Use as accelerator: VELOSIT PC 221 acts as an accelerator for many cementitious mortars. Required amount must be determined in trial mixes.

3.) Curing

VELOSIT PC 221 does not require curing.

Estimating

1,4 kg* VELOSIT PC 221 produces 1 liter of cured material.

* 1.4 kg VELOSIT PC 221 powder + 0.4 kg water, i.e. 1.8 kg mixed material per liter

Cleaning

VELOSIT PC 221 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 25
Mixing ratio by volume:	100 : 33
Density:	1.3 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	5 bar (190 psi)
- Negative side:	5 bar (72 psi)
Compressive / flexural strength:	
1 hour:	12 / 2 MPa (1740/290 psi)
24 hours:	30 / 5 MPa (4350/725 psi)
7 days:	40 / 6 MPa (5800/870 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.4 kg/m^2 x h$^{0.5}$
Adhesive strength:	1.2 MPa (232 psi)
Restrained shrinkage:	1.2 MPa (218 psi)

Packaging

VELOSIT PC 221 is available in 12 kg (26 lb.) plastic pails.

Storage

VELOSIT PC 221 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

Never add water to VELOSIT PC 221 when it has started to set. Stiffened material must be disposed.

2319

VELOSIT PC 222
Plug cement and starter

Application fields

VELOSIT PC 222 is a flash setting cement for concrete and masonry. The product is used to waterproof water leakages and as an accelerator for other VELOSIT mortars. It is especially strong against negative side water pressure. Typical application fields besides others are as follows:

- Waterproofing of punctual water leakages for example in concrete pipes, water tanks and basement walls
- Set accelerator for VELOSIT repair mortars

Properties

VELOSIT PC 222 is a shrinkage compensated plug cement with very fast strength development. VELOSIT PC 222 sets within 10-15 seconds. VELOSIT PC 222 is immediately waterproof and anchors itself into the concrete surface.

VELOSIT PC 222 surpasses the requirements of EN 1504-3 class R2 for concrete repair (CR) and can be used according to the principles 3.1 and 3.3 acc. to EN 1504-9.

VELOSIT PC 222 can be applied by hand or trowel.

- Minimal shrinkage/expansion under dry resp. wet curing conditions
- Fast strength development with 12 MPa compressive strength after 1 hours and final strength of more than 40 MPa (5800 psi) after 28 days
- Resists 130 m (400 ft.) water pressure acc. to EN 12390-8
- Flash setting with water
- Ready to receive top coat after 10 min.
- Ready for water pressure after a few minutes
- Very good adhesion to concrete and masonry
- No cracking
- No curing required
- Good resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Good weathering resistance
- Potable water approved
- Good sulfate resistance

Application

1.) Substrate preparation

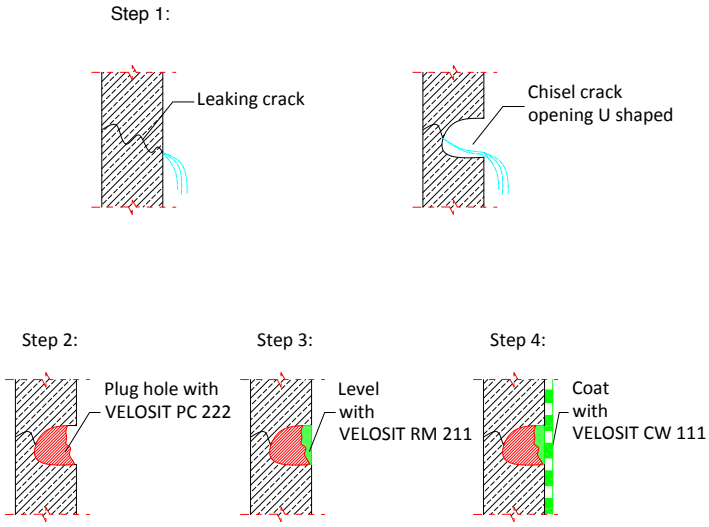
VELOSIT PC 222 is designed for mineralic substrates like concrete, masonry or absorptive natural stones.

Chisel defective area or water leakage open achieving a U-shaped profile. Remove all dust and debris from areas to be treated. Dampen the surface with water to a saturated surface dry (SSD) condition before application of VELOSIT PC 222.

2.) Processing

VELOSIT PC 222 is applied as a dry powder into the leakage. Due to the immediate set it is not possible to mix the product with water.

a.) Plugging of water leakages: Apply a handful of dry VELOSIT PC 222 (wear protective gloves!) into the prepared leakage. Hold for 1 to 2 minutes until the product has sufficiently hardened. Immediately shave the surface flush with the substrate. After a short waiting time the area waterproofing with VELOSIT WP 101 or VELOSIT CW 111 can be applied.



b.) Use as accelerator: VELOSIT PC 222 acts as an accelerator for many cementitious mortars. Required amount must be determined in trial mixes.

3.) Curing

VELOSIT PC 222 does not require curing.

Cleaning

VELOSIT PC 222 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color:	gray
Density:	1.2 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)

Water impermeability acc. EN 12390-8:

- Positive side:	5 bar (190 psi)
- Negative side:	5 bar (72 psi)

Compressive / flexural strength:	
1 hour:	12 / 2 MPa (1740/290 psi)
24 hours:	30 / 5 MPa (4350/725 psi)
7 days:	40 / 6 MPa (5800/870 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.4 kg/m^2 x h$^{0.5}$
Adhesive strength:	1.2 MPa (232 psi
Restrained shrinkage:	1.2 MPa (218 psi)

Packaging

VELOSIT PC 222 is available in 12 kg (26 lb.) plastic pails.

Storage

VELOSIT PC 222 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 PC 222 is only available for professional applicators.

Never add water to VELOSIT PC 222 when it has started to set. Stiffened material must be disposed.

2319

VELOSIT PU 400
2 component hotspray polyurea coating

CE
EN1504-2

Application fields

VELOSIT PU 400 is a universal instant setting protective coating with extraordinary properties. VELOSIT PU 400 shows an enormous flexibility paired with exceptional tensile strength, mechanical and chemical durability make it the ideal coating system for applications with demanding requirements, especially on larger areas. VELOSIT PU 400 is applied with a hotspray coating machine. VELOSIT PU 400 is innocuous once cured and is hence suitable for applications where contact with potable water are required. Typical application fields include but are not limited to:

- Potable water structures
- Waterproofing of basements and below grade parking structures
- Coating of bridges and park decks
- Roof coating, especially on corrugated sheet metal
- Waterproofing of green roofs
- Protective coating on secondary containment tanks
- Coating of biogas tanks
- Corrosion protection of pipelines

Properties

VELOSIT PU 400 is a solvent-free, 2-component pure polyurea system applied at a volume ratio of 1 : 1 with a high pressure airless hot-spray machine.

VELOSIT PU 400 surpasses the requirements of EN 1504-2 for coatings (C) and can be used according to the principles 1, 2, 5, 6 and 8 acc. to EN 1504-9.

Because of its very short reaction time it can be used on horizontal and vertical surfaces (incl. overhead).

- Extreme flexibility with an elongation at break exceeding 500%
- Enormous tensile strength (> 20 MPa)
- High tear strength and extreme impact resistance
- Waterproof in 2 min.
- Open to light foot traffic after 15 min.
- Fully cured in 48 hours
- Innocuous once cured (surface washing required prior to contact with potable water)
- Very good adhesion to metal and typical construction substrates like concrete, wood and masonry (with primer)
- Good resistance against many chemicals such as alkalis and diluted acids
- Wide application spectrum even under extreme temperatures
- Excellent crack bridging under static and dynamic loads
- Good weathering resistance (except color stability)

Application

1.) Substrate preparation

a.) Steel must be prepared to a purity of SA 2&1/2 acc. SIS 05 5900. No priming is required if the coating is applied immediately after the preparation.

b.) Concrete and masonry 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 open porous and load bearing. Minimum requirement for adhesive strength is 1 MPa (145 psi) and 20 MPa (2900 psi) for compressive strength. Depending on project requirements lower values may be tolerated. Active water leaks on the negative side effecting the waterproofing must be treated and fully stopped. 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 PU 411 (1K Polyurethane-Primer). VELOSIT PU 411 is ready to receive the coating after 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 including a full broadcast with suitable quartz sand ∅ 0.7 – 1.25. The coating can be applied as early as 6 h after the primer application. If application of VELOSIT PU 400 is executed within 24 h of primer application the broadcast with suitable quartz sand ∅ 0.7 – 1.25 can be omitted.

c.) Wooden substrates can be primed with VELOSIT PU 411, when free from bond breaking substances. Otherwise the surface must be sanded before priming. Wood substrates swell with water. A waterproofing is only permitted if the surfaces are completely dry before the application and no negative side water source will impact the waterproofing layer in the future. Wood is generally not a sufficiently load bearing substrate to achieve high adhesive strengths. Mechanical fasteners with washer heads can increase the bond to the wood substrate.

d.) Polyurethane insulating foams or insulation boards based on polystyrene must be free from bond breaking substances and fully adhered to the substrate. These can be coated with VELOSIT PU 400 immediately after installation without the need for priming.

2.) Processing

VELOSIT PU 400 can only be applied with suitable machinery. A two component airless spray machine with heated hoses is required. Suitable machines include:

- Graco Reactor E- or H-series
- Gama Evolution series
- WIWA Doumix PU 460

Depending on the type of machine both components are either metered directly from the supply packaging or filled into product hoppers of the machine. The machine must supply an exact 1 : 1 volume ratio at the spray gun. VELOSIT PU 400 is preferably sprayed at a temperature of 70°C (158°F). The pressure setting of the machine should be chosen between 100 and 200 bar (1450 – 2900 psi).

Substrates prepared according to section 1.) must be free from dust or any other bond breaking material at the time of application.

Please carefully observe the dew point. There must be no condensation on the substrate.

Apply VELOSIT PU 400 with the specified application rate without long interruptions. Ensure to work in a crossing pattern. Connected areas (like wall and slab areas) must be coated in one working step to ensure a fully uniform coat. Spray interruptions of 90 min. or more may lead to reduced adhesion between the first and second coating layer.

3.) Curing

VELOSIT PU 400 does not require curing and can be over-coated within 2 h after application. VELOSIT PU 400 may yellow slightly under UV light with no reduction in physical or chemical properties. For decorative applications it is advisable to topcoat VELOSIT PU 400 with a UV stable polyurethane or polyaspartic coating.

Estimating

Waterproofing concrete < 4 % moisture:

VELOSIT PU 411: 0.3 kg/m²

VELOSIT PU 400: 2.0 kg/m²

Waterproofing concrete > 4 % moisture:

VELOSIT PR 303: 0.5 kg/m²

suitable quartz sand
∅ 0.7 – 1.25: 0.8 kg/m²

VELOSIT PU 400: 2.0 kg/m²

Wear protection on steel:

VELOSIT PU 400: 3.0-5.0 kg/m²

Other thickness requirements: 1.1 kg/m² for 1 mm dry film thickness on smooth and level substrates. Rougher and/or undulated surfaces will lead to higher consumption.

Cleaning

VELOSIT PU 400 can be removed in the fresh state with solvents like naphta. Once cured VELOSIT PU 400 can only mechanical cleaning is possible.

Quality features

	Komp. A	Komp. B
Color:	gray	yellow
Viscosity 23°C, mPas:	600	700
Mixing ratio by weight:	100 A + 104 B	
Mixing ratio by volume:	100 A + 100 B	
Gel time:	< 7 s	
Tack-free time:	< 30 s	
Substrate temperature:	5 – 50 °C [1](40 – 120 °F)	
Elongation at break, 23 °C:	520 %	
Tensile strength, 23 °C:	21 MPa (3045 psi)	
Abrasion, Taber wheel H22:	120 mg	
CO_2-diffusion:	S_D = 250 m	
Water vapor diffusion:	S_D = 3 m, class I	

[1]observe dew point!

Capillary water absorption:	0.01 kg/m^2 x h^{0,5}
Impact resistance:	Class III
Adhesive strength on	
- Steel:	6.0 MPa (870 psi)
- Concrete with primer:	2.8 MPa (406 psi)(concrete failure)
- Wood (OSB):	0.2 MPa (29 psi) (failure OSB)
Shore A hardness, 7d:	>90
Shore D hardness, 7d:	45
Chemical resistance acc. EN ISO 868:	
- NaCl:	28 d, class II
- Caustic potash 20%:	28 d, class II
- Sulfuric acid, 5%:	28 d, class II
- Hydrochloric acid, 32%:	3 d, class I
- Diesel fuel:	28 d, class II
Fire rating EN13501-1:	Class E

Packaging

VELOSIT PU 400 is available in 60 kg: 29.4 kg A + 30.6 kg B in 30 l pails

Storage

VELOSIT PU 400 can be stored in unopened original packs for 12 months at 15 – 25 °C (59 – 77 °F) in a dry storage place protected against sunlight. The product is supplied in sealed containers under a nitrogen blanket to ensure protection against reaction with humidity. Open containers must be consumed quickly.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT PU 400 may yellow under UV load. Physical and chemical features will not be affected by the color change.

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4 Roof Coatings

Roof applications require some additional properties from a waterproofing membrane. Although cementitious products have the durability to withstand the thermal changes and UV radiation on a roof they cannot match the aesthetics and flexibility of polyurethane coatings. For this reason we have complemented our waterproofing system with a range of 1K polyurethane coatings.

The following products are explained in this chapter.

VELOSIT PU 412 - 1-component, solvent based polyurethane primer & sealer.

VELOSIT PU 453 - Elastomeric, moisture-cured, 1-component polyurethane membrane.

VELOSIT PU 454 - Thixotropic, highly elastomeric, 1-component polyurethane membrane.

VELOSIT PU 458 - Elastic, moisture-cured, 1-component, transparent/pigmented, aliphatic (color stable), thin polyurethane sealer.

VELOSIT PU 412

1-Component, economic, solvent-based polyurethane primer & sealer

CE
EN1504-2

Application fields

VELOSIT PU 412 is an economic, solvent-based, elastic polyurethane primer for polyurethane coatings or as an economic concrete sealer . VELOSIT PU 412 provides excellent adhesion to both non-porous and porous substrates especially in humid areas where moisture is an issue (can be applied on moist concrete surfaces). Typical application fields include:

- Adhesion primer on Concrete and masonry
- Adhesion primer on steel & glass
- Sealer for absorptive substrates

Properties

VELOSIT PU 412 is a solvent-based, 1-component polyurethane primer with excellent adhesion to a wide variety of construction substrates including concrete (including green concrete), ceramic tiles, glass, marble and a wide range of metals.

Because of its low viscosity, VELOSIT PU 412 penetrates well into porous substrates resulting in good adhesion.

VELOSIT PU 412 is characterized as:

- Economic
- One component
- Good paint-over time
- Excellent elongation (300 %)
- Excellent penetrating & wetting properties
- Excellent adhesion
- Good coverage rate
- Can be applied on dry or moist surfaces
- Resistant against water and frost

Application

1.) Substrate preparation

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

Surfaces must be open porous and load bearing.

The surface should have a minimum adhesive strength of 1 MPa (145 psi) and compressive strength of 20 MPa (2900 psi). Lower values can be tolerated if no significant requirements to the adhesion of VELOSIT PU 412 are specified.

Active water leaks affect the waterproofing and must be permanently stopped. VELOSIT PU 412 is suitable for substrates with a humidity of max. 85% and a water vapour emission rate below 0.8 g/m^{2}h (4 lbs./24h x 1000 ft^2).

VELOSIT PU 412 is ready to receive the coating after 12 hours of curing. At higher moisture levels or in case the moisture levels in the substrate are expected to increase than the above limits, priming must be done with VELOSIT PR 303 including a full broadcast with suitable quartz sand ∅ 0.7 – 1.25.

b.) Old polyurethane insulating foams or extruded polystyrene insulation boards must be fully adhered to the substrate and free from bond breaking substances before application of VELOSIT PU 412.

2.) Processing

VELOSIT PU 412 can be applied by brush or a lamb wool roller in the specified application rate on the prepared substrate as stated above. VELOSIT PU 412 can be coated as soon as the surface has just dried from tackiness and is not giving off any solvent odour. Do not wait more than 24 h as the reactive groups will need to be reactivated.

3.) Curing

VELOSIT PU 412 does not require curing and can be over-coated after 12 hours of application in outdoor areas and longer in confined but well-ventilated areas. It is not recommended in closed or unventilated areas. VELOSIT PU 412 may yellow slightly under UV light but this does not reduce its physical or chemical properties. As VELOSIT PU 412 receives a coating within 24 hours of its application, the UV exposure is not relevant.

Estimating

Coverage depends mainly on the porosity and levelness of the surface. Approximate coverage 20 kg pail:

Primer for PU coatings

over concrete:	150 m^2 (0.13 kg/m^2)
over PU coat:	200 m^2 (0.10 kg/m^2)
Sealer (concrete/plaster):	100 m^2 (0.20 kg/m^2)

Cleaning

VELOSIT PU 412 can be removed in the fresh state with solvents like naphta. Once cured VELOSIT PU 412 can only mechanical cleaning is possible.

Quality features

Color:	Amber
Viscosity 23°C, mPas:	45 $\pm$ 5
Density:	0.95 $\pm$ 0.05
Tack-free time 23°C, 60%:	4 - 6 hours
Re-coat time 23°C, 60%:	12 - 24 hours
Substrate temperature:	5 – 50 °C* (40-120°F)
	* observe dew point!
Tensile strength:	30 MPa (4351 psi)
Adhesive strength*: (concrete failure)	4.0 MPa (580 psi)
Fire rating EN13501-1:	Class E

Packaging

VELOSIT PU 412 is available in 20 kg pails.

Storage

VELOSIT PU 412 can be stored in unopened original packs for 9 months at 15 – 25 °C (59 – 77 °F) in a dry storage place protected against sunlight. Open containers must be consumed quickly.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

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VELOSIT PU 453

Elastomeric, moisture-cured, single-component, liquid polyurethane membrane

Application fields

VELOSIT PU 453 is a single component, moisture-cured, high performance, liquid-applied polyurethane liquid that cures to form a UV resistant, seamless and monolithic waterproofing membrane. VELOSIT PU 453 is brush, roller or spray applied on concrete, gypsum, cement boards, asphalt membranes, etc.

Once cured, VELOSIT PU 453 creates an elastomeric yet resilient, long lasting coat capable of accommodating movements of the underlying substrate. VELOSIT PU 453 is designed to give a minimum 25 year service life (W3) in **severe** (S3) temperature zones in accordance with EOTA Guidelines. Typical application fields include protection and waterproofing of:

- Flat slabs, roofs and podium slabs
- Balconies, bathrooms and kitchens
- Asphalt membranes
- Parking structures and bridge decks
- Stadiums
- Metal, galvanized steel, gypsum and wood

Properties

VELOSIT PU 453 can be used as a base coat for deck coating systems or as a stand alone final coating.

VELOSIT PU 453 offers the following advantages:

- Excellent adhesion to most substrates
- Easily applied without thinning
- Fast curing allows same day re-coating
- High elongation; above **625 %**
- Excellent mechanical and chemical resistance
- High abrasion and tear resistance
- Excellent UV resistance on gray and white colors
- Long pot life
- Resilient
- Does not soften at elevated temperatures (up to + 80 °C)
- Capable of withstanding thermal shocks up to + 190 °C
- Remains elastic even at sub-zero temperatures (down to - 35 °C)

Application

1.) Surface preparation

Substrates must have an open pore surface and sound with load-bearing capacity and free from cracks, dust, paint, oil or any adhesion inhibiting substances.

2.) Priming and levelling

Priming

When necessary or when high levels of humidity exist, primers such as VELOSIT PR 303 may be used.

Levelling of undulations

Depending on prevailing temperatures, use VELOSIT WP 101 to level off undulations. Allow 14 hours in case of VELOSIT WP 101 before application of VELOSIT PU 453.

3.) Processing

Gently stir VELOSIT PU 453 using a slow speed drill attached with an appropriate mixing paddle for one minute. Ensure that no air is entrapped.

Cracks

Cracks smaller than 1 mm should be concealed by embedding a 100 mm wide strip of reinforcement fabric into VELOSIT PU 453. The fabric must be centrally placed along the crack. If cracks are 1.0 mm wide or greater, saw-cut with a slight “V” shaped groove to a depth of 5 mm and a minimum width of 5 mm and fill with VELOSIT PU 418 prior to the above mentioned concealing method.

Brush/roller

Use a soft bristle brush or short nap roller and work in two perpendicular coats observing a 6 to 24 hour waiting interval between coats @ 25 °C.

Airless spray

It may be necessary to dilute VELOSIT PU 453 with up to 10% xylene to adjust the viscosity for spray application.

4.) Protection

Protect VELOSIT PU 453 from rain for at least 6 hours after application.

5.) Curing

No curing is required. VELOSIT PU 453 is fully cured within 7 days @ 25 °C.

Estimating

Consumption depends on surface roughness and absorptivity. A 25 kg pack of VELOSIT PU 453 will typically cover 12.5 m^2 to 15 m^2 (1.6 - 2 kg/m^2) in two coats

Cleaning

VELOSIT PU 453 may be removed with xylene. Once cured, VELOSIT PU 453 can only be removed mechanically.

Quality features

Typical properties of VELOSIT PU 453 @ 25 °C:

Colours:	Grey, Red, White
Solids content (ASTM D1353):	95 % (+/- 1%)
Density:	1.35 kg/lt (+/- 0.5)
Viscosity (Brookfield):	4500 cP (+/- 1500)
Tack free (RH = 55%):	6 hours

Re-coat open time:	6 to 24 hours
Substrate temperature:	5 – 35 °C
Maximum Elongation (ASTM D412):	**+ 625 %**
Tensile strength (ASTM D412):	55 kg/cm^2
Water Vapour permeability (ASTM E96):	0.75 g/m^{2}h
Adhesion to concrete (ASTM D4541):	20 kg/cm^2
Shore A hardness (ASTM D2240):	65
Service temperature:	- 35 °C to + 80 °C
Service temperature for short time:	+ 190 °C
Flash Point:	+ 42 °C

Packaging

VELOSIT PU 453 is available in 25 kg containers.

Storage

VELOSIT PU 453 has a minimum shelf life of 12 months when stored in original unopened containers (elevated from floor), in a dry area and away from direct sunlight where temperatures are maintained below 30 °C.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT PU 453 is only available for professional applicators.

Always note that VELOSIT PU 453 is not color stable, especially the Red color. For color-stable finishes, apply a pigmented coat of VELOSIT PU 458.

VELOSIT PU 453 is not suitable for swimming pools.

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.

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VELOSIT PU 454

Economic, thixotropic, low VOC, highly elastomeric, single-component, liquid polyurethane membrane

Application fields

VELOSIT PU 454 is an economic, low VOC, thixotropic, single component, moisture-cured, highly elastic, liquid-applied polyurethane liquid that cures to form a UV resistant, seamless and monolithic waterproofing membrane. VELOSIT PU 454 is brush, roller or spray applied on concrete, gypsum, cement boards, asphalt membranes, etc.

Once cured, VELOSIT PU 454 creates an elastomeric yet resilient, long lasting coat capable of accommodating movements of the underlying substrate. Typical application fields include protection and waterproofing of vertical and horizontal surfaces in:

- Flat slabs, roofs and podium slabs
- Balconies, bathrooms and toilets
- Flower boxes
- Walls
- Intricate details in important structures
- Over PU foam

Properties

VELOSIT PU 454 can be used as a stand alone final coating or may be covered with VELOSIT PU 458.

