

RAYSTON LEVEL 503



High Strength Self Leveling Overlayment

DESCRIPTION

Rayston Level 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.

APPLICATION FIELDS

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 1/2")

PROPERTIES

RAYSTON LEVEL 503 is a shrinkage compensated self leveling overlayment based on a special cement with very quick strength development. RAYSTON LEVEL 503 binds the mixing water very fast allowing a very short wait time before it becomes trafficable or can be covered. RAYSTON LEVEL 503 creates a well bonded and very smooth layer on the substrate.

- RAYSTON LEVEL 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.
- RAYSTON LEVEL 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 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 CO₂ 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

APPLICATIONS

1.) Substrate preparation

RAYSTON LEVEL 503 is designed for concrete substrates. Steel may be coated with a suitable bonding bridge.

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 Rayston's AQUAPUR. Leaking cracks need to be sealed with a PU injection material.

Priming:

Concrete substrates can be primed with HUMIDITY PRIMER even with a humidity of more than 4%. So, at higher moisture levels or in case the moisture levels in the substrate are expected to increase, priming can be done with HUMIDITY PRIMER as well. RAYSTON LEVEL 503 can be applied into the tacky coating within 2-4 hours after application. Longer wait times require a full broadcast with QUARTZ SAND into the primer.

2.) Processing

Mixing: Mix RAYSTON LEVEL 503 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! RAYSTON LEVEL 503 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 RAYSTON LEVEL 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 1/2") 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.

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

- 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 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. RAYSTON LEVEL 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, RAYSTON LEVEL 503 is ready to receive a coating after 16 hours. For use as a wear surface a clear sealer or surface hardener is recommended to improve resistance against penetrating liquids like oil, grease or cleaning agents.

3.) Curing

RAYSTON LEVEL 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: 25 kg (55 lbs.) RAYSTON LEVEL 503 result in approx. 14.2 liter (0.50 ft³) cured mortar.

Standard leveling: 10.5 kg (23 lbs.)* RAYSTON LEVEL 503 per m² (10.7 ft²) for 6 mm (1/4") dry mortar thickness on smooth substrates. Depending on surface roughness application rates can be significantly higher.

* 10.5 kg RAYSTON LEVEL 503 powder + 2.3kg water, i.e. 12.8 kg mixed material per 6 mm and m²

Cleaning

RAYSTON LEVEL 503 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid and mechanical cleaning are required.

TECHNICAL DATA

QUALITY FEATURES	
Colour	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: 62 / 9 MPa (8990/1305 psi)
Chloride ions	< 0.05%
Carbonation resistance	passed
Capillary water absorption	0.1 kg/m ² x h ^{0.5}
Adhesive strength**	- primed with 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

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



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PACKAGING

RAYSTON LEVEL 503 is available in 25 kg (55 lb.) watertight plastic bags.

STORAGE

RAYSTON LEVEL 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.
Used product containers must be emptied completely after use.

RECOMMENDATIONS

RAYSTON LEVEL 503 is only available for professional applicators. Never add water to RAYSTON LEVEL 503 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.

OTHER INFORMATION

The information contained in this DATA SHEET, as well as our advice, both written as verbal or provided through testing, are based on our experience, and they do not constitute any product guarantee for the installer, who must consider them as simple information.

We recommend studying deeply all information provided before proceeding to the use or application of any of our products, and strongly advise to conduct tests "on-site" in order to determine their convenience for a specific project.

Our recommendations do not exempt of the obligation of installers to deeply study the right application method for these systems before use, as well as to conduct as many preliminary tests as possible should any doubt arise. The application, use and processing of our products are beyond our control, and therefore under the exclusive responsibility of the installer. In consequence, the installer will be the only responsible of any damage derived from the partial or total in-observation of our indications, and in general, of the inappropriate use or application of these materials.

This Data Sheet supersedes previous versions.