VELOSIT PU 454 offers the following advantages:

- Excellent adhesion to most substrates
- Easily applied without thinning
- Fast curing allows same day re-coating
- Highly elastic; above **815 %**
- Excellent mechanical and chemical resistance
- High abrasion and tear resistance
- Excellent UV resistance for gray or white color
- Long pot life
- Resilient
- Suitable for exposure where the membrane temperature remains below 60 °C, including thick-bed tiled areas, planters and marble covered plazas
- Remains elastic even at sub-zero temperatures (down to - 35 °C)

Application

1.) Surface preparation

Substrates must have an open pore surface and sound with load-bearing capacity (at least 15 MPa) and free from cracks, dust, paint, oil or any adhesion inhibiting substances.

VELOSIT PU 454 may be applied on dry surfaces (residual moisture less than 4 %). In case of higher moisture levels, surfaces must be primed.

In all cases the relative humidity should be below 85 % and substrate temperature between + 5 °C and 35 °C.

2.) Priming and levelling

Priming

When necessary or when high levels of humidity exist, primers such as VELOSIT PR 303 may be used.

Levelling of undulations

Depending on prevailing temperatures, use VELOSIT WP 101 to level off undulations. Allow 14 hours in case of VELOSIT WP 101 before application of VELOSIT PU 454.

3.) Processing

Gently stir VELOSIT PU 454 using a slow speed drill attached with an appropriate mixing paddle for one minute. Ensure that no air is entrapped.

Cracks

Cracks smaller than 1 mm should be concealed by embedding a 100 mm wide strip of reinforcement fabric into VELOSIT PU 454. The fabric must be centrally placed along the crack. If cracks are 1.0 mm wide or greater, saw-cut with a slight “V” shaped groove to a depth of 5 mm and a minimum width of 5 mm and fill with VELOSIT PU 418 prior to the above mentioned concealing method.

Brush/roller

Use a soft bristle brush or short knapp roller and work in two perpendicular coats observing a 6 to 24 hour waiting interval between coats @ 25 °C.

Airless spray

It may be necessary to dilute VELOSIT PU 454 with up to 10 % xylene to adjust the viscosity for spray application.

Use a suitable airless spray equipment with an appropriate nozzle and pressures of 200 to 250 bars.

4.) Protection

Protect VELOSIT PU 454 from rain for at least 6 hours after application.

5.) Curing

No curing is required. VELOSIT PU 454 is fully cured within 7 days @ 25 °C.

Estimating

Consumption depends on surface roughness and absorptivity. A 25 kg pack of VELOSIT PU 454 will typically cover 12.5 m^2 to 15 m^2 (1.6 - 2 kg/m^2) in two coats.

Cleaning

VELOSIT PU 454 may be removed with xylene. Once cured, VELOSIT PU 454 can only be removed mechanically.

Quality features

Typical properties of VELOSIT® PU 454 @ 25 °C:

Colours:	Black, Grey, White
Density:	1.45 kg/lt (+/- 0.5)
Viscosity (Brookfield):	4500 cP (+/- 1500)
Tack free (RH = 55%):	6 hours
Re-coat open time:	6 to 24 hours
Substrate temperature:	5 – 35 °C
Maximum Elongation (ASTM D412):	**+ 815 %**
Tensile strength (ASTM D412):	30 kg/cm^2
Water Vapour permeability (ASTM E96):	0.75 g/m^{2}h (+/- 0.05)
Adhesion to concrete (ASTM D4541):	+1.5 N/mm^2
Shore A hardness (ASTM D2240):	60
SD Value-H_2O:	5 m
SD Value - CO_2:	50 m
Service temperature:	-35 ºC to + 60 ºC

Packaging

VELOSIT PU 454 is available in 25 kg containers.

Storage

VELOSIT PU 454 has a minimum shelf life of 12 months when stored in original unopened containers (elevated from floor), in a dry area and away from direct sunlight where temperatures are maintained above 5 °C and below 25 °C.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT PU 454 is only available for professional applicators.

Always note that VELOSIT PU 454 is not color stable, especially the black color. For color-stable finishes on the white and gray, apply a pigmented coat of VELOSIT PU 458.

Not recommended for applications subject to heat above 60 ºC, including under dark color tiles.

VELOSIT PU 454 is not suitable for swimming pools.

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.

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VELOSIT PU 458

Elastic, moisture-cured, single-component, transparent/pigmented, aliphatic (color-stable), thin, liquid-applied polyurethane sealer

Application fields

VELOSIT PU 458 is a single component, aliphatic, air-moisture cured, high-performance, liquid-applied polyurethane sealer that cures to form a thin, elastomeric, seamless, color-stable and glossy finish.

VELOSIT PU 458 is brush, roller or airless spray applied in a thin coating and is available in pigmented and transparent grades. The colored grade is used to cover VELOSIT PU 453 or VELOSIT PU 454 our aromatic-based, polyurethane waterproof coatings to extend color stability.

Typical applications include protection of polyurethane waterproof coatings such as VELOSIT PU 453 and VELOSIT PU 454 applied in:

- Balconies and terraces
- Car parks
- Stadiums and outdoor auditoriums
- Indoor and outdoor showrooms

Properties

VELOSIT PU 458 is a multipurpose sealer coat for deck coating systems.

VELOSIT PU 458 offers the following advantages:

- Excellent UV resistance
- Single component: long pot life
- Excellent uniform adhesion
- Very low viscosity.
- Easily applied without thinning
- Fast curing allows same day re-coating
- Highly elastic; above **300 %**
- **High tensile strength: 40 MPa (5801 psi)**
- Excellent mechanical and chemical resistance
- High abrasion and tear resistance
- Does not soften at elevated temperatures (up to + 80 °C)
- Capable of withstanding thermal shocks up to + 190 °C
- Remains elastic even at sub-zero temperatures (down to -40 °C)

Application

1.) Surface preparation

1.1) Concrete

Substrates must have an open pore surface and sound with load-bearing capacity and free from cracks, dust, paint, oil or any adhesion inhibiting substances.

1.2) Polyurethane coatings (including anti-skid)

Substrate must be fully dry and within the open time for re-coating (within 72 hours of VELOSIT PU 453 or PU 454 application). In case open times have been exceeded, abrade the surface and scrub with Xylene, wait until fully dry then commence with the next step.

1.3) Tiles

Tiles must be well adhered to the substrate. Joints must be fully grouted with no pinholes. Remove the glazed surface.

2.) Priming and levelling

Priming

Generally priming is not required. When necessary (with very porous substrates) or when high levels of humidity exist, primers such as VELOSIT PR 303 should be considered.

Please consult VELOSIT's Technical Department for details.

Leveling of undulations

Depending on prevailing temperatures, use VELOSIT WP 101 to level off undulations. Allow 14 hours in case of VELOSIT WP 101 before application of VELOSIT PU 458.

3.) Processing

3.1) Concrete/plaster

Gently stir VELOSIT PU 458 using a slow speed drill attached with an appropriate mixing paddle for one minute. Ensure no air is entrapped.

3.2.1) Sealer over polyurethane

Gently stir VELOSIT PU 458 using a slow speed drill attached with an appropriate mixing paddle for one minute. Ensure no air is entrapped. Allow to dry for at least 7 hours prior to trafficking.

3.2.2) Anti-skid over polyurethane

Gently stir VELOSIT PU 458 using a slow speed drill attached with an appropriate mixing paddle for one minute. broadcast clean & dry sand (0.30mm maximum grain size) into the wet VELOSIT PU 458 and immediately backroll to spread it evenly. Once dried, apply the second coat.

3.3) Tiles

Gently stir VELOSIT PU 458 using a slow speed drill attached with an appropriate mixing paddle for one minute. Ensure no air is entrapped.

Brush/roller

Use a soft bristle brush or short nap roller and work in two perpendicular coats observing a 6 to 24 hour waiting interval between coats @ 25 ^{o}C.

Airless spray

It may be necessary to dilute VELOSIT PU 458 with up to 5 % xylene to adjust the viscosity for spraying.

4.) Protection

Protect VELOSIT PU 458 from rain for at least 7 hours after application.

5.) Curing

No curing is required. VELOSIT PU 458 is fully cured within 7 days @ 25 °C.

Estimating

Consumption depends on surface roughness and absorptivity of the substrate. A 20 kg pack of VELOSIT PU 458 will typically cover:

Sealer on concrete:	150 m^2 (0.13 kg/m^2)
Sealer on plaster:	120 m^2 (0.17 kg/m^2)
Sealer on PU:	200 m^2 (0.10 kg/m^2)
Anti-skid on PU + sealer:	100 m^2 (0.25kg/m^2)
Sealer on glaze-removed tiles:	120 m^2 (0.17 kg/m^2)

Cleaning

VELOSIT PU 458 may be removed with xylene. Once cured, VELOSIT PU 458 can only be removed mechanically.

Generally rollers used are very difficult to clean and should be replaced with new ones for the next application.

Quality features

Typical properties of VELOSIT PU 458 @ 25 °C:

Colors:	Transparent, Grey & Red
Solids content (ASTM D1353):	51% (+/- 1%)
Density:	1.0 kg/lt (+/- 0.5)
Viscosity (Brookfield):	475 cP (+/- 50)
Tack free (RH = 55%):	7 hours
Re-coat open time:	24 hours
Substrate temperature:	5 – 35°C
Maximum Elongation (ASTM D412):	**+ 305 %**
Tensile strength (ASTM D412):	40 kg/cm^2
Water Vapour permeability (ASTM E96):	0.8 g/m^2h
Shore D hardness (ASTM D2240):	40
QUV Accelerated weathering-ASTM G53:	(2000 hrs) Passed
Service temperature:	-40 °C to + 80 °C
Service temperature for short time:	+ 180 °C

Flash Point: + 42 °C

Packaging

VELOSIT PU 458 is available in 4 and 20 kg containers.

Storage

VELOSIT PU 458 has a minimum shelf life of 12 months when stored in original unopened containers (elevated from floor), in a dry area and away from direct sunlight where temperatures are maintained below 30 °C.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT PU 458 is only available for professional applicators.

Clear color does not proved a color stable protection to either VELOSIT PU 453 or VELOSIT PU 454.

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.

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5 Injection resins

For negative side waterproofing applications with significant hydrostatic pressure all leaking cracks and joints need to be treated before the application of the cementitious coating or mortar. For these types of projects we offer several injection materials that are covered in this section.

The following products are explained in this chapter.

VELOSIT IR 601 - Water activated - hydrophobic polyurethane injection grout.

VELOSIT IR 604 - Ultra low viscosity hydrophilic polyacrylate gel.

VELOSIT IR 605 - Low viscosity flexible polyurethane injection grout.

VELOSIT IR 601

Water activated hydrophobic polyurethane injection grout

Application fields

VELOSIT IR 601 is a two component semi rigid hydrophobic water activated injection grout based on MDI chemistry. It is mixed with the Accelerator VELOSIT at 3 % to 20 % to control reaction time of the grout.

Typical application fields are as follows:

- Stopping active water leaks in cracks and joints
- Filling of large voids
- Waterproofing pipe penetrations
- Curtain Wall applications
- Suitable for both Potable and Waste Water

Properties

When VELOSIT IR 601 comes in contact with water it forms a semi rigid foam that expands to unto 30 times of its original volume. Since VELOSIT IR 601 is hydrophobic, it does not use water to form its cell structure. This results in a cured foam that will not shrink or swell and will not be affected if the treated area becomes dry.

VELOSIT IR 601 is mixed with the Accelerator VELOSIT at varying amounts to achieve the desired reaction and set time. Depending on the amount added and the pressure at which the resin is injected, the resultant foam may vary from closed cell to slightly open cell. Due to the low viscosity of the resin, it has the ability to penetrate under pressure and fill hairline cracks, voids, and unconsolidated areas in concrete, shotcrete and stone. It can also act as a high strength soil stabilization grout. The VELOSIT IR 601 can be and is often used in conjunction with other products in the VELOSIT IR line.

- Applied as an one component system with single component pumps
- Fast foaming
- 2 component (resin + catalyst)
- Closed cells
- Variable reaction time
- 3000% expansion in case of free foaming
- Hard elastic
- Phtalate-free
- Reacts with water
- No shrinking after curing
- Low viscosity

Application

VELOSIT IR 601 and the Accelerator VELOSIT are packaged separately to allow for adjustment of the reaction time. The Accelerator VELOSIT must be added to ensure that the resin reacts. Because the accelerator can be added across a wide range, VELOSIT IR 601 becomes a very versatile injection grout that can be used in a variety of applications. The reactive properties, gel times, and expansion rates can be adjusted. For waterproofing applications, an addition of 3 % – 10 % of the Accelerator VELOSIT is recommended. In instances of very high active water flow or low temperatures, the addition of the accelerator is increased to up to 20 %. For conditions that require longer open time so the resin can travel a distance before expanding (hairline cracks etc.), a 5 % addition is used. Temperature and humidity greatly influence the gel times of the product. Do not mix more material than can be pumped in a reasonable period of time.

Ensure that all equipment including mixing paddles, pails, pumps and hoses are dry. If product begins to foam or the viscosity of the mixed resin increases, cease pumping and begin to clean the system out.

Cleaning

VELOSIT IR 601 can be cleaned in the fresh state with Acetone. Once it has cured mechanical removal is necessary.

Quality features

Color:	Amber
Solids:	100 %
Mix Ratio by weight:	10:1 Accelerator VELOSIT
Density:	1.15 g/ml
Viscosity:	130 mPas

Reaction Time 15 °C/60 F: 11 sec (10 % Accelerator VELOSIT)

Properties of Cured Resin

Expansion %:	3000 %
Elongation %:	10 – 20 % ASTM D 638
Shrinkage %:	< 4 % ASTM D 1042
Appearance:	Yellowish Foam

Packaging

VELOSIT IR 601 is available in 10 kg metal jugs, the Accelerator VELOSIT is available in 1 kg metal tins.

Storage

VELOSIT IR 601 can be stored in unopened original packs for 12 months at 5 – 25 °C (40 – 77 °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 IR 601 is only available for professional applicators.

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.

2519

VELOSIT IR 604

Ultra low viscosity hydrophilic polyacrylate gel

Application fields

VELOSIT IR 604 is a three component ultra low viscosity flexible hydrophilic polyacrylate gel.

Typical application fields are as follows:

- Curtain Wall Grouting
- Brick, Block, Defective Concrete
- Sealing of Construction Joints
- Waterproofing pipe penetrations
- Tunnels, Dams, Bridges, Soil Stabilization
- Waste Water Tanks

Properties

VELOSIT IR 604 offers outstanding flow and penetration properties. It flows extremely well into hairline cracks and fissures thereby sealing the structure. VELOSIT IR 604 is well suited for curtain wall grouting or area injections behind joints and wall segments. It can also be used for soil stabilization.

VELOSIT IR 604 is characterized by its high flexibility, strength, and its ability to handle movement within structures. It also has the ability to shrink and re-swell for the life span of the product. If for some reason the area waterproofed is no longer subject to water for a period of time, the gel will remain in place. If water comes back at some point, the gel will swell creating a watertight seal again. The curing time of VELOSIT IR 604 can be adjusted on the job site from 15 seconds up to several minutes depending on the conditions and water flow on the job. Higher temperatures and humidity will result in faster cure times of the gel. Please consult VELOSIT Technical Staff for the ideal cure times for your project. The cured gel has excellent adhesion and is not affected or soluble in water or hydrocarbons. It is not affected by dilute acids or alkalis or the standard salts that are present in concrete.

- 3 component acrylate gel
- Self swelling
- Variable reaction time adjustable through catalyst
- Very flexible
- Phenol-free
- Application with 2 component pumps (1:1)
- Very good penetration
- Low viscosity

Application

VELOSIT IR 604 is a three component product supplied with amounts of both comp. A1, comp. A2 and comp. B. Comp. A2 is added to the 28 kg jug of comp. A1 and mixed. Comp. B (granules) is added to 28 l in a suitable pail. VELOSIT IR 604 is generally mixed and pumped through a stainless steel 1:1 plural component pump. Be sure to observe the temperature and humidity of

the environment since both will affect the pot life. Since VELOSIT IR 604 is mixed at the gun, a continuous pumping operation can achieved.

Curtain Wall Grouting

Prior to injecting VELOSIT IR 604, a complete assessment should be made of the structure, the soil, and the conditions behind the foundation wall. This can be done by making probes through the wall. If massive amounts of active water are present, injection with a VELOSIT IR foam may be necessary. A strategy for packer placement, type of packer, gel cure time, and gel consumption should also be planned out before injection. Because of the ultra low viscosity of VELOSIT IR 604, a higher consumption rate will occur on porous substrates and with silty or sandy soils. The drill holes should go through the entire thickness of the wall to the positive side. This will allow for a complete continuous membrane to form on the soil side of the wall. Begin injection on the lowest packer and work along the wall in the packer pattern. Look for the gel to travel to the packer adjacent the one that is being pumped into. Average gel consumption for a curtain wall application ranges from 0,1 – 0,15 m^2/l. This can change if there are larger cavities behind the wall. Plan accordingly. Continue this process until the entire height and length of the wall are injected.

Porous Substrates

As in the curtain wall application, the structure should be assessed and a plan made for the injection process. This application is commonly used on weaker and leaking masonry (brick), block, natural stone and poorly consolidated concrete. Deteriorated joints need to be repaired or replaced as well as any visible or larger cracks. The holes drilled for the packer placement should point downward at 35 – 45 ° angles. This will allow for better penetration of the gel. The drill holes should not penetrate the entire thickness of the wall. They should only go to 75 % the thickness of the wall. the injection process should start and proceed from the bottom to the top of the wall. Continue pumping on a port until you see material traveling to and coming out of an adjacent port. The consumption rate will vary depending on the porosity of the structure. Average consumption rate is 0,05 – 1 m^2/l.

Cleaning

VELOSIT IR 604 can be cleaned in the fresh state with soap and water. Once it has cured mechanical removal is necessary.

Quality features

	Comp A1/A2:	**Comp B:**
Color:	Amber/colorless	White
Mix Ratio by volume:	20:1	5 % sol.
Mix Ratio:	1 :	1
Density:	1.10 kg/l	
Mixed Viscosity:	1.5 – 10 mPas	
Reaction Time (21 °C): (depending on mix ratio)	38 – 130 sec	

Reaction

Comp.B in 28 l water	Reaction time (21 °C)
1.2 kg	38 sec.
1.0 kg	43 sec.
0.8 kg	60 sec.
0.6 kg	80 sec.
0.4 kg	130 sec.

Packaging

VELOSIT IR 604 Comp. A1 is available in 28 kg jugs

VELOSIT IR 604 Comp. A2 is available in 1.2 kg bottle

VELOSIT IR 604 Comp. B is available in 1.0 kg tin

Storage

Comp. A1 and Comp. B from VELOSIT IR 604 can be stored in unopened original packs for 12 months at 5 – 25 °C (40 – 77 °F) in a dry storage place protected against sunlight.

Comp. B from VELOSIT IR 604 can be stored in unopened original packs for 6 months at 5 – 25 °C (40 – 77 °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 IR 604 is only available for professional applicators.

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.

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VELOSIT IR 605

Low viscosity flexible polyurethane injection grout

Application fields

VELOSIT IR 605 is a two component flexible hydrophobic phthalate free injection grout based on MDI chemistry.

Typical application fields are as follows:

- Damp or Dry Cracks
- Hairline Cracks
- Sealing of Construction Joints
- Waterproofing pipe penetrations
- Tunnels, Dams Bridges
- Waste Water Tanks

Properties

When VELOSIT IR 605 comes in contact with water it forms a flexible foam resin under pressure. This results in a cured resin that will not shrink or swell and will not be affected if the treated area becomes dry.

VELOSIT IR 605 can also be used to seal dry cracks as it does not need water to cure. When water is not present and the resin is injected under pressure, it will form a flexible solid body gel that undergoes little to no foaming. If water is present, the product will foam and stop any active water leaks. A dual injection is usually done with the VELOSIT IR 605. First, the leaking crack or joint is injected and the VELOSIT IR 605 will foam and stop the active leak. After 15 minutes, the area is injected again with VELOSIT IR 605. The VELOSIT IR 605 will then fill in around the foam creating a secondary seal in the form of a solid body resin, making the area watertight. Due to the low viscosity of the resin, it has the ability to penetrate under pressure and fill hairline cracks, voids, and unconsolidated areas in concrete, masonry, shotcrete and stone.

- Applied as an one component system with single component pumps
- Fast foaming in contact with water
- 2 component (resin + hardener)
- Stops water flow
- Closed cells
- Variable reaction time
- 1:1 mixing ratio
- Elastic
- Phtalate-free
- For injection of injection hose systems
- Alkaline stable
- Non corrosive
- Low viscosity

Application

VELOSIT IR 605 is a two component product supplied with equal amounts of both A and B. The mix ratio is 1:1 by volume. VELOSIT IR 605 is generally mixed and pumped through a single component pump. Be sure to observe the temperature and humidity of the environment since both will affect the pot life. Do not mix more material than can be pumped within the pot life window.

VELOSIT IR 605 can also be pumped through suitable 1:1 plural component injection equipment.

Ensure that all equipment including mixing paddles, pails, pumps and hoses are dry. If product begins to foam or the viscosity of the mixed resin increases, cease pumping and begin to clean the system out.

Cleaning

VELOSIT IR 605 can be cleaned in the fresh state with Acetone. Once it has cured mechanical removal is necessary.

Quality features

	Comp A:	Comp B:
Color:	Transparent	Brown
Solids:	100 %	100 %
Mix Ratio by volume:	1 Part	1 Part
Density:	1.06 g/ml	
Viscosity:	170 mPas	
Induction Time, 20 °C:	50 sec	
Pot life:	40 min.	

Properties of Cured Resin

Elongation %:	17 % ASTM D 638
Shore A hardness:	30
Glass transition temp:	- 23 °C

Packaging

VELOSIT IR 605 Comp. A is available in 5 kg pails and VELOSIT IR 605 Comp. B is available in 5 kg pails.

Storage

VELOSIT IR 605 can be stored in unopened original packs for 12 months at at 5 – 25 °C (40 – 77 °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 IR 605 is only available for professional applicators.

All described product features are determined under controlled laboratory conditions according to the relevant international standards. Values determined under job site conditions may deviate.

2519

6 Integral waterproofing admixtures for concrete

Besides the coating systems VELOSIT has a range of integral waterproofing admixtures that use the crystalline chemistry to improve the resistance of the concrete against hydrostatic pressure. These admixtures give concrete a self healing effect that cures cracks up to 0.4 mm under contact with water.

The following products are explained in this chapter.

VELOSIT CA 112 - Powder crystalline admixture.

VELOSIT CA 113 - Powder crystalline and hydrophobic admixture.

VELOSIT CA 115 - Liquid crystalline admixture.

VELOSIT CA 117 - Liquid crystalline and plasticizing admixture.

VELOSIT HA 951 - Air Entraining and Water repelling admixture for plasters and mortars.

VELOSIT LE 910 - Latex emulsion for mortars and adhesives.

VELOSIT CA 112
Crystalline waterproofing admixture

Application fields

VELOSIT CA 112 is a crystalline and hydrophobic waterproofing admixture for concrete. It is very economic and easy to apply. VELOSIT CA 112 creates a crystalline structure inside the concrete reducing the amount and diameter of the capillary pores. Trented concrete is able to self-heal static cracks up to 0.5 mm. Typical application fields besides others are as follows:

- Waterproof concrete for basements and below grade parking structures
- Waterproofing of potable water structures
- Waterproofing of sewage structures
- Waterproofing of tunnels and pipelines
- Slab waterproofing
- Waterproofing of elevator pits
- Waterproofing of shotcrete

Properties

VELOSIT CA 112 is a powder admixture that initiates a crystalline reaction in concrete. The reaction takes place with the free lime of the concrete and creates a permanent reduction of water permeability. Besides that it allows the structure to self-heal shrinkage cracks under contact with water.

VELOSIT CA 112 meets the requirements of EN 934-2 for concrete admixtures and is classified as a waterproofing additive according table 9.

VELOSIT CA 112 is mixed into the concrete either at the batch plant or on site into the batch truck.

- Self healing properties of treated concrete of up to 0.5 mm static cracks
- Waterproof up to 16 bars in properly formulated mix designs
- Easy to mix
- Increased final strength
- Little influence on concrete setting and strength development
- Increased resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Does not effect rebar passivation
- Potable water approved

Application

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: VELOSIT CA 112 can be used with most CEM I – III R and N (ASTM Type I – V) cements. Only cement types with more the 50% pozzolanic content are not suitable. Cement content must be at least 280 kg/m³ (472 lbs. per yd³).

Fly ash: Total fly ash must be less than 50% of the cement content.

Water: potable water quality with a maximum dosage of 55 % on cement content (water/cement ratio < 0.55).

Pozzolans: Pozzolanic additives like Microsilica or slag should be avoided as they compete with VELOSIT CA 112 for the available lime.

Aggregates and sand: Ensure a proper sieve curve according to good concreting practice as outlined for example in the ACI guidelines.

Admixtures: VELOSIT CA 112 is compatible with most concrete admixtures.

For compatibility of VELOSIT CA 112 trial mixes are strongly recommended.

Rebar: Amount and layout of reinforcement must be planned to minimize the risk of crack development. The rebar design is not influenced by the use of VELOSIT CA 112.

2.) Processing

The dosage depends on the amount of mixing water including aggregate moisture in the batch mix. Add 1.8 % VELOSIT CA 112, i.e. 1.8 kg per 100 liter (1.5 lbs. per 10 gal.). In a typical 300 kg cement per m^3 (505 lbs. per yd^3) with a water/cement ratio of 0.45 this equals a dosage 0.8 % of Cement/Cementitious content.

a.) Batch-plant: Add VELOSIT CA 112 together with the aggregates. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 112 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Trial mixes with the concrete mix design are strongly recommended for this application.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 112. As the mixing intensity is lower, we recommend producing a slurry of VELOSIT CA 112 with 100 – 200 % water to ensure proper mixing results.

3.) Placing

Concrete can be placed as specified. Take special care of the compaction by properly vibrating the placed concrete. Install joint waterproofing solutions for example VELOSIT WS 801 in any cold joints or construction joints.

4.) Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying a curing compound.

Cleaning

VELOSIT CA 112 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Estimating

Dosage per m^3 (yd^3) concrete

Water Cement	40 %	45 %	50 %	55 %
280 kg/m³ (472 lb./yd³)	2.02 kg (3.40 lb.)	2.27 kg (3.83 lb.)	2.52 kg (4.25 lb.)	2,77 kg (4.67 lb.)
310 kg/m³ (522 lb./yd³)	2.24 kg (3.78 lb.)	2.51 kg (4.23 lb.)	2.79 kg (4.70 lb.)	3.07 kg (5.17 lb.)
340 kg/m³ (573 lb./yd³)	2.45 kg (4.13 lb.)	2.76 kg (4.65 lb.)	3.06 kg (5.16 lb.)	3.36 kg (5.66 lb.)
370 kg/m³ (623 lb./yd³)	2.66 kg (4.48 lb.)	3.00 kg (5.06 lb.)	3.33 kg (5.61 lb.)	3.66 kg (6.17 lb.)

Quality features

Color: gray

Density: 1.1 kg/l

Water impermeability acc. EN 12390-8 (concrete with 310 kg OPC per m³, w/c= 0.45):

- Positive side: 16 bar (232 psi)
- Negative side: 16 bar (232 psi)

Compressive strength compared to untreated concrete:

7 days: + 2 %

28 days: + 3 %

Self-healing of static cracks: max. 0.5 mm (20 mils)

Chloride ions: < 0.05 %

*Concrete mix design:

CEM I 42.5N (Milke Classic): 310 kg per m³

Wesersand 0/2 (Sand): 670 kg per m³

Weserkies 2/8 (Aggregate): 750 kg per m³

Weserkies 8/16 (Aggregate): 700 kg per m³

water: 139.5 l per m³

w/c=0.45

VELOSIT CA 112: 3.49 kg per m³

Packaging

VELOSIT CA 112 is available in two pack sizes: 20 kg (44 lb.) watertight plastic bag

1000 kg (2200 lbs.) BigBags

Storage

VELOSIT CA 112 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

Concrete treated with VELOSIT CA 112 may discolor or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

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VELOSIT CA 113

Crystalline hydrophobic waterproofing admixture

CE
EN934-2

Application fields

VELOSIT CA 113 is a crystalline and hydrophobic waterproofing admixture for concrete. It is very economic and easy to apply. VELOSIT CA 113 creates a crystalline structure inside the concrete reducing the amount and diameter of the capillary pores. Trented concrete is able to self-heal static cracks up to 0.4 mm. Typical application fields besides others are as follows:

- Waterproof concrete for basements and below grade parking structures
- Usable on decorative features because of limited efflorescence compared to standard crystalline products
- Waterproofing of potable water structures
- Waterproofing of sewage structures
- Waterproofing of tunnels and pipelines
- Slab waterproofing
- Waterproofing of shotcrete

Properties

VELOSIT CA 113 is a powder admixture that initiates a crystalline reaction in concrete.

The reaction takes place with the free lime of the concrete and creates a permanent reduction of water permeability. The crystalline effect allows the structure to self-heal shrinkage cracks under contact with water. Besides that VELOSIT CA 113 treated concrete develops a strong water repellency.

VELOSIT CA 113 exceeds the requirements of EN 934-2 for concrete admixtures and is classified as a waterproofing additive according table 9.

VELOSIT CA 113 is mixed into the concrete either at the batch plant or on site into the batch truck.

- Self healing properties of treated concrete of up to 0.4 mm static cracks
- Waterproof up to 163 bars in properly formulated mix designs
- Strong hydrophobic effect
- Minimal efflorescence and discoloration
- Easy to mix
- Increased final strength
- Little influence on concrete setting and strength development
- Increased resistance against aggressive media with a pH range of 3 – 12 and against soft water with low ion content
- Suitable for potable water
- Active corrosion inhibitor

Application

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: VELOSIT CA 113 can be used with most CEM I – III R and N (ASTM Type I – V) cements. Only cement types with more the 50% pozzolanic content are not suitable. Cement content must be at least 280 kg/m³ (472 lbs. per yd³).

Fly ash: Total fly ash must be less than 50% of the cement content.

Water: potable water quality with a maximum dosage of 55 % on cement content (water/cement ratio < 0.55).

Pozzolans: Pozzolanic additives like Microsilica or slag should be avoided as they compete with VELOSIT CA 113 for the available lime.

Aggragates and sand: Ensure a proper sieve curve according to good concreting practice as outlined for example in the ACI guidelines.

Admixtures: VELOSIT CA 113 is compatible with most concrete admixtures.

For compatibility of VELOSIT CA 113 trial mixes are strongly recommended.

Rebar: Amount and layout of reinforcement must be planned to minimize the risk of crack development. The rebar design is not influenced by the use of VELOSIT CA 113.

2.) Processing

The dosage depends on the amount of mixing water including aggregate moisture in the batch mix. Add 2.5% VELOSIT CA 113, i.e. 2.5 kg per 100 liter (2.1 lbs. per 10 gal.). In a typical 300 kg cement per m³ (505 lbs. per yd³) with a water/cement ratio of 0.40 this equals a dosage of 1.0 % on cement.

a.) Batch-plant: Add VELOSIT CA 113 together with the aggregates. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 113 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Trial mixes with the concrete mix design are strongly recommended for this application.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 113. As the mixing intensity is lower, we recommend producing a slurry of VELOSIT CA 113 with 100 – 200 % water to ensure proper mixing results.

3.) Placing

Concrete can be placed as specified. Take special care of the compaction by properly vibrating the placed concrete. Install joint waterproofing solutions from our VELOSIT WS 801 line in any cold joints or construction joints.

4.) Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying a curing compound.

Estimating

Dosage per m³ (yd³) concrete

Water / Cement	40 %	45 %	50 %	55 %
280 kg/m^3 (472 lb./yd^3)	2.80 kg (4.72 lb.)	3.15 kg (5.32 lb.)	3.50 kg (5.91 lb.)	3.85 kg (6.50 lb.)
310 kg/m^3 (522 lb./yd^3)	3.10 kg (5.23 lb.)	3.49 kg (5.88 lb.)	3.88 kg (6.54 lb.)	4.26 kg (7.19 lb.)
340 kg/m^3 (573 lb./yd^3)	3.40 kg (5.73 lb.)	3.83 kg (6.45 lb.)	4.25 kg (7.17 lb.)	4.68 kg (7.89 lb.)
370 kg/m^3 (623 lb./yd^3)	3.70 kg (6.24 lb.)	4.16 kg (7.02 lb.)	4.63 kg (7.80 lb.)	5.09 kg (8.58 lb.)

Cleaning

VELOSIT CA 113 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Quality features

Color: gray

Density: 1.1 kg/l

Water impermeability acc. EN 12390-8

(concrete with 310 kg OPC per m^3, w/c= 0.45):

- Positive side: 16 bar (232 psi)
- Negative side: 13 bar (190 psi)

Capillary absorption: - 72 % against control

Compressive strength compared to untreated concrete*:

7 days : +/- 0 %

28 days: + 1 %

Self-healing of static cracks: max. 0.4 mm (16 mils)

Chloride ions: < 0.05 %

***Concrete mix design:**

CEM I 42.5N (Milke Classic): 310 kg per m^3

Sand Wesersand 0/2: 670 kg per m^3

Aggregate Weserkies 2/8: 750 kg per m^3

Aggregate Weserkies 8/16: 700 kg per m^3

Water (w/c=0.45): 139.5 l per m^3

VELOSIT CA 113: 3.49 kg per m^3

Packaging

VELOSIT CA 113 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT CA 113 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

Concrete treated with VELOSIT CA 113 may discolor or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

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VELOSIT CA 115
Liquid crystalline waterproofing admixture

Application fields

VELOSIT CA 115 is an easy to use, economic, liquid crystalline waterproofing concrete admixture. VELOSIT CA 115 creates a crystalline “nano” structure within the concrete matrix, reducing the diameter of capillaries and sealing of any micro static cracks (up to 400 microns). Typical application fields include waterproofing of concrete:

- Basements and below grade parking structures
- Potable water structures
- Sewage retaining structures
- Tunnels and pipes
- On grade slabs, rafts and pile caps
- Providing waterproof shotcrete

Properties

VELOSIT CA 115 is a liquid admixture that initiates a crystalline reaction in concrete. The reaction takes place with the free lime in concrete pores and capillaries creating a permanent reduction of water permeability. The crystalline effect allows the structure to self-heal shrinkage cracks when exposed to water.

VELOSIT CA 115 is mixed into the concrete either at the batching plant or in the mixer truck on site.

- VELOSIT CA 115-administered concrete self-seals both existing and futuristic static cracks of up to 0.4 mm
- Properly formulated mix designs result in waterproof concrete resistant against up to 13 bars
- Quick dispersion; easy to mix with no lumping or need for extensive mixing times
- Minimal influence on concrete setting time
- Increased resistance against low-ion soft water and aggressive media with a pH range of 3 – 12
- Suitable for potable water

Application

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: VELOSIT CA 115 can be used with most CEM I – III R and N (ASTM Type I – V) cements. Only cement types with more the 50% pozzolanic content are not suitable. Cement content must be at least 280 kg/m^3 (472 lbs. per yd^3).

Fly ash: Total fly ash content must be less than 50% of the total cementitious content.

Water: potable water quality with a maximum dosage of 55% to total cementitious content (water/cement ratio < 0.55).

Pozzolans: Additives like Microsilica and slag compete with VELOSIT CA 115 for the available lime. In these cases laboratory tests should be conducted beforehand to determine suitability, especially when “pozzolanic-containing” cements are used.

Aggregates and sand: Ensure a proper sieve curve according to good concreting practice such as outlined by the ACI guidelines for example.

Admixtures: VELOSIT CA 115 is compatible with most concrete admixtures. Mixes containing strong water reducers or super plasticizers must undergo suitability tests to avoid possible segregation, especially at high dosage rates.

Rebar: Amount and layout of reinforcement must be planned to minimize the risk of crack development. The rebar design is not influenced by the use of VELOSIT CA 115.

2.) Processing

The water content in any concrete mix is directly related to the porosity of the resultant concrete.

Hence, the dosage depends on the amount of mixing water (aggregate moisture included) in the batch mix. VELOSIT CA 115 is added at a rate of 5% by weight of the total water (mixing water + aggregate moisture) i.e. 5 kg per 100 liter (4.2 lbs. per 10 gal.). In a typical 300 kg per m^3 (505 lbs. per yd^3) total cementitious and a water:cement ratio of 0.40, use 6 kg of VELOSIT CA 115 (Please refer to the guideline table under “Estimating” later on in this technical data sheet.

a.) Batch-plant: Add VELOSIT CA 115 together with the mixing water. Reduce mixing water by 5 liter per m^3 (1 gal per yd^3) compared to an untreated mix design. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 115 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Preliminary lab trials are mandatory for this type of administration to adjust the required mixing water at the batch plant and at the job site.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 115. Add the product in the calculated amount together with the water into the mixer. Start with a semi dry mix and adjust to the desired consistency after at 3 minutes of mixing.

3.) Placing

Standard concrete placing practice in accordance with ACI Recommendations or equivalent International codes must be followed to ensure optimum results. Install joint waterproofing solutions from the VELOSIT WS Range in cold joints and construction joints.

4.) Curing

Follow specified curing procedures as necessary. VELOSIT CA 115 is effective whether water curing or a curing compound is used.

Cleaning

VELOSIT CA 115 spillages are easily removed with water.

Estimating

Dosage per m^3 (yd^3) concrete

Total water percentage	40 %	45 %	50 %	55 %
CA115 dosage Rate as % of total water	5 %			
CA115 dosage Rate as % of cement	2 %	2.25%	2.5%	2.75%
280 kg/m³ (472 lb./yd³)	5.60 kg (9.42 lb.)	6.30 kg (10.60 lb.)	7.00 kg (11.78 lb.)	7.70 kg (12.96 lb.)
310 kg/m³ (522 lb./yd³)	6.20 kg (10.43 lb.)	6.98 kg (11.74 lb.)	7.76 kg (13.06 lb.)	8.52 kg (14.34 lb.)
340 kg/m³ (573 lb./yd³)	6.80 kg (11.44 lb.)	7.66 kg (12.89 lb.)	8.50 kg (14.31 lb.)	9.36 kg (15.75 lb.)
370 kg/m³ (623 lb./yd³)	7.40 kg (12.45 lb.)	8,32 kg (14.00 lb.)	9.26 kg (15.59 lb.)	10.18 kg (17.13 lb.)

Quality features

Color: clear

Density: 1.16 kg/l

Water impermeability acc. EN 12390-8*:

- Positive side: 13 bar (190 psi)
- Negative side: 13 bar (190 psi)

Compressive strength compared to untreated concrete* 28 days: +/- 0 %

Self-healing of static cracks: max. 0.4 mm (16 mils)

Fire rating EN13501-1: Class A1

*Concrete mix design:

CEM I 42,5N (Milke Classic): 310 kg per m³

Weser Fine sand 0/2: 670 kg per m³

Weser Fine aggregate 2/8: 450 kg per m³

Weser Coarse aggregate 8/16: 700 kg per m³

Water (w/c= 0.45): 135 l per m³

VELOSIT CA 115: 7.00 kg per m³

Packaging

VELOSIT CA 115 is available in two pack sizes:

25 kg (55 lb.) plastic pails and 1000 kg (2200 lb.) IBC containers

Storage

VELOSIT CA 115 has a shelf life of 12 months when stored in unopened original packs between 10 °C – 35 °C (50 – 95°F) in dry storage conditions and protected from direct sunlight.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

Concrete treated with VELOSIT CA 115 may discolor or show efflorescence once in contact with water. This is normal and mainly caused by the crystalline reaction. The discoloration does not affect performance.

0519

VELOSIT CA 117

Liquid crystalline waterproofing & plasticizing admixture

Application fields

VELOSIT CA 117 is an easy to use, economic, liquid crystalline and water-reducing waterproofing concrete admixture. VELOSIT CA 117 creates a crystalline “nano” structure within the concrete matrix, reducing the diameter of capillaries and sealing of any micro static cracks (up to 400 microns). Typical application fields include waterproofing of concrete:

- Basements and below grade parking structures
- Potable water structures
- Sewage retaining structures
- Tunnels and pipes
- On grade slabs, rafts and pile caps
- Providing waterproof shotcrete

Properties

VELOSIT CA 117 is a liquid admixture that initiates a crystalline reaction in concrete. The reaction takes place with the free lime in concrete pores and capillaries creating a permanent reduction of water permeability. The crystalline effect allows the structure to self-heal shrinkage cracks when exposed to water.

VELOSIT CA 117 exceeds the requirements of: EN 934-2 for concrete admixtures and is classified as a water reducing additive according to table 2 and ASTM C494, Part 2, Tables 1 & 2.

VELOSIT CA 117 is mixed into the concrete either at the batching plant or in the mixer truck on site.

- VELOSIT C117-administered concrete self-seals both existing and futuristic static cracks of up to 0.4 mm
- Properly formulated mix designs result in waterproof concrete resistant against up to 13 bars
- Quick dispersion; easy to mix with no lumping or need for extensive mixing times
- Ability to reduce water/cement ratio means increased final strength and/or water tightness over control.
- Minimal influence on concrete setting time
- Increased resistance against low-ion soft water and aggressive media with a pH range of 3-12
- Suitable for potable water

Application

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: VELOSIT CA 117 can be used with most CEM I – III R and N (ASTM Type I – V) cements. Only cement types with more the 50 % pozzolanic content are not suitable. Cement content must be at least 280 kg/m³ (472 lbs. per yd³).

Fly ash: Total fly ash content must be less than 50 % of the total cementitious content.

Water: potable water quality with a maximum dosage of 55 % to total cementitious content (water/cement ratio < 0.55).

Pozzolans: Additives like Microsilica and slag compete with VELOSIT CA 117 for the available lime. In these cases laboratory tests should be conducted beforehand to determine suitability, especially when “pozzolanic-containing” cements are used.

Aggregates and sand: Ensure a proper sieve curve according to good concreting practice such as outlined by the ACI guidelines for example.

Admixtures: VELOSIT CA 117 is compatible with most concrete admixtures. Mixes containing strong water reducers or super plasticizers must undergo suitability tests to avoid possible segregation, especially at high dosage rates.

Rebar: Amount and layout of reinforcement must be planned to minimize the risk of crack development. The rebar design is not influenced by the use of VELOSIT CA 117.

2.) Processing

The water content in any concrete mix is directly related to the porosity of the resultant concrete.

Hence, the dosage depends on the amount of mixing water (aggregate moisture included) in the batch mix. VELOSIT CA 117 is added at a rate of 5 % by weight of the total water (mixing water + aggregate moisture) i.e. 5 kg per 100 liter (4.2 lbs. per 10 gal.). In a typical 300 kg per m³ (505 lbs. per yd³) total cementitious and a water:cement ratio of 0.40, use 6 kgs of VELOSIT CA 117 (Please refer to the guideline table under “Estimating” later on in this technical data sheet.

a.) Batch-plant: Add VELOSIT CA 117 together with the mixing water. Water demand will be 5-10% lower than the untreated mix design. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 117 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Preliminary lab trials are mandatory for this type of administration to adjust the required mixing water at the batch plant and at the job site.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 117. Add the product in the calculated amount together with the water into the mixer. Start with a semi dry mix and adjust to the desired consistency after at 3 minutes of mixing.

3.) Placing

Standard concrete placing practice in accordance with ACI Recommendations or equivalent International codes must be followed to ensure optimum results. Install joint waterproofing solutions from the VELOSIT WS 801. Range in cold joints and construction joints.

4.) Curing

Follow specified curing procedures as necessary. VELOSIT CA 117 is effective whether water curing or a curing compound is used.

Estimating

Dosage per m^3 (yd^3) concrete

Total water percentage	**40 %**	**45 %**	**50 %**	**55 %**
VELOSIT CA 117 dosage Rate as % of total water	**5 %**			
VELOSIT CA 117 dosage Rate as % of total cement	**2 %**	**2 %**	**3 %**	**3 %**
280 kg/m^3 (472 lb./yd^3)	5.60 kg (9.42 lb.)	6.30 kg (10.60 lb.)	7.00 kg (11.78 lb.)	7.70 kg (12.96 lb.)
310 kg/m^3 (522 lb./yd^3)	6.20 kg (10.43 lb.)	6.98 kg (11.74 lb.)	7.76 kg (13.06 lb.)	8.52 kg (14.34 lb.)
340 kg/m^3 (573 lb./yd^3)	6.80 kg (11.44 lb.)	7.66 kg (12.89 lb.)	8.50 kg (14.31 lb.)	9.36 kg (15.75 lb.)
370 kg/m^3 (623 lb./yd^3)	7.40 kg (12.45 lb.)	8,32 kg (14.00 lb.)	9.26 kg (15.59 lb.)	10.18 kg (17.13 lb.)

Cleaning

VELOSIT CA 117 spillages are easily removed with water.

Quality features

Color: brownish

Density: 1.17 kg/l

Water impermeability acc. EN 12390-8*:

- Positive side: 13 bar (190 psi)
- Negative side: 13 bar (190 psi)

Compressive strength compared to untreated concrete*:

7 days: + 2 %

28 days: + 4 %

Chloride ions: < 0.05 %

Self-healing of static cracks: max. 0.4 mm (16 mils)

*Concrete mix design:

CEM I 42,5N (Milke Classic): 310 kg per m^3

Weser Fine sand 0/2: 670 kg per m^3

Weser Fine aggregate 2/8:	750 kg per m^3
Weser Coarse aggregate 8/16:	700 kg per m^3
Water (w/c= 0.45):	139.5 l per m^3
VELOSIT CA 117:	7.00 kg per m^3

Packaging

VELOSIT CA 117 is available in two pack sizes:

25 kg (55 lb.) plastic pails and 1000 kg (2200 lb.) IBC containers

Storage

VELOSIT CA 117 has a shelf life of 12 months when stored in unopened original packs between 5 °C – 35 °C (41 – 95 °F) in dry storage conditions and protected from direct sunlight.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

Concrete treated with VELOSIT CA 117 may discolor or show efflorescence once in contact with water. This is normal and mainly caused by the crystalline reaction. The discoloration does not affect performance.

0519

VELOSIT HA 951

Air Entraining and Water Repelling Admixture for Plasters and Mortars

Application fields

VELOSIT HA 951 is a liquid admixture for the modification of plasters, mortars and concrete mixes. Typical application fields besides others are as follows:

- Job site plaster and mortar mixes
- Adhesion promoter for mortars, plasters and concrete
- Waterproofer for mortar mixes
- Efflorescence reducer
- Admixture for paver stone production

Properties

VELOSIT HA 951 is a concentrated cement stable air entraining agent. VELOSIT HA 951 surpasses the requirements for EN 934-2:T.5 VELOSIT HA 951 is added to the mixing water.

- High yield
- Improved workability
- Reduction of cracking tendency
- Hydrophobic
- Very good cement compatibility
- Reduction of water absorption
- Plasticizing
- Reduced shrinkage
- Improved shrinkage behavior
- Improved water retention

Application

VELOSIT HA 951 is suitable for cement based mortars and plasters.

VELOSIT HA 951 is diluted with water in the required amount. The concentration determines the achievable properties. The dosage is 0.2 – 0.5 % based on cement content. Depending on the water/cement ratio the product is added at a 1 : 80 to 1 : 200 dilution to the mixing water. This mix is then blended with suitable sand, aggregate and cement. VELOSIT HA 951 entrains air into the mix. The mixing intensity determines beside the dosage height the amount of air entrainment. Overdosage may lead to segregation and strength loss.

Typical plaster formulation:

CEM I/II:	50 kg
Sand/Aggregate:	150 kg
Water:	30 l
VELOSIT HA 951:	0.12 l

Curing

Cure VELOSIT HA 951 modified plasters according to the relevant standards.

Estimating

0.2 – 0.5 % of binder content.

Plaster: approx. 1 g per m^2 and mm thickness

Mortar: approx. 2 kg pro m^3

Cleaning

VELOSIT HA 951 modified mortars can be removed in the fresh state with water. Once it has cured only mechanical cleaning is possible.

Quality features

Color:	green
Density:	1.04 kg/l
Air entrainment*:	17 %

*Plaster formulation

Packaging

VELOSIT HA 951 is available in 10 kg (22 lb.) or 25 kg (55 lb.) jugs.

Storage

VELOSIT HA 951 can be stored in unopened original packs for 12 months at 5 – 25 °C (40 – 77 °F) in a dry storage place protected against sunlight. Higher storage temperatures reduce the shelf life.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT HA 951 is only available for professional applicators.

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.

2319

CE
EN1504-2

VELOSIT LE 910
Latex emulsion for mortars and adhesives

Application fields

VELOSIT LE 910 is a latex emulsion for the modification of mortars, adhesives and concrete mixes. It can also be used as a primer for typical construction substrates like dry wall, concrete and masonry. Typical application fields besides others are as follows:

- Priming underneath adhesives and mortars
- Densification of weak or sandy substrates
- Job site mix of bonding bridges or splatter coats
- Adhesion promoter for mortars, plasters, screeds and concrete
- Elastificator for VELOSIT-repair mortars and tile adhesives
- Waterproofer and salt barrier
- Improvement of workability
- Improvement of chemical resistance

Properties

VELOSIT LE 910 is a concentrated cement stable latex emulsion.

Used a sealer/primer VELOSIT LE 910 meets the requirements of EN 1504-2 as an impregnation (I) and can be used according to principle 1 acc. to EN 1504-9.

VELOSIT LE 910 is applied by brush or roller if used as a primer. As mortar additive it is added to the mixing water.

- Improved adhesion on absorptive substrates in interior applications
- Drying time of 2 – 3 hours at 23 °C (73 °F) and 60% relative humidity
- Solvent-free, low odor
- Excellent cement stability
- Improves flexibility of mortars and adhesives
- Significantly higher adhesive strength
- Reduction of water absorption
- Reduced shrinkage
- Improved water retention
- Increased flexural strength

Application

1.) Substrate preparation

VELOSIT LE 910 is designed for mineralic substrates like concrete, masonry or absorptive natural stones, but also for gypsum or gypsum fiber boards.

Substrate must be prepared to remove all bond breaking substances. Detailed substrate preparation is described on the respective data sheet of the final product.

2.) Processing

a) as primer / sealer

Depending on substrate absorptiveness

VELOSIT LE 910 can be diluted with up to 5 parts water. Product is applied by brush or roller to the substrate. Avoid puddling.

b) as boding bridge / splatter coat

VELOSIT LE 910 is diluted 1:2 with water. This mixing liquid is used to mix a cement/sand mortar (1:1 to 1:3) with plastic consistency. For splatter coats use sand with max. 4 mm grain size, for bonding bridges max. 2 mm. Apply 2-4 kg/m² of the bonding bridge to the substrate. Splatter coats are applied at coverage of approx. 50% of the surface area.

c) as concrete / mortar additive

VELOSIT LE 910 is diluted with water in the required amount. The concentration of the added polymer determines the achievable properties. Concentrations of one third (1:2) lead to a significant increase of the adhesive and flexural strength of the mortar. Higher concentrations lead to a gradual transition to a flexible product where the polymer properties become more predominant. Using undiluted VELOSIT LE 910 results in an elastic product with reduced compressive strength but crack bridging properties.

d) as elstificator for tile adhesives

VELOSIT LE 910 can be used to improve the flexibility of tile adhesives like VELOSIT TA 704. A dilution of 1:4 is in most cases sufficient to fulfill the requirements for class S1 acc. EN 12002. At 1:1 even the properties required for class S2 may be achieved.

3.) Curing

VELOSIT LE 910 does not require curing.

Estimating

As primer/sealer: Consumption depends on surface roughness and absorptivity. Typical application rates are at 0.03 – 0.1 l/m² (0.7 – 2.5 gal per 1,000 ft²)

As mortar additive 5 – 100 % of the mixing water.

Cleaning

VELOSIT LE 910 can be removed in the fresh state with water. Once it has cured only mechanical cleaning is possible.

Quality features

Color:	white
Density:	1.01 kg/l
Solid content:	47 %
Min. film formation temp.:	0 °C
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Capillary water absorption**:	0.1 kg/m² x $h^{0.5}$
Penetration depth*:	> 5 mm

*0.1 l/m² on concrete

Packaging

VELOSIT LE 910 is available in 10 kg (22 lb.) or 25 kg (55 lb.) jugs

Storage

VELOSIT LE 910 can be stored in unopened original packs for 24 months at 5 – 25 °C (40 – 77 °F) in a dry storage place protected against sunlight. Higher storage temperatures reduce the shelf life.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT LE 910 is only available for professional applicators.

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.

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7 Joint waterproofing systems

The weakest spot of each waterproof structure are joints and cracks. These are often associated with significant movement and thus need a treatment that can accommodate this motion. **VELOSIT** offers two basic systems which are applied in different stages of the construction process. The VELOSIT WS products are installed during the concrete pour inside the designed joint whereas VELOSIT DB products are post-applied onto joints and cracks.

The following chapter covers:

VELOSIT DB 830 - Joint tape for reinforcement of waterproof membranes.

VELOSIT WS 801 - Swellable waterstop for concrete joints.

VELOSIT WS 805 - Swellable thermoplastic gasket for segmental structures.

VELOSIT DB 830
Joint sealing tape

Application fields

VELOSIT DB 830 is a waterproof join sealing tape used for waterproofing of construction and expansion joints. Typical application fields besides others are as follows:

- Waterproofing of construction joints between different concrete pours
- Waterproofing of cracks
- Waterproofing of pipe penetrations
- Waterproofing of the wall-slab joint
- Waterproofing of expansion joints
- Waterproofing of interfaces between substrates with different expansion behaviour

Properties

VELOSIT DB 830 is a highly flexible joint sealing tape with good resistance against hydrostatic pressure. It is applied with a suitable adhesive over cracks, construction or expansion joints.

- > 300 % tensile elongation
- Minimal thickness makes it an especially suitable substrate for tile applications
- Resists 50 m (160 ft.) water pressure acc. to EN 12390-8
- Good chemical resistance against many typical media
- UV stable

Application

1.) Substrate preparation

VELOSIT DB 830 is suitable for all cracks and joints in substrates that are limited to a max. movement of 0.5 mm (20 mils). VELOSIT DB 830 is only suitable against positive side water pressure.

Substrate must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances. Substrate must be open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 psi). Lower strength values can be accepted if lower adhesive strength is acceptable. This is for example on gypsum boards or gypsum fiber boards the case. Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material. Blowholes, honeycombs or other surface defects can be filled with VELOSIT WP 101 or the repair mortar VELOSIT RM 202. Before the application of VELOSIT DB 830, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

2.) Processing

All joints and cracks with more than 6 mm (¼") width must be filled with a backer rod or a flexible joint material before the installation of VELOSIT DB 830.

a.) Adhesion with 120 or 121: Mix a suitable amount of material and apply a mortar bed matching the width of the joint tape with a 4 mm (3/16 ") notched trowel above the crack or joint. Push VELOSIT DB 830 immediately into the fresh mortar bed and smoothen with a trowel. Excessive

adhesive may be used to smoothen the height difference between substrate and joint tape. Adhesive is cured after approx. 1 hour.

b.) Pipe penetrations are waterproofed with a sleeve made from VELOSIT DB 830. Cut a hole into the sleeve with a diameter approx. 6 mm (¼") smaller than the pipe. The sleeve is made from a 12 cm (5") piece of VELOSIT DB 830. Brush plenty of VELOSIT WP 120, VELOSIT WP 121 or VELOSIT WP 124 onto the pipe and the surrounding area. Pull the sleeve over the pipe push it with a trowel into the material. Work away from the pipe and take care not to entrap air or create wrinkles.

3.) Curing

VELOSIT DB 830 does not require curing. It may be over coated with with VELOSIT WP 120, VELOSIT WP 121 or VELOSIT WP 124 as soon as the adhesive has set.

Estimating

The required amount is calculated with the planned length of the joint or crack waterproofing.

Cleaning

VELOSIT DB 830 does not cause any dirt. Dirty material can be cleaned with a moist cloth.

Quality features

Color:		blue
Dimensions:		120 mm (4.75")
		200 mm (8")
Weight,	120 mm:	0.036 kg/m (0.072 lb./yd)
	200 mm:	0.060 kg/m (0.12 lb./yd.)
Substrate temperature:		5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:		
	- Positive side:	5 bar (73 psi)
Tensile elongation:		300 %

Packaging

VELOSIT DB 830 is supplied in rolls á 50 m (163').

120 mm (4.75") width: Each roll is packaged separately.

200 mm (8") width: 6 rolls are packaged in a box (approx. 18 kg/40 lbs.).

Storage

VELOSIT DB 830 can be stored in unopened original packs for 5 years 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.

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VELOSIT WS 801
Swellable waterstop

Application fields

VELOSIT WS 801 is a water swellable waterstop used for waterproofing of construction joints. Typical application fields besides others are as follows:

- Waterproofing of construction joints between different concrete pours
- Waterproofing of saw cut joints
- Waterproofing of pipe penetrations
- Waterproofing of the wall-slab joint

Properties

VELOSIT WS 801 is a waterstop that swells under contact with water. It is applied on the previous concrete pour into the center of the construction or expansion joint.

VELOSIT WS 801 is either glued with an adhesive or nailed to the concrete.

- 1000% swelling capacity, fully reversible for an unlimited number of cycles
- Dimensional stable, no wash-out like with Bentonite waterstops
- Retarded swelling, volume increase starts several hours after water contact
- Swelling pressure of > 5 bar (73 psi), extreme resitance against hydrostatic pressure
- Resists 50 m (160 ft.) water pressure acc. to EN 12390-8

Application

1.) Substrate preparation

VELOSIT WS 801 is suitable for reinforced joints in concrete bodies.

Remove separating and bondbreaking substances from first concrete section (for example foundation and slab). Surface should be open porous and load bearing. Minimal strength requirement is 15 MPa (2175 psi). Patch larger surface defects with VELOSIT RM 202.

2.) Processing

Due to its enormous swelling pressure VELOSIT WS 801 must be installed min. 50 mm (2”) from each edge. Do not use VELOSIT WS 801 on concrete walls of less than 120 mm cross-section.

a.) Adhesion with VELOSIT EA 331: Mix asuitable amount of adhesive and apply an approx. 4 cm (1 ½”) wide mortar bed with a 4 mm (3/16 “) or 6 mm (¼”) notched trowel. Push VELOSIT WS 801 immediately into the fresh mortar bed. Adhesive is cured after approx. 1 hour.

b.) Fixing with nails: VELOSIT WS 801 can be nailed to the first concrete section. Shoot nails each 15 cm (6”) with a nail gun (for example Hilti DX 76) through VELOSIT WS 801 into the concrete.

Cut overlaps, crossings or terminations of the waterstop in a 45° angle and connect without a gap. Hollow areas of more than 4 mm may reduce watertightness significantly.

Plastic pipes can only be treated with VELOSIT WS 801 up to DN 50 (2”) with cold water and up to DN 25 (1”) for more than 30°C (86°F) water temperature. Due to the high swelling pressure plastic pipes may collapse under load. Larger diameters are only permitted with metal pipes.

3.) Curing

VELOSIT WS 801 does not require curing. Avoid standing water on the waterstop as this may result in apremature swelling of the material. Because of the retarded swelling a short term contact with rain water is not a problem.

Estimating

The required amount is calculated with the planned length of the joint waterproofing.

Cleaning

VELOSIT WS 801 does not cause any dirt. Dirty material can be cleaned with a moist cloth. Do not install material that has already swollen. Wait until the material has completely dried and achieved its original dimensions.

Quality features

Color:	blue
Dimensions:	5 x 20 mm
Weight:	0.12 kg/m
	(0.24 lb./yd.)
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Water impermeability acc. EN 12390-8:	
- Positive side:	5 bar (73 psi)
Water absorption:	1.2 kg/m (2.4 lb./yd.)
Maximum swelling	
- potable water:	1060 %
- sea water:	750 %
- saline water:	580 %

Packaging

VELOSIT WS 801 is supplied in rolls á 50 m (163'). 5 rolls are packaged in a box (approx. 27 kg/ 63 lbs.).

Storage

VELOSIT WS 801 can be stored in unopened original packs for 5 years 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.

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VELOSIT WS 805

Swellable thermoplastic gasket for segmental structures

5 Bar Water Resistance EN 12390-8

Application fields

VELOSIT WS 805 is a swellable gasket manufactured from a blend of proprietary thermoplastics and swelling agents compounded to produce a re-swellable seal of unique swelling ability. VELOSIT WS 805 is used to seal joints between pre-cast segments. Typical application fields include:

- Sealing between pre-cast segments.
- Sealing between potable water pipes.
- Sealing sewage & wastewater pipes.
- Waterproofing of wall/slab joints.

Properties

VELOSIT WS 805 swellable thermoplastic gaskets gradually swell when in contact with water after approximate delay period of 2 weeks to enable working in wet/rainy conditions.

VELOSIT WS 805 is easily glued or nailed to the existing hardened concrete prior to pouring of the next fresh concrete.

VELOSIT WS 805 exhibits unique properties such as:

- Profile includes 2 protrusions to form double parallel compressible sealing lines
- 450 % swelling capacity; fully reversible for an unlimited number of cycles
- High water retention means delayed shrinkage when dry
- Dimensionally stable; does not wash-out like Bentonite waterstops
- Delayed swelling; volume increase starts after approx. 2 weeks of contact with water allowing water curing of precast units and/or placing of segments and pipes in wet conditions
- Swelling pressure resistant to 5 bars (73 psi) hydrostatic water pressures up to 50 m (160 ft.) acc. to EN 12390-8.
- Extremely flexible: easily bent to take the shape of concrete segment.

Application

1.) Substrate preparation

VELOSIT WS 805 is designed to seal construction joints in concrete segments against water passage.

Remove all separating and bond-breaking substances from hardened concrete (eg. foundation and slab). Surface should be as level as possible with a minimum load bearing capacity of 15 MPa (2175 psi). Deep surface defects must be levelled off with a shrinkage-compensated, structural grade repair mortar such as VELOSIT RM 202 to a smooth finish.

2.) Processing

Due to its swelling pressure VELOSIT WS 805 must be installed minimum 25 mm (1”) from the edge.

Fixing with nails: VELOSIT WS 805 can be nailed every 15 cm (6”) to the prepared hardened concrete section. Use a power-actuated nail gun such as Hilti DX 76 to firmly staple VELOSIT WS 805 into place.

Joints & connections are made by cutting the gasket in a 45° angle and butting together ensuring no gap is formed. Do not allow for any gaps exceeding 2 mm below or on the sides of VELOSIT WS 805.

3.) Curing

VELOSIT WS 805’s delayed swelling (approx. 12 – 14 days @ 23°C) allows long term contact with water (such as hardened concrete pre-dampening or exposure to rain) prior to the next concrete pour.

Estimating

The required amount is calculated with the planned length of the joint waterproofing, allowing for an extra 10mm for detailing at butt joint.

Cleaning

VELOSIT WS 805 does not cause any dirt. Dust/dirt can be cleaned off VELOSIT WS 805 with a moist cloth.

Do not install material that has already started to swell or is swollen. Wait until the material has completely dried and retrieved to its original dimensions.

Quality features

Color:	Dark Blue
Dimensions:	3 – 5 mm x 20 mm
Weight:	0.04 kg/m
	(0.08 lb./yd.)
Substrate temperature:	5 – 35 °C
	(40 – 95 °F)
Service temperature:	5 – 90 °C
	(40 – 95 °F)
Water impermeability:	5 bar
(EN 12390-8)	(73 psi)
Water absorption:	0.40 kg/m
	(0.80 lb./yd.)
Maximum swelling	
- potable water:	450 %

Packaging

VELOSIT WS 805 is supplied in 240 m (782.4’) rolls with 3 rolls per box (Total weight per box approx. 28.8 kg / 67 lb.).

Storage

VELOSIT WS 805 can be stored in unopened original packs for 5 years at 5 – 35°C (40 – 95 °F) in a dry storage place protected against sunlight and water.

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 WS 805 is only available for professional applicators.

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.

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8 Cementitious flooring solutions

VELOSIT offers a complete line of cementitious flooring products with various self leveling underlayments, overlayments and screed systems.

VELOSIT SL 501 - cementitious self leveling underlayment.

VELOSIT SL 502 - high strength self leveling underlayment, > 50 MPa (> 7250 psi)

VELOSIT SL 503 - self leveling overlayment, commercial floor.

VELOSIT SL 505 - white self leveling overlayment, commercial floor.

VELOSIT SL 506 - Cementitious self leveling underlayment, sandable.

VELOSIT SL 507 - Abrasion resistant self leveling overlayment.

VELOSIT SL 525 - Economic cementitious self leveling underlayment, sandable.

VELOSIT SC 240 - Rapid screed cement.

VELOSIT SC 241 - Ready-to-use screed mix.

VELOSIT SC 244 - Rapid self smoothing screed mix.

VELOSIT SC 245 - Rapid self smoothing screed cement. Optimized for application in pump-trucks.

VELOSIT SC 250 - Economic self smoothing screed cement. Optimized for application in pump-trucks.

VELOSIT SC 252 - Binder concentrate for high strength self leveling underlayments.

VELOSIT SC 253 - Binder concentrate for high strength self leveling overlayments.

Flooring

VELOSIT DS 271 - Corundum based monolithic floor hardener.

VELOSIT DS 272 - Quartz based monolithic floor hardener.

VELOSIT FH 921 - Silicate/siliconate floor hardener.

Selection aid floor systems

VELOSIT-	0 - 3 mm thickness			3 - 6 mm thickness				6 - 15 mm thickn.		15 - 100 mm thickness			
	Residential, under carpet vinyl and laminate	Commercial, under carpet vinyl and laminate	Commercial as a substrate for sealers	Residential and commercial under tiles and natural stones	Commercial, under carpet vinyl and laminate	Residential and commercial as a floor finish	Coating of warehouses and industrial floors	Residential and commercial under tiles and natural stones	Coating of warehouses and industrial floors	Bonded screeds	Decoupled screeds, suitable with radiant floor heating	Light weight screeds (decoupled)	Industrial screed as a finished floor
SL 501				✔	O			✔					
SL 502				✔	✔			✔					
SL 503/505			✔	✔	✔	✔	✔	✔	✔	O			O
SL 506	✔	✔	✔	✔	O								
SL 507			✔		O	✔	✔	✔	✔	✔			✔
SL 525	✔	✔	✔	✔	O								
SC 240*										✔	✔		✔
SC 241										✔	✔	✔	
SC 244/245*										✔	✔		✔
SC 252*				✔	✔			✔	✔	✔			
SC 253*			✔	✔	✔	✔	✔	✔	✔	✔			✔

*** with suitable aggregate grading**

✔ Recommended

O With restriction suitable

VELOSIT SL 501
Economic self leveling underlayment

Application fields

VELOSIT SL 501 is a cementitious self leveling underlayment for concrete substrates. It creates a smooth surface for coatings and floor coverings. Typical application fields besides others are as follows:

- Interior and exterior use
- Leveling of concrete slabs and floors
- Repair of surface defects on concrete floors
- Application thickness from 3 mm (1/8") to 38 mm (1 ½")

Properties

VELOSIT SL 501 is a shrinkage compensated cementitious self leveling underlayment with very quick strength development. VELOSIT SL 501 binds the mixing water very fast allowing a very short wait time before it can be covered. VELOSIT SL 501 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 501 surpasses the requirements of EN 1504-3 class R2 for concrete repair (CR) and can be used according to the principles 3 and 7 acc. to EN 1504-9.

VELOSIT SL 501 surpasses the requirements of EN 13813 and meets class CT-C30-F7.

VELOSIT SL 501 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 12 MPa (1740 psi) compressive strength after 4 hours
- Final strength of more than 30 MPa (4350 psi) after 28 days
- Open to foot traffic after 3 hours
- Very good 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
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT SL 501 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 1.0 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.

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 – 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 501 can be applied into the tacky 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 501 with 17 – 18 % potable water, i.e. 4.2 – 4.5 l (1.1 – 1.2 gal.) water per 25 kg (55 lb.) bag. Fill the 17 % mixing water (4.2 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. 1 % additional water under stirring until the desired consistency is achieved. Do not over water the product!

The product is workable for 30 – 40 min. at 23 °C.

a.) Rake application: Pour VELOSIT SL 501 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: Suitable mortar pumps are for example:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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 501 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 SL 501 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 501 result in approx. 14.0 liter (0.49 ft^3) cured mortar.

Standard leveling:

11 kg (24 lbs.)* VELOSIT SL 501 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 501 powder + 1.8kg water, i.e. 12.8kg mixed material per 6 mm and m^2

Cleaning

VELOSIT SL 501 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 : 17
Mixing ratio by volume:	100 : 27
Density:	1.6 kg/l
Substrate temperature:	10 – 35 C (50 – 95 °F)

Initial set:	50 min.
Final set:	110 min.
Compressive / flexural strength:	
4 hours:	12 / 2 MPa (1740/290 psi)
24 hours:	23 / 4 MPa (3335/580 psi)
7 days:	29 / 6 MPa (4205/870 psi)
28 days:	34 / 7 MPa (4930/1015 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
Adhesive strength*:	
- primed with PR 303:	1.3 MPa (189 psi)
- primed with PA 911:	1.2 MPa (174 psi)
Restrained shrinkage:	1.2 MPa (174 psi)
Length change after 56 days:	
- dry storage:	- 0.4 mm/m (- 0.04 %)
- water storage:	+ 0.1 mm/m (+ 0.01 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SL 501 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SL 501 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

Never add water to VELOSIT SL 501 when it has started to set. Stiffened material must be disposed.

3619

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

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 surpasses the requirements of EN 1504-3 class R3 for concrete repair (CR) and can be used according to the principles 3 and 7 acc. to EN 1504-9. VELOSIT SL 502 surpasses the requirements of EN 13813 and meets 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

- Light gray color close to concrete color

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. 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 lb./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. Fill the 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. 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
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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!

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 + 1.9kg water, i.e. 12.9kg mixed material per 6 mm and m^2

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

Color:	gray
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:	55 min.
Final set.	105 min.
Compressive / flexural strength:	
4 hours:	16 / 3 MPa (2340/435 psi)
24 hours:	30 / 5 MPa (4350/725 psi)
7 days:	41 / 7 MPa (5945/1015 psi)
28 days:	52 / 8 MPa (7540/1160 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
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	
- 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

Never add water to VELOSIT SL 502 when it has started to set. Stiffened material must be disposed.

2619

VELOSIT SL 503
High strength self leveling overlayment

Application fields

VELOSIT SL 503 is a cementitious self leveling 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 3 mm (1/8") to 38 mm (1 ½")

Properties

VELOSIT SL 503 is a shrinkage compensated self leveling overlayment based on a special cement with very quick strength development. VELOSIT SL 503 binds the mixing water very fast 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 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3 and 7 acc. to EN 1504-9. VELOSIT SL 503 surpasses the requirements of EN 13813 and meets class CT-C60-F7.

VELOSIT SL 503 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
- Ready for foot traffic after 3 hours, for forklift traffic after 16 hours
- 30 – 40 min. working time and 20 MPa (2900 psi) compressive strength after 4 hours
- Final strength of more than 60 MPa (8700 psi) after 28 days
- 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
- Light gray color close to concrete color

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 a purity of SA 2&1/2 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 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 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 (suitable quartz sand 0.7 – 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 503 can be applied into the tacky 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.

2.) Processing

Mixing: Mix VELOSIT SL 503 with 21 – 22 % potable water, i.e. 4.2 – 4.4 l (1.1 – 1.2 gal.) water per 20 kg (44 lb.) bag. Fill 21% mixing water (4.2 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. 1% additional water under stirring until the desired consistency is achieved. Do not over water the product! VELOSIT SL 503 can be colored within organic pigments. Add dry pigments together with the product to the mixing water and stir until a streak-free mix is achieved. Do not add more than 3 % pigments.

The product is workable for 30 – 40 min. at 23 °C.

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 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 the surface at larger application thickness. Finish with a smooth rake.

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

- PFT GmbH: PFT G4

- HighTech GmbH: HighComb Big

- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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 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 16 hours. For use as a wear surface a clear sealer, a surface hardener or VELOSIT FH 921 (silicone enhanced floor hardener) is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents.

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 5 °C (9 °F).

Estimating

Volume yield:

20 kg (44 lbs.) VELOSIT SL 503 result in approx. 11.40 liter (0.40 ft^3) cured mortar.

Standard leveling:

10.5 kg (23 lbs.)* VELOSIT SL 503 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.

* 10.5 kg VELOSIT SL 503 powder + 2.22 kg water, i.e. 12.7 kg mixed material per 6 mm and m^2

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:	10 – 35 °C (50 – 95 °F)
Initial set:	50 min.
Final set.	95 min.

Compressive / flexural strength:	
4 hours:	20 / 4 MPa (2900/580 psi)
24 hours:	43 / 7 MPa (6235/1015 psi)
7 days:	51 / 8 MPa (7395/1160 psi)
28 days:	65 / 9 MPa (9427/1305 psi)
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
Adhesive strength*:	
- primed with PR 303:	2.3 MPa (334 psi)
- primed with PA 911:	1.6 MPa (232 psi)
Restrained shrinkage:	2.0 MPa (290 psi)
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 $A1_{fl}$

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

Packaging

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

Storage

VELOSIT SL 503 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

Never add water to VELOSIT SL 503 when it has started to set. Stiffened material must be disposed.

2619

VELOSIT SL 505
White High strength self leveling overlayment

Application fields

VELOSIT SL 505 is a white cementitious self leveling 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
- Decorative applications
- Leveling of concrete slabs and floors as a finished surface
- Repair of surface defects on concrete floors
- Application thickness from 3 mm (1/8") to 15 mm (0.6")

Properties

VELOSIT SL 505 is a white shrinkage compensated self leveling overlayment based on a special cement with very quick strength development. VELOSIT SL 505 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. VELOSIT SL 505 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 505 surpasses the requirements of EN 13813 and meets class CT-C50-F6.

VELOSIT SL 505 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
- Tintable with inorganic pigments
- 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 20 MPa (2900 psi) compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- 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
- White color

Application

1.) Substrate preparation

VELOSIT SL 505 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 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 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 (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 505 can be applied into the tacky 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.

2.) Processing

Mixing: Mix VELOSIT SL 505 with 21– 22 % potable water, i.e. 5.3 – 5.5 l (1.4 – 1.5 gal.) water per 25 kg (55 lb.) bag. Fill the 21 % mixing water (5.3 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. 1% additional water under stirring until the desired consistency is achieved. Do not over water the product! VELOSIT SL 505 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 23 °C.

a.) Rake application: Pour VELOSIT SL 505 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 15 mm (0.6 ") 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: Suitable mortar pumps are for example:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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 505 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 505 is ready to receive a coating after 16 hours. For use as a wear surface a clear sealer, a surface hardener or VELOSIT FH 921 (silicone enhanced floor hardener) is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents.

3.) Curing

VELOSIT SL 505 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 505 result in approx. 14.2 liter (0.50 ft^3) cured mortar.

Standard leveling:

10.5 kg (23 lbs.)* VELOSIT SL 505 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.

* 10.5 kg VELOSIT SL 505 powder + 2.2 kg water, i.e. 12.7 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT SL 505 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:	white
Mixing ratio by weight:	100 : 21
Mixing ratio by volume:	100 : 34
Density:	1.6 kg/l
Substrate temperature:	10 – 35 ° (50 – 95 °F)
Initial set:	45 min.
Final set.	85 min.
Compressive / flexural strength:	
4 hours:	17 / 4 MPa (2465/580 psi)
24 hours:	36 / 6 MPa (5220/870 psi)
7 days:	45 / 7 MPa (6525/1015psi)

28 days:	53 / 7 MPa (7685/1015 psi)
Adhesive strength*:	
- primed with PR 303:	2.4 MPa (348 psi)
- primed with PA 911:	1.5 MPa (217 psi)
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 $A1_{fl}$

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

Packaging

VELOSIT SL 505 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SL 505 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

Never add water to VELOSIT SL 505 when it has started to set. Stiffened material must be disposed.

2619

VELOSIT SL 506

Self leveling underlayment for carpet, vinyl and laminate floors

Application fields

VELOSIT SL 506 is a cementitious self leveling underlayment for concrete, gypsum, magnesia and asphalt substrates. It creates a smooth surface for coatings and floor coverings. Typical application fields besides others are as follows:

- Interior and exterior use
- Leveling of floors for covering with thin flooring materials
- Repair of surface defects on concrete floors
- Application thickness from 1 mm (40 mils) to 12 mm (½“)
- As a binder for terrazzo floors

Properties

VELOSIT SL 506 is a shrinkage compensated cementitious self leveling underlayment with very quick strength development. VELOSIT SL 506 binds the mixing water very fast allowing a very short wait time before it can be covered. VELOSIT SL 506 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 506 meets the requirements of EN 13813 and is classified CT-C30-F5.

VELOSIT SL 506 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
- Extremely smooth surface profile due to superfine grading
- Easy to sand or polish after curing
- Fast air release with minimal requirement for agitation
- Ready for covering with ceramic tiles after 4 hours, for moisture sensitive floor coverings after 12 hours.
- 30 – 40 min. working time and 10 MPa (1450 psi) compressive strength after 4 hours
- Final strength of more than 30 MPa (4350 psi) after 28 days
- Open to foot traffic after 2-3 hours
- Very good adhesion to properly prepared substrates
- Excellent water resistance, no strength loss under water
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT SL 506 is designed for concrete and various screed types. 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, gypsum, magnesia and asphalt substrates must be prepared with sand blasting, shot blasting or grinding 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.

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 lb./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 506 can be applied into the tacky 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 506 with 24 - 26% potable water, i.e. 4.8 – 5.2 l (1.3 – 1.4 gal.) water per 20 kg (44 lb.) bag. Fill the 24 % mixing water (4.8 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 506 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 506 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 12 mm (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: Suitable mortar pumps are for example:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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 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 506 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 506 can be blended with 2.0 to 2.2 kg terrazzo aggregate 6-9 mm per kg VELOSIT SL 506 (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 506 is poured onto the surface until all voids between the aggregates have been filled. The terrazzo floor can be ground with a diamond grinder after 3-4 hours. The fine grinding and polishing should be made the following day or later.

3.) Curing

VELOSIT SL 506 does not require curing. Protect the applied product for 24 hours against direct sun light, wind and temperature changes exceeding 5 °C (9 °F).

4.) Finishing

To remove rake marks or if a smoother surface is desired VELOSIT SL 506 can be sanded or polished after it has gained sufficient strength. This is usually after 6 – 8 hours depending on application thickness and climatic conditions.

Estimating

Volume yield:

20 kg (44 lbs.) VELOSIT SL 506 result in approx. 13 liter (0.46 ft^3) cured mortar.

Standard leveling:

4.6 kg (10 lbs.)* VELOSIT SL 506 per m^2 (10.7 ft^2) for 3 mm (1/8") dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 4.6 kg VELOSIT SL 506 powder + 1.2kg water, i.e. 5.8kg mixed material per 3 mm and m^2

Cleaning

VELOSIT SL 506 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 : 25
Mixing ratio by volume:	100 : 38
Density:	1.5 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	60 min.
Final set.	90 min.
Compressive / flexural strength:	
4 hours:	10 / 2 MPa (1450/290 psi)
24 hours:	17 / 4 MPa (2465/580 psi)
7 days:	27 / 5 MPa (3915/725 psi)
28 days:	32 / 6 MPa (4640/870 psi)
Adhesive strength*:	
- primed with PR 303:	1.3 MPa (189 psi)
- primed with PA 911:	1.2 MPa (174 psi)
Length change after 56 days	
- dry storage:	- 0.3 mm/m (- 0.03 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SL 506 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT SL 506 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

Never add water to VELOSIT SL 506 when it has started to set. Stiffened material must be disposed.

2619

VELOSIT SL 507

Abrasion resistant self leveling overlayment

EN13813

Application fields

VELOSIT SL 507 is a cementitious self leveling overlayment for concrete floors. It creates a highly abrasion resistant smooth surface. 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 6 mm (1/4") to 38 mm (1 ½")

Properties

VELOSIT SL 507 is a shrinkage compensated self leveling overlayment based on a special cement and corundum fillers with very quick strength development. VELOSIT SL 507 binds the mixing water very fast allowing a very short wait time before it becomes trafficable.
VELOSIT SL 507 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 507 surpasses the requirements of EN 13813 class CT-C60-F10-A3.

VELOSIT SL 507 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 abrasion resistance
- Excellent flow with long slump life
- Smooth surface profile
- Fast air release with minimal requirement for agitation
- Ready for foot traffic after 3 hours, for forklift traffic after 6 hours.
- 30 – 40 min. working time and 20 MPa (2900 psi) compressive strength after 4 hours
- Final strength of more than 60 MPa (8700 psi) after 28 days
- 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
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT SL 507 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 (> 400 bar/5800 psi) to remove all bond breaking substances.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Lower strength values can be accepted if lower adhesive strength is acceptable.

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 PR 303 with a full broadcast of fire dried quartz sand 0.7 – 1.25 mm.

2.) Processing

Mixing: Mix VELOSIT SL 507 with 17 % potable water, i.e. 4.25 l (1.1 gal.) water per 25 kg (55 lb.) bag. Fill the mixing water 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. Do not over water the product! VELOSIT SL 507 may be extended with up to 50 % corundum aggregate 1 – 2 mm for large application thickness.

The product is workable for 30 – 40 min. at 23 °C.

a.) Rake application: Pour VELOSIT SL 507 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 the surface at larger application thickness. Finish with a smooth rake.

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

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Putzmeister GmbH: SP11 or MP 25
- M-Tec Duomix 2000
- Wagner GmbH: PC 25

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 507 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!

For use as a wear surface a clear sealer, a surface hardener or VELOSIT FH 921 (silicone enhanced floor hardener) is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents.

3.) Curing

VELOSIT SL 507 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 507 result in approx. 14.2 liter (0.50 ft^3) cured mortar.

Standard leveling:

10.9 kg (24 lbs.)* VELOSIT SL 507 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.

* 10.9 kg VELOSIT SL 507 powder + 1.9 l water, i.e. 12.8 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT SL 507 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 : 17
Mixing ratio by volume:	100 : 27
Density:	1.6 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	70 min.
Final set:	100 min.

Compressive / flexural strength:

4 hours:	20 / 4 MPa (2900/580 psi)
24 hours:	37 / 5 MPa (5365/725 psi)
7 days:	51 / 7 MPa (7395/1015 psi)
28 days:	60 / 10 MPa (8700/1450 psi)

Adhesive strength*(on PR 303): 2.3 MPa (334 psi)

Abrasion resistance (Böhme): 2.6 $cm^3/50cm^2$

Slip resistance:	Class R10

Length change after 56 days:

- dry storage:	- 0.3 mm/m (- 0.03 %)
- water storage:	+ 0.0 mm/m (+ 0.00 %)
Fire rating EN 13501-1:	class $A1_{fl}$

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

Packaging

VELOSIT SL 507 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SL 507 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 507 is only available for professional applicators.

Never add water to VELOSIT SL 507 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.

2619

VELOSIT SL 525

Economic self leveling underlayment for carpet, vinyl and laminate floors

Application fields

VELOSIT SL 525 is an economic cementitious self leveling C25 underlayment on concrete, gypsum, magnesia and asphalt substrates. VELOSIT SL 525 creates a smooth surface for coatings and floor coverings. Typical application fields include:

- Leveling of floors receiving thin flooring materials
- Leveling of undulations prior to installation of wall-to-wall carpet, vinyl sheets, vinyl carpet and laminate floors
- Application thickness from 1 mm (40 mils) to 12 mm (½“)
- As a binder for terrazzo floors

Properties

VELOSIT SL 525 is a shrinkage compensated cementitious self leveling underlayment with quick strength development. VELOSIT SL 525 binds the mixing water very fast allowing very short wait times prior to covering. VELOSIT SL 525 creates a well bonded and very smooth layer on the substrate.

VELOSIT SL 525 meets the requirements of EN 13813 and is classified CT-C25-F5.

VELOSIT SL 525 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 good slump life
- Extremely smooth surface profile
- Easy to sand and/or polish after curing
- Fast air release with minimal agitation requirement
- Ready for covering with ceramic tiles after 5 hours and moisture sensitive floor coverings after 48 hours.
- 30 – 40 min. working time and 10 MPa (1450 psi) compressive strength after 5 hours
- Final strength of more than 25 MPa (3652 psi) at 28 days
- Open to foot traffic after 3 hours
- Very good adhesion to properly prepared substrates
- Excellent water resistance, no strength loss under water
- Mid gray color

Application

1.) Substrate preparation

VELOSIT SL 525 is designed for concrete and various screed types. 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, gypsum, magnesia and asphalt substrates must be prepared with sand blasting, shot blasting or grinding 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.

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 lb./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 525 can be applied into the tacky coating within 2 – 4 hours after application. Longer wait times require a full broadcast with suitable quartz sand 0.7 mm – 1.25 mm 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 525 with 22 – 24 % potable water, i.e. 5.5 – 6.0 l (1.5 – 1.6 gal.) water per 25 kg (55 lb.) bag. Fill the 22 % mixing water (5.5 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 525 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 525 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 12 mm (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: Suitable mortar pumps are for example:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP11 or MP 25
- Inotec GmbH: INOMAT-M8
- M-Tec: Duomix 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 525 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 525 can be blended with 2.0 to 2.2 kg terrazzo aggregate 6 – 9 mm per kg VELOSIT SL 525 (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 525 is poured onto the surface until all voids between the aggregates have been filled. The terrazzo floor can be ground with a diamond grinder after 5 – 6 hours. The fine grinding and polishing should be made the following day or later.

3.) Curing

VELOSIT SL 525 does not require curing. Protect the applied product for 24 hours against direct sun light, wind and temperature changes exceeding 5 °C (9 °F).

4.) Finishing

To remove rake marks or if a smoother surface is desired VELOSIT SL 525 can be sanded or polished after it has gained sufficient strength. This is usually after 6 – 8 hours depending on application thickness and climatic conditions.

Estimating

Volume yield:

25 kg (55 lbs.) VELOSIT SL 525 result in approx. 16 liter (0.56 ft^3) cured mortar.

Standard leveling:

4.7 kg (10.36 lbs.)* VELOSIT SL 525 per m^2 (10.7 ft2) for 3 mm (1/8”) dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 4.7 kg VELOSIT SL 525 powder + 1.1 kg water, i.e. 5.8 kg mixed material per 3 mm and m^2

Cleaning

VELOSIT SL 525 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 : 22
Mixing ratio by volume:	100 : 35
Density:	1.1 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	60 min.
Final set.	90 min.
Compressive / flexural strength:	
4 hours:	8 / 2 MPa (1160/290 psi)
24 hours:	14 / 3 MPa (2031/435 psi)
7 days:	20 / 4 MPa (2901/652 psi)
28 days:	25 / 5 MPa (3626/725 psi)
Adhesive strength*:	
- primed with PR 303:	1.5 MPa (218 psi)
- primed with PA 911:	1.2 MPa (174 psi)
Length change after 56 days:	
- dry storage:	- 0.3 mm/m (- 0.03 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SL 525 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT SL 525 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 525 is only available for professional applicators.

Never add water to VELOSIT SL 525 when it has started to set. Stiffened material must be disposed.

For application with mixing pumps we recommend spiked rolling after 2 – 5 min. for a better surface smoothness. 3619

VELOSIT FF 220
Fast setting floor patching mortar

Application fields

VELOSIT FF 220 is a cementitious patching mortar for underlayment and slabs. It is used to create a smooth surface for thin floor coverings. Typical application fields besides others are as follows:

- Interior and exterior use
- Smoothing of concrete slabs and floors
- Repair of small surface defects on concrete floors
- Ramps between floor coverings with slightly different height
- Application thickness from feather edge to 6 mm (¼“).

Properties

VELOSIT FF 220 is a shrinkage compensated cementitious underlayment patching mortar with very quick strength development. VELOSIT FF 220 binds the mixing water very fast allowing a very short wait time before it can be covered. VELOSIT FF 220 creates a well bonded and very smooth layer on the substrate.

VELOSIT FF 220 surpasses the requirements of EN 1504-3 class R2 for concrete repair (CR) and can be used according to the principles 3 and 7 acc. to EN 1504-9.

VELOSIT FF 220 can be applied by rake or trowel.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Creamy workability
- No sand, max. aggregate size < 0.07 mm (< 3 mils)
- Smooth surface profile
- Ready for covering with flooring system after 60 min.
- 10 min. working time and 0.5 MPa (73 psi psi) adhesive strength after 1 hour
- Open to foot traffic after 60 min.
- Very good adhesion to properly prepared concrete
- Excellent water resistance, no strength loss under water
- Light gray color close to concrete color

Application

1.) Substrate preparation

Concrete substrates must be prepared with grinding 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.

Priming:

Most substrates do not require a primer. Very absorbent materials must be primed with

VELOSIT PA 911, which can be coated with VELOSIT FF 220 after 2 – 3 hours.

2.) Processing

Mixing: Mix VELOSIT FF 220 with 22 – 28 % potable water, i.e. 4.4 – 5.6 l (1.2 – 1.5 gal.) water per 20 kg (44 lb.) bag. Fill 22 % mixing water (4.4 l (1.2 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. Add more water (max. 6 %) under stirring until the desired consistency is achieved.

The product is workable for approx. 10 min. at 23 °C. Do not mix more material than can be used within this time.

Trowel application:

Pour VELOSIT FF 220 in small portions onto the prepared substrate and trowel to the desired thickness. Make sure there are no bond breaking substances on the surface. The product can be applied up to 6 mm (¼") in one application. Make sure to work in sections that can be finished within 10 min.

Never overcoat joints or untreated cracks as this will most likely result in surface cracks!

3.) Curing

VELOSIT FF 220 does not require curing. Flooring system may be applied as soon as VELOSIT FF 220 has sufficiently set.

Estimating

Volume yield:

20 kg (44 lbs.) VELOSIT FF 220 result in approx. 18.0 liter (0.64 ft^3) cured mortar.

Cleaning

VELOSIT FF 220 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 : 25
Mixing ratio by volume:	100 : 41
Density:	1.4 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	30 min.
Final set.	45 min.

Compressive / flexural strength:

24 hours:	30 / 5 MPa (4350/725 psi)

Adhesive strength*:

- primed with VELOSIT PA 911: 1.1 MPa (159 psi)

Length change after 56 days:

- dry storage:	- 0.6 mm/m (- 0.06 %)
- water storage:	+ 0.1 mm/m (+ 0.01 %)

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

Packaging

VELOSIT FF 220 is available in 20 kg (44 lb.) watertight plastic bags.

Storage

VELOSIT FF 220 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

Never add water to VELOSIT FF 220 when it has started to set. Stiffened material must be disposed.

2319

VELOSIT SC 240
Rapid screed cement

EN13813

Application fields

VELOSIT SC 240 is a cementitious binder for on-site screed mixes. It is mixed with sand and aggregates creating a rapid hardening overlayment ready to receive flooring systems within 24 hours. VELOSIT SC 240 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
- Industrial screeds
- De-coupled screeds on insulation or membranes
- On-site concrete mixes

Properties

VELOSIT SC 240 is a shrinkage compensated special cement formulation with very quick strength development. VELOSIT SC 240 binds the mixing water very fast allowing a very short wait time before it can be covered.

VELOSIT SC 240* surpasses the requirements of EN 13813 class CT-C50-F7.

VELOSIT SC 240 can be applied by trowel or suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Fiber reinforced
- Ready for covering with ceramic tiles after 5 hours, for moisture sensitive floor coverings after 24 hours.
- 60 min. working time and 12 MPa (1740 psi) compressive strength after 5 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

*Mixed with 4 parts screed sand 0 - 4 mm

Application

1.) Substrate preparation

Bonded screed application

VELOSIT SC 240 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 with VELOSIT SC 240 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 240 based screed.

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

2.) Processing

Mixing: VELOSIT SC 240 requires 35 – 45 % potable water, i.e. 7.0 – 9.0 l (1.8 – 2.4 gal.) water and 80 to 100 kg screed sand with a proper grading per 20 kg (44 lb.) bag. Depending on aggregate moisture fill the 20 –35 % mixing water (4.0-7.0 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 240 and mix for 2 min. Check the consistency and add water to adjust the desired consistency (total water not to exceed 9.0 l). Small volumes can be hand-mixed in a suitable bucket. Mix designs can be calculated according the below mentioned chart.

Do not over water the product!

The product is workable for 60 min. at 23 °C

a.) Trowel application: Pour VELOSIT SC 240 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 45 min.

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

- Brinkmann GmbH: Estrichboy
- Putzmeister GmbH: Mixokret M 740

Add the required amount of water into the drum and shovel 240 kg (35 shovels) of screed sand into the drum. Add 3 bags of VELOSIT SC 240 and mix for 1 – 2 min. Pump onto the prepared substrate and level with a rake. Finish with a screed trowel and compact the surface. Make sure to work in sections that can be finished within 45 min. Control the slump with a slump cone regularly. 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 240 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 240 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:

1 : 4 mixing ratio: 20 kg (44 lbs.) VELOSIT SC 240 plus 80 kg screed sand result in approx. 50 liter (1.8 ft^3) cured screed.

Consumption per m^2:

1 cm thickness: 4 kg (8.8 lbs.)

4 cm thickness: 16 kg (35.2 lbs.)

5 cm (2“) thickness: 20 kg (44 lbs.)

Cleaning

VELOSIT SC 240 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:	5 – 35 °C (40 – 95 °F)
Initial set:	135 min.
Final set.	160 min.

Compressive / flexural strength:

5 hours:	12 / 2 MPa (1740/290 psi)
24 hours:	30 / 4 MPa (4350/580 psi)
7 days:	44/ 6 MPa (6380/870 psi)
28 days:	51 / 7 MPa (7395/1015 psi)

Adhesive strength*:

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

Length change after 56 days:

- dry storage:	- 0.2 mm/m (- 0.04 %)
- water storage:	+ 0.0 mm/m (+ 0.01 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SC 240 is available in 20 kg (44 lbs.)watertight plastic bags.

Storage

VELOSIT SC 240 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 240 is only available for professional applicators.

Never add water to VELOSIT SC 240 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT SC 241
Light weight screed

Application fields

VELOSIT SC 241 is a cementitious light weight screed mix. It is mixed on site creating a rapid hardening overlayment with significantly lower weight than regular screeds. It is ready to receive flooring systems within 24 hours. Typical application fields besides others are as follows:

- Interior and exterior use
- Bonded screeds
- De-coupled screeds on insulation or membranes
- Restoration of structures with limited static loads

Properties

VELOSIT SC 241 is a shrinkage compensated ready for use screed formulation with very quick strength development. VELOSIT SC 241 binds the mixing water very fast allowing a very short wait time before it can be covered.

VELOSIT SC 241 surpasses the requirements of EN 13813 class CT-C35-F6.

VELOSIT SC 241 can be applied by trowel or suitable pumping equipment.

- Minimal shrinkage/expansion under dry resp. wet curing conditions minimizing the risk of micro-cracking
- Excellent workability
- Fiber reinforced
- Ready for covering with ceramic tiles after 6 hours, for moisture sensitive floor coverings after 24 hours.
- 45 min. working time and 10 MPa (1450 psi) compressive strength after 6 hours
- Final strength of more than 40 MPa (7250 psi) after 28 days
- Open to foot traffic after 6 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 241 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 241 based screed.

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

2.) Processing

Mixing: VELOSIT SC 241 requires 13 – 15 % potable water, i.e. 2.6 - 3.0 l (0.7 – 0.8 gal.) water per 20 kg (44 lb.) bag. Fill the 13 % mixing water (7.8 l per 3 bags) into a freefall mixer and add 3 bags of VELOSIT SC 241 and mix for 2 min. Check the consistency and add water to adjust the desired consistency (total water not to exceed 9.0 l). Small volumes can be hand-mixed in a suitable bucket. Add the calculated water amount and add the powder 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 45 min. at 23 °C.

a.) Trowel application: Pour VELOSIT SC 241 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 45 min.

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

- Brinkmann GmbH: Estrichboy 450 series
- Putzmeister GmbH: Mixokret M 740

Add the required amount of water into the drum and shovel 7-8 bags of VELOSIT SC 241 and mix for 1 – 2 min. Pump onto the prepared substrate and level with a rake. Finish with a screed trowel and compact the surface. Make sure to work in sections that can be finished within 45 min. Control the slump with a slump cone regularly. 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 241 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 241 is a cement 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:

20 kg (44 lbs.) VELOSIT SC 241 result in approx.15.4 liter (0.55 ft^3) cured screed.

Consumption per m^2:

1 cm thickness: 13 kg

4 cm thickness: 52 kg

5 cm (2“) thickness: 65 kg

Cleaning

VELOSIT SC 241 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:	13 – 15 %
Density:	1.1 kg/l
Substrate temperature:	5 – 35 °C* (40 – 95 °F)
Initial set:	100 min.
Final set.	150 min.
Compressive / flexural strength:	
6 hours:	10 / 2 MPa (1450/290 psi)
24 hours:	25 / 4 MPa (3625/580 psi)
7 days:	34/ 6 MPa (4930/870 psi)
28 days:	41 / 7 MPa (5945/1015 psi)
Adhesive strength*:	
- primed with CP 201:	1.6 MPa (232 psi)
Length change after 56 days:	
- dry storage:	- 0.2 mm/m (- 0.02 %)
- 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 SC 241 is available in 20 kg (44 lb.) watertight plastic bags. For arge project VELOSIT SC 241 is also available in 75 kg kits consisting of a 25 kg binder concentrate and 2 x 25 kg light weight filler.

Storage

VELOSIT SC 241 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

Never add water to VELOSIT SC 241 when it has started to set. Stiffened material must be disposed.

2519

VELOSIT SC 244
Rapid flowable screed

CE
EN13813

Application fields

VELOSIT SC 244 is a ready-to-use cementitious flowable screed mix. It is mixed on site creating a rapid hardening overlayment. It is ready to receive flooring systems within 24 hours. Typical application fields besides others are as follows:

- Interior and exterior use
- Bonded screeds
- De-coupled screeds on insulation or membranes
- Job site concrete mix

Properties

VELOSIT SC 244 is a shrinkage compensated ready for use screed formulation with very quick strength development. VELOSIT SC 244 binds the mixing water very fast allowing a very short wait time before it can be covered.

VELOSIT SC 244 surpasses the requirements of EN 13813 class CT-C50-F7.

VELOSIT SC 244 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 workability
- Fiber reinforced
- Ready for covering with ceramic tiles after 4 hours, for moisture sensitive floor coverings after 48 hours.
- 40 min. working time and 12 MPa (1840 psi) compressive strength after 4 hours
- Final strength of more than 50 MPa (7250 psi) after 28 days
- Open to foot traffic after 4 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 244 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. Seal membrane overlaps with tape. Please consider only the thickness above radiant floor heating pipes for the thickness calculation.

b.) Existing membranes like bitumen sheets can be covered directly with a VELOSIT SC 244 based screed.

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

2.) Processing

Mixing: VELOSIT SC 244 requires 9.5 – 10.8 % potable water, i.e. 2.4 - 2.7 l (0.7 gal.) water per 25 kg (55 lb.) bag. Fill the mixing water into a freefall mixer and add 1 – 4 bags of VELOSIT SC 244 and mix for 2 min. Check the consistency and add water to adjust the desired consistency (total water not to exceed 10.8 l). Small volumes can be hand-mixed in a suitable bucket. Add the calculated water amount and add the powder 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 40 min. at 23 °C.

a.) Rake application: Pour VELOSIT SC 244 screed onto the prepared substrate and level with a rake to the desired thickness and agitate to remove air. Make sure to work in sections that can be finished within 30 min.

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

- Brinkmann GmbH: Estrichboy FHS 200/3
- PFT GmbH: G4
- Putzmeister GmbH: SP11 or MP 25
- M-Tec DuoMix 2000

Feed VELOSIT SC 244 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 10 min. Pump continuously and spread the material with a rake to the desired thickness. Agitate to remove entrained air. Make sure to work in sections that can be finished within 30 min. 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 244 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 244 is a cement based screed an 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 SC 244 result in approx. 12 liter (0.46 ft^3) cured screed.

Consumption per m^2:

1 cm thickness: 19 kg

4 cm thickness: 75 kg

5 cm (2“) thickness: 94 kg

Cleaning

VELOSIT SC 244 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:	9.5 – 10.8 %
Density:	1.68 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	90 min.
Final set.	120 min.
Compressive / flexural strength:	
4 hours:	13 / 2 MPa (1985/290 psi)
24 hours:	26 / 4 MPa (3770/580 psi)
7 days:	42/ 6 MPa (6090/870 psi)
28 days:	51 / 7 MPa (7395/1015 psi)
Adhesive strength*:	
- primed with CP 201:	2.2 MPa (309 psi)
Length change after 56 days:	
- dry storage:	- 0.2 mm/m (- 0.02 %)
- 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 SC 244 is available in 25 kg (55 lb.) watertight plastic bags or 1000 kg (2,200 lb.) BigBags.

Storage

VELOSIT SC 244 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 244 is only available for professional applicators.

Never add water to VELOSIT SC 244 when it has started to set. Stiffened material must be disposed.

2719

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 25 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.)

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 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 (140 kg SC 245, 360 kg sand, 41 l water):	
6 hours:	12 / 3 MPa (1740/435 psi)
24 hours:	22 / 4 MPa (3190/580 psi)
7 days:	35/ 6 MPa (5075/870 psi)
28 days:	44 / 7 MPa (6380/1015 psi)
Adhesive strength*:	
- primed with CP 201:	2.0 MPa (290 psi)
Length change after 56 days	
- dry storage:	- 0.3 mm/m (- 0.03 %)
- water storage:	+ 0.0 mm/m (+ 0.01 %)
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.

2519

VELOSIT SC 250
Economic flowable screed cement

CE
EN13813

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 screed ready to receive flooring systems within 10 –14 days. 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.

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 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.

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 (2200 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 33% 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:	15 – 35 °C* (40 – 95 °F)	
Initial set:	180 min.	
Final set.	240 min.	
Compressive / flexural strength		
	(28 % SC 250)	(32 % SC 250)
6 hours:	5 / 2 MPa (725/290 psi)	6 / 2 MPa (870/290 psi)
24 hours:	11 / 3 MPa (1595/435 psi)	12 / 3 MPa (1740/435 psi)
7 days:	19 / 4 MPa (2755/580 psi)	22 / 4 MPa (3190/580 psi)
28 days:	24 / 4 MPa (3480/580psi)	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 °C – 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.

2519

VELOSIT SC 252
Binder for pumpable self leveling mortars

CE
EN13813

Application fields

VELOSIT SC 252 is a binder for the production of cementitious self leveling mortars for concrete floors. It creates a tough and smooth surface which is 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 3 mm (1/8") to 50 mm (2")
- On floor heating systems

Properties

VELOSIT SC 252 is a shrinkage compensated cementitious binder for self leveling mortars with very quick strength development. VELOSIT SC 252 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. VELOSIT SC 252 based self leveling mortars create a well bonded and very smooth layer on the substrate.

VELOSIT SC 252 surpasses the requirements of EN 13813. Depending on the aggregate grading and water addition the resulting screeds meet class CT-C25-F5 to CT-C50-F7.

VELOSIT SC 252 can be applied with 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 tiles after 4 hours, for moisture sensitive flooring materials after 16 hours.
- 30 - 40 min. working time and 16 MPa (2,340 psi) compressive strength after 4 hours
- Final strength of more than 30 to 50 MPa (4350 – 7,250 psi) after 28 days
- 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
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT SC 252 based self leveling mortars are 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 (3625 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. 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 lb./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 with a full broadcast with suitable quartz sand 0.7 – 1.25 mm 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

VELOSIT SC 252 is applied with suitable pump technology such as:

- GB Machines Mobileman D3
- Putzmeister TransMix 3200

VELOSIT SC 252 is filled into the clean and dry cement silo of the pump truck and the sand silo is filled with damp or dry sand of the required grading.

The water rate must be adjusted by measuring the flow and should be between 24 and 28 cm (9.5 - 11“) determined with a flow ring with 177 ml (6.0 oz.) volume. Adjust the batch size so that the shaft of the mixer is fully immersed in the mix to avoid excess air entrainment.

Guide formulations for a 400 l (105 gal.) mix for various application thickness ranges:

	High strength		Standard	
	Range 1 < 5 mm (0.2“)	**Range 2** 5-15 mm (0.2-0.6“)	**Range 1** < 5 mm (0.2“)	**Range 2** 5-15 mm (0.2-0.6“)
VELOSIT SC 252	350 kg (770 lbs)	315 kg (616 lbs)	280 kg (616 lbs)	260 kg (572 lbs)
Sand 0,1-0,5 mm*	350 kg (770 lbs)		420 kg (924 lbs)	
Sand 0,1-2 mm**		385 kg (924 lbs)		440 kg (968 lbs)
Water***	135 l (35.6 gal)	120 l (31.7 gal)	109 l (28.8 gal)	99 l (26.2 gal)
Flow	26 cm (10.2“)	26 cm (10.2“)	25 cm (10.0“)	24 cm (9.5“)

*95% passage through #35, 99% retention on #140
**95% passage through #10, 60% retention on #35, 99% ret. on #140
***Consider sand moisture

Screeds from 15 to 50 mm (0.6-2“) can be formulated with 230 kg VELOSIT SC 252, 470 kg screed sand*** and 76 l (20.0 gal) water.

***95% pass. #5, 20%ret. on #10, 60% ret. on #35, 99% ret. on #140

Control the flow with a flow cone every 5 to 10 min. Pump the mixed self leveling mortar 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 50 mm (2”) 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. Higher temperatures reduce, lower temperatures increase the required wait times.

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 SC 252 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!

For smaller areas use VELOSIT SL 502. Mechanical properties of the guide formulations are close to VELOSIT SL 502.

3.) Curing

VELOSIT SC 252 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:

1.000 kg (2.200 lbs.) VELOSIT SC 252 result mixed with 1.225 kg (2.695 lb.) sand in approx. 1.25 m^3 (44 ft^3) cured mortar.

Standard leveling:

5 kg (11.0 lbs.)* VELOSIT SC 252 + 6.1 kg (13.4 lb.) sand 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.

* 5.0 kg VELOSIT SC 252 powder + 6.1 kg sand + 1.9 kg water, i.e. 13.0 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT SC 252 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 : 39
Mixing ratio by volume:	100 : 55
Density:	1.4 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	55 min.
Final set.	105 min.
Compressive / flexural strength (Range 1):	
4 hours:	16 / 3 MPa (2340/435 psi)
24 hours:	30 / 5 MPa (4350/725 psi)
7 days:	41 / 7 MPa (5945/1015 psi)
28 days:	50 / 8 MPa (7250/1160 psi)
Adhesive strength*:	
- primed with PR 303:	1.8 MPa (261 psi)
- primed with PA 911:	1.5 MPa (218 psi)
Length change after 56 days:	
- dry storage:	- 0.5 mm/m (- 0.05 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SC 252 is available in 1000 kg (2200 lb.) watertight jumbo bags.

Storage

VELOSIT SC 252 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

Never add water to VELOSIT SC 252 when it has started to set. Stiffened material must be disposed.

Sand, water and VELOSIT 252 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.

2519

VELOSIT SC 253

Binder for high strength self leveling mortars

CE
EN13813

Application fields

VELOSIT SC 253 is a binder for the production of cementitious self leveling mortars for concrete floors. It creates an abrasion resistant smooth surface. The mortar 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 3 mm (1/8") to 50 mm (2")

Properties

VELOSIT SC 253 is a shrinkage compensated cementitious binder for self leveling mortars based with very quick strength development. VELOSIT SC 253 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. VELOSIT SC 253 based self leveling mortars create a well bonded and very smooth layer on the substrate.

VELOSIT SC 253 surpasses the requirements of EN 13813. Depending on the aggregate grading and water addition the resulting screeds meet class CT-C50-F6 to CT-C70-F10.

VELOSIT SC 253 can be applied with 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 tiles after 4 hours, for moisture sensitive flooring materials after 16 hours.
- 30 – 40 min. working time and 20 MPa (2,900 psi) compressive strength after 4 hours
- Final strength of more than 50 to 70 MPa (7,250 – 10,150 psi) after 28 days
- 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
- Light gray color close to concrete color

Application

1.) Substrate preparation

VELOSIT SC 253 based self leveling mortars are 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 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 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 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 with a full broadcast with suitable quartz sand ∅ 0.7 – 1.25 into the primer.

2.) Processing

VELOSIT SC 253 is applied with suitable pump technology such as:

- GB Machines Mobileman D3
- Putzmeister TransMix 3200
- Bremat S3.17

VELOSIT SC 253 is filled into the clean and dry cement silo of the pump truck and the sand silo is filled with damp or dry sand of the required grading.

The water rate must be adjusted by measuring the flow and should be between 24 and 28 cm (9.5 - 11“) determined with a flow ring with 177 ml (6 oz.) volume. Adjust the batch size so that the shaft of the mixer is fully immersed in the mix to avoid excess air entrainment.

Control the flow with a flow cone every 5 to 10 min. Pump the mixed self leveling mortar 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 50 mm (2”) 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. Higher temperatures reduce, lower temperatures increase the required wait times.

Guide formulations for a 400 l (105 gal.) mix for various application thickness ranges:

	Range 1 < 5 mm (0.2")	**Range 2** 5 – 15 mm (0.2-0.6")	**Range 3** > 15 mm (> 0.6")
VELOSIT SC 253	350 kg (770 lbs)	280 kg (616 lbs)	260 kg (572 lbs)
Sand 0,1-0,5 mm*	350 kg (770 lbs)		
Sand 0,1-2 mm**		420 kg (924 lbs)	
Sand 0,1-4 mm***			440 kg (968 lbs)
Water****	128 l (33.8 gal)	102 l (26.9 gal)	94 l (24.8 gal)
Flow	27 cm (10.6")	26 cm (10.2")	24 cm (9.5")

*95% passage through #35, 99% retention on #140

**95% passage through #10, 60% retention on #35, 99% ret. on #140

***95% pass. #5, 20%ret. on #10, 60% ret. on #35, 99% ret. on #140

****Consider sand moisture

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 SC 253 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!

For smaller areas use VELOSIT SL 503. Mechanical properties of the guide formulations are close to VELOSIT SL 503. The formula for range 1 has a similar grading.

If used as an underlayment, VELOSIT SC 253 based mortars are ready to receive a coating after 16 hours. For use as a wear surface we recommend a treatment with VELOSIT FH 921 or a clear sealer to improve resistance against penetrating liquids like oil, grease or cleaning agents.

3.) Curing

VELOSIT SC 253 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:

1.000 kg (2200 lbs.) VELOSIT SC 253 result mixed with 1.500 kg (3.300 lb.) sand in approx. 1.4 m^3 (50 ft^3) cured mortar.

Standard leveling:

4.2 kg (9.2 lbs.)* VELOSIT SC 253 + 6.3 kg (13.9 lbs) sand 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.

* 4.2 kg VELOSIT SC 253 powder + 6.3 kg sand + 2.2 kg water, i.e. 12.7 kg mixed material per 6 mm and m^2

Cleaning

VELOSIT SC 253 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 : 47
Mixing ratio by volume:	100 : 66
Density:	1.4 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Initial set:	50 min.
Final set.	95 min.
Compressive / flexural strength (Range 1):	
4 hours:	20 / 4 MPa (2900/580 psi)
24 hours:	41 / 7 MPa (5945/1015 psi)
7 days:	49 / 8 MPa (7105/1160 psi)
28 days:	62 / 9 MPa (8990/1305 psi)
Adhesive strength*:	
- primed with PR 303:	2.3 MPa (334 psi)
- primed with PA 911:	1.6 MPa (232 psi)
Length change after 56 days	
- dry storage:	- 0.4 mm/m (- 0.04 %)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT SC 253 is available in 1.000 kg (2 200 lb.) BigBags.

Storage

VELOSIT SC 253 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

Never add water to VELOSIT SC 253 when it has started to set. Stiffened material must be disposed.

Sand, water and VELOSIT 253 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.

2619

VELOSIT DS 271
Corundum based monolithic floor hardener

Application fields

VELOSIT DS 271 is a ready to use, non metallic, monolithic floor hardener for surfacing fresh concrete floors using the dry shake application method. VELOSIT DS 271 is based on corundum and results in extremely hard-wearing, abrasion-resistant surfaces with significantly improved resistance to impact. Typical applications include the following heavy & ultra heavy trafficked floors:

- Outdoor & indoor car parks
- Steel mills
- Warehouses, workshops & loading bays
- Aviation hangers
- Power plants
- Laboratories and slaughter houses

Properties

VELOSIT DS 271 is a blend of proprietary binders, powders, water-reducers and fillers based on Corundum, a natural mineral with unique hardness properties reaching 9.0 on the Mohs Scale.

VELOSIT DS 271 surpasses the requirements for class CT-C70-F9-A1,5 acc. EN 13813.

VELOSIT DS 271 is broadcast at the specified rate and worked (ideally power floated) into the fresh concrete to form a monolithic bond with the host concrete floor and providing a surface with the following properties:

- Significantly improved impact and abrasion resistance owing to the Corundum filler
- Denser surface and reduced permeability and hence improving resistance to both water and oil absorption
- Increased compressive strength
- Improved aesthetic finish.

VELOSIT DS 271 is designed for use in plain and reinforced concrete floors including Polypropylene and/or steel fibre reinforcements.

VELOSIT DS 271 is available in 3 standard colours; Grey, Red and Green

Do not use Vacuum dewatering on VELOSIT DS 271 surfaced floors.

Application

1.) Concrete & joint requirements

Concrete should have a minimum cement content of 300 Kg/m^3, a w/c ratio below 0.55 and a slump between 75 mm & 100 mm at pour. Prior lab trials should be conducted to ensure the resultant mix is free from segregation and major bleeding (minor bleed water may be acceptable in many cases as it assists in wetting of VELOSIT DS 271).

Special care should be given to execution of the joints:

Expansion: Use proper joint fillers capable of accommodating the expected cyclic movements and in case of dowel & sleeve ensure joint filler is continued above and below the dowel line.

Saw-cut (crack control): Ensure preciseness of saw-cutting to be right above the pre-placed crack inducers and execution to be within the open time specified by the design/structural engineer.

Perimeter joints:
Use an appropriate slip membrane between the concrete floor slab and external walls, columns and separated machinery footings.

2.) Processing

Perimeters, expansion & saw cut joint lines: to ensure strong edges of the resultant floor surface, it is recommended - once the concrete has been vibrated and initially levelled - to remove a 100 mm wide and 10 mm deep tapered wedge from all edges (such as perimeters and expansion joint sides) and replace with a stiff paste of VELOSIT® DS 271. The same should also be done where saw cutting is planned.

Entirety of the floor: processing should commence once the concrete begins to stiffen and foot traffic results in a 3 mm to 5 mm imprint.

Depending on the expected traffic, the design engineer would specify the application rate, recommended as follows:

Medium traffic: 3.0 kg/m²

Heavy traffic: 5.0 kg/m²

Ultra heavy traffic: 7.0 - 9.0 kg/m²

VELOSIT DS 271 should be applied in two steps for the Medium and Heavy traffic rates and three steps for the Ultra Heavy traffic rate.

The consumption per step should not exceed 3.0 kg per square meter.

Broadcasting of second and third steps must be at right angle to the previous step.

Each broadcast must be thoroughly worked and power floated into the concrete (or previous floor hardener) ensuring full wetting of the VELOSIT DS 271 broadcast.

3.) Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying a curing compound.

Estimating

VELOSIT DS 271 should be uniformly broadcast and power floated into the fresh concrete at the following rates:

Traffic Grade	Recommended consumption per m²	Coverage per 25 kg bag
Medium	3.0 kg (6.6 lbs)	6.3 m²
Heavy	5.0 kg (11 lbs)	5.0 m²
Ultra heavy	7.0 – 9.0 kg (15.4 – 19.8 lbs)	2.8 m² – 3.6 m²

Cleaning

VELOSIT DS 271 can be removed in the fresh state with water. Once cured VELOSIT DS 271 can only be either removed mechanically or by using acidic cleaners such as muriatic acid).

Quality features

Colours: grey, red and green

Hardness of Corundum filler: 9.0 (Mohs scale)

Compressive strength @ 28d: 70/9 MPa (10.153/1.305 psi)(ASTM C39)

Abrasion resistance: + 250 % over control (ASTM C779-89a)

Packaging

VELOSIT DS 271 is available in 25 kg (55 lb.) plastic bags.

Storage

VELOSIT DS 271 must 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 DS 271 is only available for professional applicators.

2319

VELOSIT DS 272
Quartz based monolithic floor hardener

Application fields

VELOSIT DS 272 is a ready to use, non metallic, monolithic floor hardener for surfacing fresh concrete floors using the dry shake application method. VELOSIT DS 272 is based on Quartz and results in hard-wearing, abrasion-resistant surfaces with significantly improved resistance to impact. Typical applications include the following heavy & ultra heavy trafficked floors:

- Outdoor & indoor car parks
- Steel mills
- Warehouses, workshops & loading bays
- Aviation hangers
- Power plants
- Laboratories and slaughter houses

Properties

VELOSIT DS 272 is a blend of proprietary binders, powders, water-reducers and fillers based on Quartz, a natural mineral with unique hardness properties reaching 7.0 on the Mohs Scale.

VELOSIT DS 272 surpasses the requirements for class CT-C50-F7-A5 acc. EN 13813.

VELOSIT DS 272 is broadcast at the specified rate and worked (ideally power floated) into the fresh concrete to form a monolithic bond with the host concrete floor and providing a surface with the following properties:

- Significantly improved impact and abrasion resistance owing to the Quartz filler
- Denser surface and reduced permeability and hence improving resistance to both water and oil absorption
- Increased compressive strength
- Improved aesthetic finish.

VELOSIT DS 272 is designed for use in plain and reinforced concrete floors including Polypropylene and/or steel fibre reinforcements.

VELOSIT DS 272 is available in 3 standard colours; Grey, Red and Green

Application

1.) Concrete & joint requirements

Concrete should have a minimum cement content of 300 kg/m^3, a w/c ratio below 0.55 and a slump between 75 mm & 100 mm at pour. Prior lab trials should be conducted to ensure the resultant mix is free from segregation and major bleeding (minor bleed water may be acceptable in many cases as it assists in wetting of VELOSIT DS 272).

Special care should be given to execution of the joints:

Expansion: Use proper joint fillers capable of accommodating the expected cyclic movements and in case of dowel & sleeve ensure joint filler is continued above and below the dowel line.

Saw-cut (crack control): Ensure preciseness of saw-cutting to be right above the pre-placed crack inducers and execution to be within the open time specified by the design/structural engineer.

Perimeter joints:
Use an appropriate slip membrane between the concrete floor slab and external walls, columns and separated machinery footings.

2.) Processing

Perimeters, expansion & saw cut joint lines: to ensure strong edges of the resultant floor surface, it is recommended - once the concrete has been vibrated and initially levelled - to remove a 100 mm wide and 10 mm deep tapered wedge from all edges (such as perimeters and expansion joint sides) and replace with a stiff paste of VELOSIT DS 272. The same should also be done where saw cutting is planned.

Entirety of the floor: processing should commence once the concrete begins to stiffen and foot traffic results in a 3 mm to 5 mm imprint.

Depending on the expected traffic, the design engineer would specify the application rate, recommended as follows:

Medium traffic: 3.0 kg/m²

Heavy traffic: 5.0 kg/m²

Ultra heavy traffic: 7.0 – 9.0 kg/m²

VELOSIT DS 272 should be applied in two steps for the Medium and Heavy traffic rates and three steps for the Ultra Heavy traffic rate.

The consumption per step should not exceed 3.0 kg per square meter.

Broadcasting of second and third steps must be at right angle to the previous step.

Each broadcast must be thoroughly worked and power floated into the concrete (or previous floor hardener) ensuring full wetting of the VELOSIT DS 272 broadcast.

3.) Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying a curing compound.

Estimating

VELOSIT DS 272 should be uniformly broadcast and power floated into the fresh concrete at the following rates:

Traffic Grade	Recommended consumption per m²	Coverage per 25 kg bag
Medium	3.0 kg (6.6 lbs)	6.3 m²
Heavy	5.0 (11 lbs)	5.0 m²

Cleaning

VELOSIT DS 272 can be removed in the fresh state with water. Once cured VELOSIT DS 272 can only be either removed mechanically or by using acidic cleaners such as muriatic acid).

Quality features

Colours: grey, red and green

Hardness of Quartz filler: 7.0 (Mohs scale)

Compressive strength @ 28d: 55/7 MPa (7975/1015 psi)(ASTM C39)

Abrasion resistance: + 150 % over control (ASTM C779-89a)

Packaging

VELOSIT DS 272 is available in 25 kg (55 lb.) plastic bags.

Storage

VELOSIT DS 272 must 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 DS 272 is only available for professional applicators.

2319

VELOSIT FH 921
Siliconate enhanced floor hardener

CE
EN1504-2

Application fields

VELOSIT FH 921 is a siliconate enhanced concrete floor hardener.
VELOSIT FH 921 improves abrasion resistance and substrate appearance whilst also reducing surface absorptivity. Typical application fields besides others are as follows:

- Strengthening of concrete floors in factories, distribution centers and warehouses
- Improving of surface sheen in polished concrete applications
- Fast track finishing of commercial floors as an alternative to coatings and sealers
- On new and existing concrete

Properties

VELOSIT FH 921 is a solvent-free, siliconate enhanced floor hardener based on silicate polymers.

VELOSIT FH 921 surpasses requirements of EN 1504-2 for impregnations (I) and can be used according to principle 1 acc. to EN 1504-9.

VELOSIT FH 921 can be used on interior and exterior surfaces.

- VOC and solvent free
- Low viscosity
- Improved water and oil repellency on treated concrete floors
- Easy to use
- Reduces abrasion and tire wear

Application

1.) Substrate preparation

a.) Existing concrete 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 open porous and load bearing. The minimum requirement for adhesive strength is 1.5 MPa (218 psi) and for the compressive strength 25 MPa (3625 psi). Repair blowholes, honeycombs and other surface defects with a repair mortar like VELOSIT RM 202.

b.) New concrete must be cured with water or sheet acc. to ASTM C-171. Concrete should have achieved at least 20 MPa (2900 psi) before application of VELOSIT FH 921. Let the surface dry at least 24 h after curing is terminated.

2.) Processing

In warm weather or at dry or windy conditions, pre-dampen the surface but avoid puddles and standing water.

Apply VELOSIT FH 921 with a sprayer (for example Gloria 410T) or pour directly onto the concrete. Follow with a squeegee, brush or broom. Work the material into the surface and make sure concrete stays wet with VELOSIT FH 921 for 20 – 30 min. Additional material may be sprayed onto the surface to keep the concrete wet. Automatic scrubbers may be used on larger areas. Best results are achieved if a floor polishing machine is used to work the material into the pores.

After VELOSIT FH 921 has started to gel spray the area with clean water and squeegee the diluted material onto the next area to be treated. When the complete area is covered remove all excess material by moving it to a collecting area where it is removed for example by vacuum from the surface. Do not leave excess VELOSIT FH 921 on the surface as this will lead to a hard to remove white efflorescence after drying.

For enhanced oil repellency and maximum sheen apply a second coat and polish to a glossy surface appearance.

3.) Curing

VELOSIT FH 921 does not require curing and is ready for light foot traffic after 4 hours at 23 °C (73 °F).

Estimating

Concrete floor hardening:

VELOSIT FH 921: 0.2 kg/m^2 (200 ft^2/gal)

Cleaning

VELOSIT FH 921 can be removed in the fresh state with water. Once it has cured only mechanical cleaning is possible.

Quality features

Color:	clear
Density:	1.1 kg/l
Substrate temperature:	10 – 35 °C (50 – 95 °F)
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Penetration depth:	> 5 mm
Fire rating EN13501-1:	Class A

Packaging

VELOSIT FH 921 is available in 25 kg (55 lbs) canister or 1.100 kg (2.420 lbs) totes.

Storage

VELOSIT FH 921 can be stored in unopened original packs for 24 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.

0519

9 Grouts, anchors and adhesives

The VELOSIT product range contains some grouts, anchors and adhesives to complete our portfolio. On the next pages you will find the following products:

VELOSIT NG 510 - Rapid setting non-shrink grout 6 - 50 mm (1/4 – 2“).

VELOSIT NG 511 - Non-shrink grout 6 – 50 mm (1/4 – 2“).

VELOSIT NG 512 - Non-shrink grout 12 – 125 mm (1/2 – 5“).

VELOSIT EA 332 - Epoxy adhesive for concrete.

VELOSIT TA 703 - Light weight tile adhesive C2 FE S1.

VELOSIT TA 704 - Tile adhesive C2 TE.

VELOSIT NG 510
Rapid setting non-shrink grout 6 – 50 mm

Application fields

VELOSIT NG 510 is a cementitious non-shrink grout for concrete substrates.It is used to fill large voids or underneath base plates of machinery or building columns up to 50 mm (2") clearance. Typical

application fields besides others are as follows:

- Repair of large surface defects on concrete
- Grouting of manhole liners
- Filling of gaps between two concrete bodies
- Grouting of machinery and construction columns
- Application thickness from 6 mm (¼") to 50 mm (2")
- Anchoring of starter bars and dowels

Properties

VELOSIT NG 510 is a double shrinkage compensated cementitious grout with extremely quick strength development. VELOSIT NG 510 binds the mixing water quickly reducing or completely eliminating the need for water curing and protection. VELOSIT NG 510 creates an extremely well bonded, high strength connection between concrete and concrete or concrete and steel.

VELOSIT NG 510 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT NG 510 can be poured or pumped.

- Minimal shrinkage
- Slight volume increase in the plastic stage to ensure good bond to base plates
- Excellent workability
- Wide range of water addition allowing consistencies from plastic to fluid
- Fiber reinforced
- Advanced corrosion inhibitor technology
- 15 min. working time and 20 MPa (2900 psi) compressive strength after 2 hours
- Final strength of more than 70 MPa (10150 psi) after 28 days in fluid consistency
- Water curing only under hot and dry conditions required for max. 4 hours
- Open to foot traffic after 1 hour
- Excellent adhesion to properly prepared concrete and steel
- Minimal water penetration
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure

Application

1.) Substrate preparation

VELOSIT NG 510 is designed for concrete and steel substrates.

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 ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT NG 510.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Before the application of VELOSIT NG 510, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Remove standing water puddles .

2.) Processing

Mixing: Mix VELOSIT NG 510 with 13 – 16 % potable water, i.e. 3.2 – 4.0 l (0.8 – 1.0 gal.) water per 25 kg (55 lb.) bag. Fill the 13% mixing water (3.2 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. Add unto 3 % water under stirring until the desired consistency is achieved.

The product is workable for 15 min. at 23 °C.

a.) Manual application: Pour VELOSIT NG 510 can be applied directly onto the proper prepared substrates. The product can be applied into voids of minimum 6 mm (¼“) and up to 50 mm (2”) width. Make sure to work in sections that can be finished within 10 min. Rebars and other penetrations must be fully embedded into the mortar. If grouting underneath large base plates use a fluid consistency. The max. travel distance of the grout depends on the min. clearance of the gap. Without forcing the material the travel distance is approx. the gap width multiplied by 50. For example a 50 mm (2”) gap allows 2.5 m (8’4”) travel distance just by gravity.

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

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With grout pumps add the mixed product as described under „Mixing“ into the feed hopper of the pump and pump continuously.

Long spray interruptions may result in clogging of the spray 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 work interruptions. VELOSIT NG 510 is a fast curing material and may be hard to remove if left in the machine.

Never vibrate VELOSIT NG 510 to increase flow. Use wood or a steel rod to move the material in place.

3.) Curing

VELOSIT NG 510 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for max. 4 hours is required

Estimating

Repair of surface defects:

25 kg (55 lbs.)* VELOSIT NG 510 result in approx. 13.3 liter (0.46 ft^3) cured mortar.

* 25 kg VELOSIT NG 510 powder + 3.2 kg water, i.e. 28.2 kg mixed material per bag

Cleaning

VELOSIT NG 510 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 : 14
Mixing ratio by volume:	100 : 24
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	35 min.
Final set:	60 min.
Compressive / flexural strength in fluid consistency (16 % water per bag):	
2 hours:	20 / 4 MPa (2900/580 psi)
24 hours:	36 / 6 MPa (5220/870 psi)
7 days:	57 / 9 MPa (8265/1305 psi)
28 days:	71 / 10 MPa (10295/1450 psi)
In plastic consistency strength values are achieved	
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 $kg/m^2 \times h^{0.5}$
Adhesive strength*, concr.:	2.4 MPa (348 psi)
Restrained shrinkage**:	2.1 MPa (305 psi)
Fire rating EN13501-1:	Class $A1_{fl}$

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

Packaging

VELOSIT NG 510 is available in 25 kg (55 lb.) watertight plastic bags.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

Never add water to VELOSIT NG 511 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT NG 511

High performance non-shrink grout 6 – 50 mm

Application fields

VELOSIT NG 511 is a cementitious non-shrink grout for concrete substrates.It is used to fill large voids or underneath base plates of machinery or building columns up to 50 mm (2") clearance. Typical

application fields besides others are as follows:

- Repair of large surface defects on concrete
- Filling of gaps between two concrete bodies
- Grouting of machinery and construction columns
- Application thickness from 6 mm (¼") to 50 mm (2")
- Anchoring of starter bars and dowels

Properties

VELOSIT NG 511 is a double shrinkage compensated cementitious grout with quick strength development. VELOSIT NG 511 binds the mixing water quickly reducing or completely eliminating the need for water curing and protection. VELOSIT NG 511 creates an extremely well bonded, high strength connection between concrete and concrete or concrete and steel.

VELOSIT NG 511 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT NG 511 can be poured or pumped.

- Minimal shrinkage
- Slight volume increase in the plastic stage to ensure good bond to base plates
- Excellent workability
- Wide range of water addition allowing consistencies from plastic to fluid
- Fiber reinforced
- Advanced corrosion inhibitor technology
- 60 min. working time and 12 MPa (1740 psi) compressive strength after 6 hours
- Final strength of more than 70 MPa (10150 psi) after 28 days in fluid consistency
- Open to foot traffic after 6 hours
- Excellent adhesion to properly prepared concrete and steel
- Minimal water penetration
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure

Application

1.) Substrate preparation

VELOSIT NG 511 is designed for concrete and steel substrates.

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 ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT NG 511.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Before the application of VELOSIT NG 511, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Remove standing water puddles .

2.) Processing

Mixing: Mix VELOSIT NG 511 with 13 – 16 % potable water, i.e. 3.2 – 4.0 l (0.8 – 1.0 gal.) water per 25 kg (55 lb.) bag. Fill the 13 % mixing water (3.2 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. Add up to 3 % water under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C.

a.) Manual application: Pour VELOSIT NG 511 can be applied directly onto the proper prepared substrates. The product can be applied into voids of minimum 6 mm (¼“) and up to 50 mm (2”) width. Make sure to work in sections that can be finished within 15 min. Rebars and other penetrations must be fully embedded into the mortar. If grouting underneath large base plates use a fluid consistency. The max. travel distance of the grout depends on the min. clearance of the gap. Without forcing the material the travel distance is approx. the gap width multiplied by 50. For example a 50 mm (2”) gap allows 2.5 m (8’4”) travel distance just by gravity.

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

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Putzmeister GmbH: SP12 or MP 25

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With grout pumps add the mixed product as described under „Mixing“ into the feed hopper of the pump and pump continuously.

Long spray interruptions may result in clogging of the spray 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 work interruptions. VELOSIT NG 511 is a fast curing material and may be hard to remove if left in the machine.

Never vibrate VELOSIT NG 511 to increase flow. Use wood or a steel rod to move the material in place.

3.) Curing

VELOSIT NG 511 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3-4 hours is required

Estimating

25 kg (55 lbs.)* VELOSIT NG 511 result in approx. 13.3 liter (0.46 ft^3) cured mortar.

* 25 kg VELOSIT NG 511 powder + 3.2 kg water, i.e. 28.2 kg mixed material per bag

Cleaning

VELOSIT NG 511 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 : 14
Mixing ratio by volume:	100 : 24
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set.	200 min.
Compressive / flexural strength in fluid consistency (16% water per bag):	
6 hours:	12 / 3 MPa (1740/335 psi)
24 hours:	35 / 6 MPa (5075/870 psi)
7 days:	58 / 9 MPa (8410/1305 psi)
28 days:	71 / 10 MPa (10295/1450 psi)
In plastic consistency strength values are achieved	
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength*, concr.:	2.2 MPa (319 psi)
Restrained shrinkage**:	2.1 MPa (305 psi)
Fire rating EN13501-1:	Class A1$_{fl}$

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

Packaging

VELOSIT NG 511 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT NG 511 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

Never add water to VELOSIT NG 511 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT NG 512

High performance non-shrink grout 12 – 120 mm

Application fields

VELOSIT NG 512 is a cementitious non-shrink grout for concrete substrates. It is used to fill large voids or underneath base plates of machinery or building columns up to 120 mm (4.7”) clearance. Typical application fields besides others are as follows:

- Repair of large surface defects on concrete
- Filling of gaps between two concrete bodies
- Grouting of machinery and construction columns
- Application thickness from 12mm (½“) to 120 mm (4.7”)
- Anchoring of starter bars and dowels
- Use as micro-concrete

Properties

VELOSIT NG 512 is a double shrinkage compensated cementitious grout with quick strength development. VELOSIT NG 512 binds the mixing water quickly reducing or completely eliminating the need for water curing and protection. VELOSIT NG 512 creates an extremely well bonded, high strength connection between concrete and concrete or concrete and steel.

VELOSIT NG 512 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT NG 512 can be poured or pumped.

- Minimal shrinkage
- Slight volume increase in the plastic stage to ensure good bond to base plates
- Excellent workability
- Wide range of water addition allowing consistencies from plastic to fluid
- Fiber reinforced
- Advanced corrosion inhibitor technology
- 60 min. working time and 15 MPa (2175 psi) compressive strength after 6 hours
- Final strength of more than 90 MPa (13000 psi) after 28 days in fluid consistency
- Open to foot traffic after 6 hours
- Excellent adhesion to properly prepared concrete and steel
- Minimal water penetration
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO_2 and Chloride penetration due to a very tight pore structure

Application

1.) Substrate preparation

VELOSIT NG 512 is designed for concrete and steel substrates.

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 ideally high pressure water blasting (>100 bar/1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 12 mm (½“) behind rebar to fully embed the steel into VELOSIT NG 512.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Before the application of VELOSIT NG 512, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Remove standing water puddles .

2.) Processing

Mixing: Mix VELOSIT NG 512 with 12.5 – 15 % potable water, i.e. 3.1 – 3.8 l (0.8 – 1.0 gal.) water per 25 kg (55 lb.) bag. Fill the 12.5 % mixing water (3.1 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. Add up to 2.5 % water under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C.

a.) Manual application: Pour VELOSIT NG 512 can be applied fresh in fresh into the prime coat. The product can be applied into voids of minimum 12 mm (½“) and up to 120 mm (4.7”) width. For smaller gaps use VELOSIT NG 511. Make sure to work in sections that can be finished within 15 min. Cooler temperatures extend, warmer temperatures reduce the working time. Rebars and other penetrations must be fully embedded into the mortar. If grouting underneath large base plates use a fluid consistency. The max. travel distance of the grout depends on the min. clearance of the gap. Without forcing the material the travel distance is approx. the gap width multiplied by 50. For example a 50 mm (2”) gap allows 2.5 m (8’4”) travel distance just by gravity.

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

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Putzmeister GmbH: SP12 or MP 25

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With grout pumps add the mixed product as described above into the feed hopper of the pump and pump continuously.

Long spray interruptions may result in clogging of the spray 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 work interruptions. VELOSIT NG 512 is a fast curing material and may be hard to remove if left in the machine.

Never vibrate VELOSIT NG 512 to increase flow. Use wood or a steel rod to move the material in place.

3.) Curing

VELOSIT NG 512 does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3-4 hours is required.

Estimating

25 kg (55 lb.)* VELOSIT NG 512 results in approx. 13.0 liter (0.46 ft^3) cured mortar.

* 25 kg VELOSIT NG 512 powder + 3.5 kg water, i.e. 28.5 kg mixed material per bag

Cleaning

VELOSIT NG 512 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 : 15
Mixing ratio by volume:	100 : 26
Density:	1.7 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set.	200 min.
Compressive / flexural strength in fluid consistency (16 % water per bag):	
6 hours:	15 / 3 MPa (2175/335 psi)
24 hours:	44 / 6 MPa (6380/870 psi)
7 days:	78 / 9 MPa (11310/1305 psi)
28 days:	90 / 10 MPa (13050/1450 psi)
In plastic consistency strength values are achieved	
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.01 kg/m^2 x h$^{0.5}$
Adhesive strength*, concr.:	2.5 MPa (363 psi)
Restrained shrinkage*:	2.2 MPa (319 psi)
Fire rating EN13501-1:	Class A1$_{fl}$

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

Packaging

VELOSIT NG 512 is available in 25 kg (55 lb.) watertight plastic bags or 1.000 kg (2.200 lb.) BigBags.

Storage

VELOSIT NG 512 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

Never add water to VELOSIT NG 512 when it has started to set. Stiffened material must be disposed.

2419

VELOSIT EA 332
Epoxy adhesive for concrete

CE
EN1504-5

Application fields

VELOSIT EA 332 is a epoxy resin based adhesive for concrete, masonry and steel. It is designed as a bonding bridge for new concrete on existing surfaces or the VELOSIT RM repair mortars on critical substrates. Typical application fields besides others are as follows:

- Priming of concrete and masonry for following concrete pours
- Prime coat for concrete repair systems of the VELOSIT RM range
- Can be used for vibrated floor systems as a bonding bridge between tiles and mortar bed

Properties

VELOSIT EA 332 is a 2 component solvent free epoxy adhesive and bonding bridge.

VELOSIT EA 332 can be applied by brush, roller or suitable spray equipment.

- Long pot life for best adhesion between new and old concrete
- 60 min. working time a
- Final compressive strength of more than 60 MPa (8700 psi) after 28 days
- Very good adhesion to concrete and masonry
- Good resistance against aggressive media with a pH range of 1-12 and against soft water with low ion content
- Excellent adhesion on damp substrates

Application

1.) Substrate preparation

VELOSIT EA 332 is designed for substrates like concrete, masonry and steel.

a.) Steel must be prepared to a purity of SA 2 acc. SIS 05 5900.

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

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼“) behind rebar to fully embed the steel into VELOSIT repair system.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material.

2.) Processing

Mixing: VELOSIT EA 332 is supplied in two packs with the A- and B-component in the correct mixing ratio. Make sure the material is between 15 and 28 °C (59 – 82 °F) before mixing. Hot material may react very fast whereas too cold material has a higher viscosity and will not penetrate into the substrate as desired.

Open the A-component and stir it with a slow speed drill to evenly distribute all fillers throughout the resin. Then add the full amount of B-component and continue stirring for approx. 2 min.

Fill the mixed material into a clean pail and re-stir for another 30 sec. The mix must be completely streak-free.

Brush application: Apply one coat with a brush or roller in crossing applications to the substrate at the specified rate. Concrete or VELOSIT RM repair mortar must be applied within the pot life while the material is still tacky. This is up to 2 hours at 23 °C. Colder temperatures extend, warmer temperatures shorten this time.

3.) Curing

VELOSIT EA 332 does not require curing as it reacts by itself.

Estimating

Brush, roller or spray application:

VELOSIT EA 332: 0.3 – 0.8 kg/m² (1-3 oz/ft²)

Cleaning

VELOSIT EA 332 can be removed in the fresh state with solvents. Once it has cured only mechanical removal is possible

Quality features

Color:	gray
Mixing ratio by weight:	100 : 50
Density:	1.64 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Compressive / flexural strength:	
7 days:	65 / 34 MPa (9425/4930 psi)
Adhesive strength:	3.3 MPa (479 psi)

Packaging

VELOSIT EA 332 is available in 10 kg (22 lb.) kits.

Storage

VELOSIT EA 332 can be stored in unopened original packs for 24 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.

3315

VELOSIT TA 703
Light weight thin & medium bed tile adhesive
C2 FE S1

Application fields

VELOSIT TA 703 is a rapid hardening and light weight cementitious tile adhesive for a wide variety of tiles and natural stones on typical construction substrates like dry wall, screeds, concrete and masonry. Typical application fields include fixing of tiles and natural stones:

- Especially suitable for large format tiles and natural stones
- On cementitious, magnesite and gypsum-based floor screeds
- On gypsum board walls, plaster, concrete and masonry
- In swimming pools (over waterproofing layer)
- In wet rooms, showers and kitchens
- Interior and exterior applications

Properties

VELOSIT TA 703 is a cementitious tile adhesive with rapid strength development and very low consumption. The tile adhesive fulfills the requirements C2FE S1.

VELOSIT TA 703 is applied with a notched trowel.

- Dust reduced
- Shrinkage compensated - may be used as a repair mortar
- Good initial tack and high sag resistance
- Meets the requirements of EN 12004, Class C2FE
- Variable water addition allows floor and wall application
- Flexibility Class S1 acc. to EN 12002
- Mortar bed thickness between 2 and 12 mm (1/12“ to 1/2“)
- 30 min. open time and 0.5 MPa (73 psi) adhesive strength after 6 hours
- Open to foot traffic after 3 hours

Application

1.) Substrate preparation

VELOSIT TA 703 is designed for mineralic substrates like concrete, masonry or absorptive natural stones, in addition to gypsum or gypsum fibre boards.

Substrate must be pore-open and of load bearing capacity. Surfaces must be prepared by removing all bond-breaking substances. Minimum adhesive and compressive strength requirements of 1.0 MPa (145 psi) and 20 MPa (2900 psi) respectively. Lower strength values may be accepted if lower adhesive strength is acceptable to the consultant/supervising engineer. Gypsum boards give good adhesion but due to the substrate strength, only 0.2 – 0.3 MPa (15 – 22 psi) can be achieved.

Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material.

Blowholes, honeycombs or other surface defects can be filled with VELOSIT TA 703 or a repair mortar such as VELOSIT RM 202. Where required (i.e. in swimming pools, water tanks etc.) apply a seamless waterproofing system such as VELOSIT WP 120.

Screeds must have sufficiently cured. The moisture content determined with a CM device must be less than 2 % on cementitious screeds and underlayments and less than 0.5 % on calcium sulphate based screeds (< 0.3 % on heated screeds).

Absorptive substrates must be primed with VELOSIT PA 911.

2.) Processing

Mix VELOSIT TA 703 with 30 – 36 % potable water, i.e. 5.4 – 6.5 l (1.4 – 1.7 gal.) water per 18 kg (40 lb.) bag. Fill 30 % (5.4 l per bag) mixing water 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. Add up to 6 % water under stirring until the desired consistency is achieved. Allow the product to stand for 2 min. and mix again for 1 to 2 minutes. The product is workable for 45 min. at 23 °C. Apply the desired amount of VELOSIT TA 703 with a notched trowel on the substrate and push the tiles or natural stones into the adhesive bed. For exterior and swimming pool applications also apply VELOSIT TA 703 to the back side of the tile (“buttering & floating“ method). Tile position can be corrected for several minutes. The time depends on the absorptivity of the tile back.

3.) Curing

VELOSIT TA 703 does not require curing as it reacts very fast with water. The surface is carefully trafficable after 6 hours at 23 °C.

Estimating

Application rate, notched trowel:

VELOSIT PA 911:		0.1 kg/m²
VELOSIT TA 703	- 6 mm notches:	1.4 kg/m² (2.9 lbs/10ft.²)
	- 8 mm notches:	1.9 kg/m² (3.9 lbs/10ft.²)
	- 10 mm notches:	2.3kg/m² (4.7 lbs/10ft.²)

Other thickness requirements: 0.9 kg* VELOSIT TA 703 per m² for 1 mm adhesive thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

*0.9 kg VELOSIT TA 703 powder + 0.3 kg water, i.e. 1.2 kg mixed material per mm and m² (2.0 lb. per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT TA 703 can be removed in the fresh state with water. Once cured, acidic cleaners like muriatic acid are required.

Quality features

Color:	Gray
Mixing ratio by weight:	100 : 30
Mixing ratio by volume:	100 : 30
Density:	0.95 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Pot life:	> 45 min.
Open time:	> 30 min.

Adhesive strength, dry:	> 1.0 MPa (>145 psi)
Adhesive strength, wet:	> 1.0 MPa (>145 psi)
Adhesive str., freeze/thaw:	> 1.0 MPa (>145 psi)
Adhesive str., warm storage:	> 1.0 MPa (>145 psi)
Fire rating EN13501-1:	Class E

Packaging

VELOSIT TA 703 is available in 18 kg (40 lb.) watertight plastic bags.

Storage

VELOSIT TA 703 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

Never add water to VELOSIT TA 703 when it has started to set. Stiffened material must be disposed.

3119

VELOSIT TA 704

Thin & medium bed tile adhesive C2 TE, normal setting

Application fields

VELOSIT TA 704 is a cementitious tile adhesive for a wide variety of tiles and natural stones on typical construction substrates like dry wall, screeds, concrete and masonry. Typical application fields include fixing of tiles and natural stones:

- On cementitious, magnesite and gypsum-based floor screeds
- On gypsum board walls, plaster, concrete and masonry
- In swimming pools (over waterproofing layer)
- In wet rooms, showers and kitchens
- Interior and exterior applications

Properties

VELOSIT TA 704 is a cementitious tile adhesive with normal strength development. The tile adhesive fulfills the requirements C2TE.

VELOSIT TA 704 is applied with a notched trowel.

- Long pot life
- Meets the requirements of EN 12004, Class C2TE
- Mortar bed thickness between 2 and 12 mm (1/12“ to 1/2“)
- 30 min. open time and 0.5 MPa (73 psi) adhesive strength after 24 hours
- Very good adhesion to most construction substrates

Application

1.) Substrate preparation

VELOSIT TA 704 is designed for mineralic substrates like concrete, masonry or absorptive natural stones, in addition to gypsum or gypsum fibre boards.

Substrate must be pore-open and of load bearing capacity. Surfaces must be prepared by removing all bond-breaking substances. Minimum adhesive and compressive strength requirements of 1.0 MPa (145 psi) and 20 MPa (2900 psi) respectively. Lower strength values may be accepted if lower adhesive strength is acceptable to the consultant/supervising engineer. Gypsum boards give good adhesion but due to the substrate strength, only 0.2-0.3 MPa (15 – 22 psi) can be achieved.

Active water leaks must be treated and fully stopped with VELOSIT PC 221. Leaking cracks need to be sealed with a PU injection material.

Blowholes, honeycombs or other surface defects can be filled with VELOSIT TA 704 or a repair mortar such as VELOSIT RM 202. Where required (i.e. in swimming pools, water tanks etc.) apply a seamless waterproofing system such as VELOSIT WP 120.

Screeds must have sufficiently cured. The moisture content determined with a CM device must be less than 2 % on cementitious screeds and underlayments and less than 0.5 % on calcium sulphate based screeds (< 0.3 % on heated screeds). On rapid setting screeds refer to manufacturers requirements.

Absorptive substrates must be primed with VELOSIT PA 911.

2.) Processing

Mixing: Mix VELOSIT TA 704 with 27– 32 % potable water, i.e. 6.7 – 8 l (1.8 – 2.1 gal.) water per 25 kg (55 lb.) bag. Fill 27 % (6.7 l per bag) mixing water 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. Add up to 5 % water under stirring until the desired consistency is achieved. Allow the product to stand for 2 min. and mix again for 1 to 2 minutes. The product is workable for mind. 60 min. at 23 °C. Apply the desired amount of VELOSIT TA 704 with a notched trowel on the substrate and push the tiles or natural stones into the adhesive bed. For exterior and swimming pool applications also apply VELOSIT TA 704 to the back side of the tile ("buttering & floating" method). Tile position can be corrected for several minutes. The time depends on the absorptivity of the tile back.

3.) Curing

VELOSIT TA 704 does not require curing as it reacts very fast with water. The surface is carefully trafficable after 6 hours.

Estimating

Application rate, notched trowel:

VELOSIT PA 911:		0.1 kg/m²
VELOSIT TA 704	- 6 mm notches:	2.4 kg/m² (4.9 lbs/10ft.²)
	- 8 mm notches:	3.0 kg/m* (6.2 lbs/10ft.²)
	- 10 mm notches:	3.6kg/m² (7.4 lbs/10ft.²)

Other thickness requirements: 1.4 kg* VELOSIT TA 704 per m² for 1 mm adhesive thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 1.4 kg VELOSIT TA 704 powder + 0.4 kg water, i.e. 1.8 kg mixed material per mm and m² (2.9 lbs. per 40 mil dft and 10 sq.ft.)

Cleaning

VELOSIT TA 704 can be removed in the fresh state with water. Once cured, acidic cleaners like muriatic acid are required.

Quality features

Color:	Gray
Mixing ratio by weight:	100 : 27
Mixing ratio by volume:	100 : 39
Density:	1.4 kg/l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Pot life:	mind. 60 min.
Open time:	30 min.
Adhesive strength, dry:	> 1.0 MPa (> 145 psi)
Adhesive strength, wet:	> 1.0 MPa (> 145 psi)
Adhesive str., freeze/thaw:	> 1.0 MPa (> 145 psi)
Adhesive str., warm storage:	> 1.0 MPa (>145 psi)
Fire rating EN13501-1:	Class E

Packaging

VELOSIT TA 704 is available in 20 kg (44 lb.) and 25 kg (55 lbs.) watertight plastic bags.

Storage

VELOSIT TA 704 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.

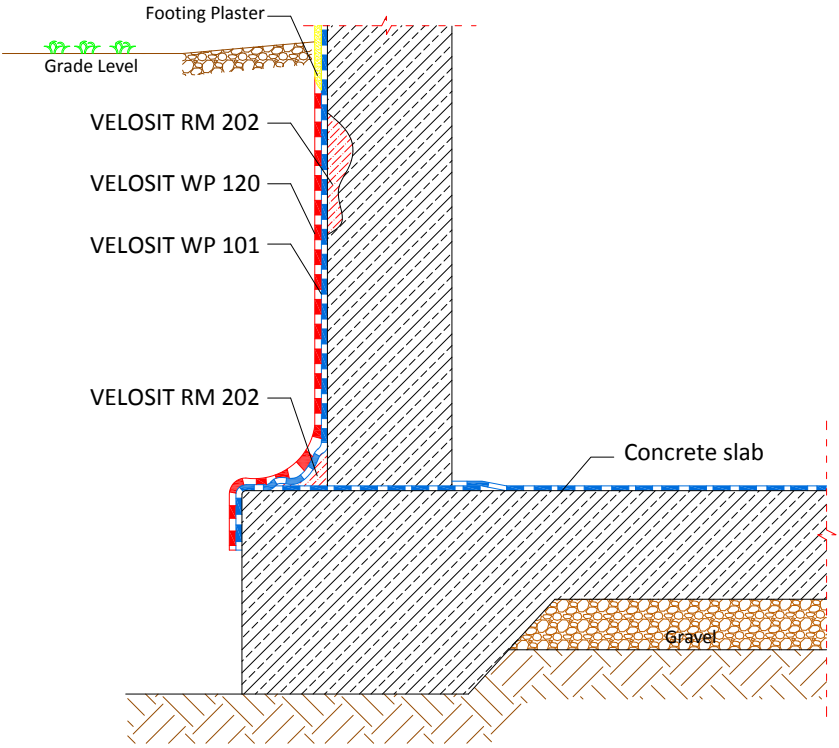
Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

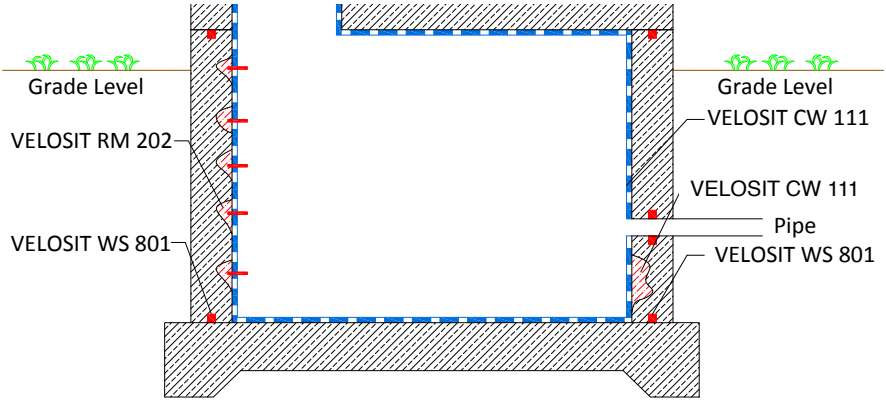
Recommendations

Never add water to VELOSIT TA 704 when it has started to set. Stiffened material must be disposed.

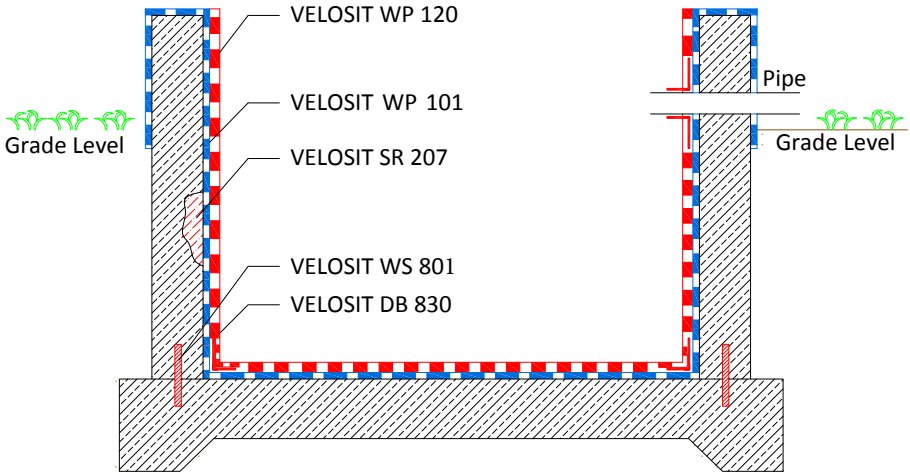
0519



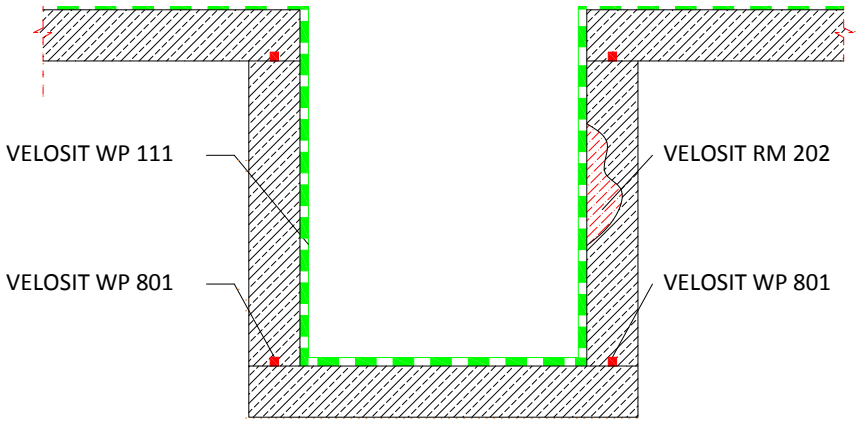
TD 101: Basement waterproofing



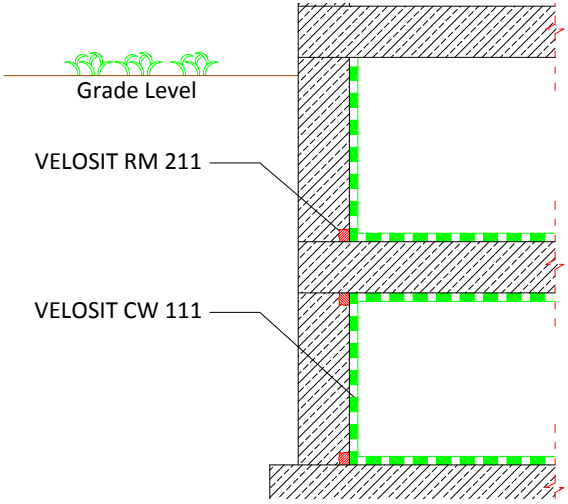
TD 102: Potable water tank



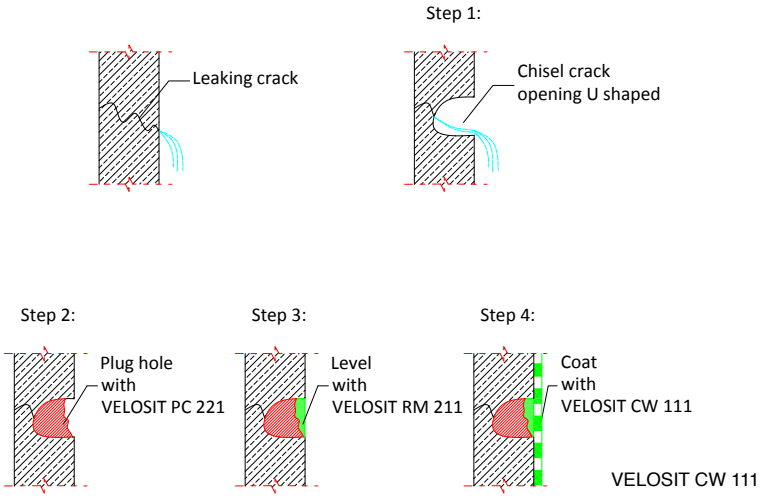
TD 103: Sewage tank



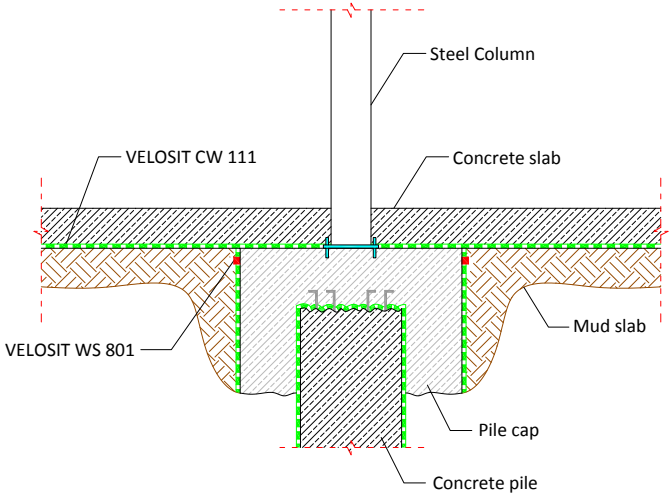
TD 104: Elevator pit



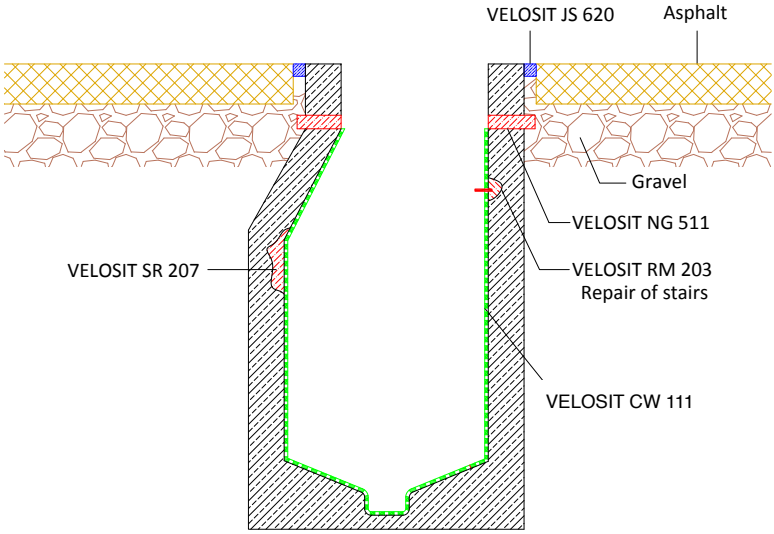
TD 105: Negative side waterproofing



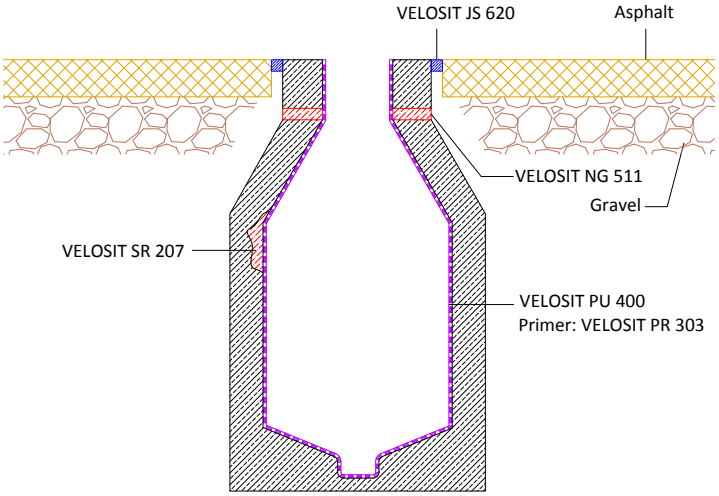
TD 106: Plugging leakages



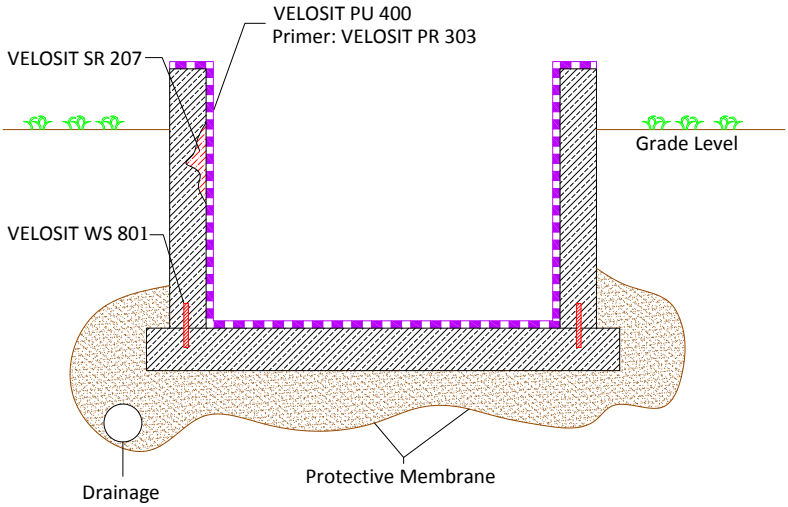
TD 107: Pile cap waterproofing



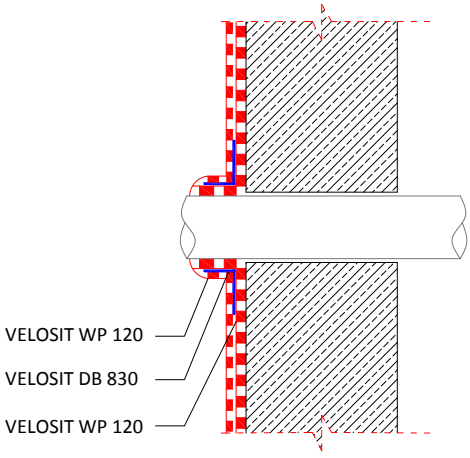
TD 108: Manhole repair and waterproofing



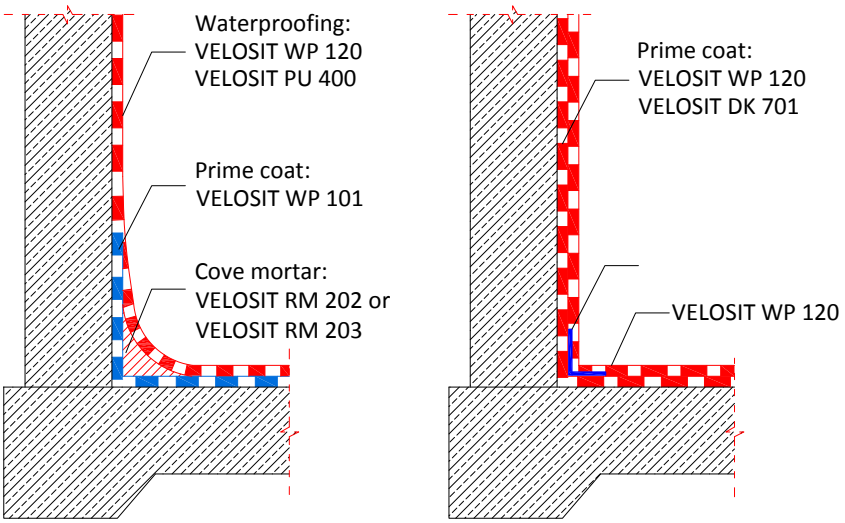
TD 109: Manhole repair and lining



TD 110: Biogas tank lining



TD 111: Pipe penetration detail



TD 112: Corner waterproofing detail

Notes