



Rev 1
11/21



GRAUTEK RAPID

Thixotropic thixotropic fiber-reinforced sulfate-reinforced
shrinkage-compensated mortar



DESCRIPTION

GRAUTEK RAPID is a premixed mortar based on special hydraulic binders and ultra-pure quartz, single-component, to be mixed with water to obtain thixotropic mixtures with rapid setting and hardening. GRAUTEK RAPID develops high initial and final mechanical strengths, is waterproof, durable even in highly aggressive environments, and provides high adhesion to steel and concrete. GRAUTEK RAPID contains no metal parts and is chloride-free.

GRAUTEK RAPID is a non-structural repair mortar of type CC and class R4 according to EN 1504-3.

ADVANTAGES

The features of GRAUTEK RAPID allow:

- Quick repair, of holes, tears, chipping of concrete artifacts (floors, pillars, beams, walls, panels, etc.), concrete restoration, preservation of passivity.
- Rapid grouting, of volume defects in hardened concrete following segregation in the fresh state (e.g., gravel nests, replacement of concrete marred by carbonation).
- Quick fixing, of manhole covers, pipes, etc..
- Perfect finish
- Can be used up to thicknesses of 40 mm

FEATURES

GRAUTEK RAPID has been carefully designed to have rapid hardening in the absence of shrinkage in conjunction with decent workability, more precisely GRAUTEK RAPID once mixed with water possesses excellent workability that can vary from 20 to 30 min (depending on temperature and outdoor humidity) and excellent thixotropy, which allows for installation even vertically in thicknesses up to 40 mm. From application, the product sets in about 15 min under normal conditions (20 °C). The hardened product is loadable after about an hour, and because of its high durability it is excellently suited for both interior and exterior applications.

Being part of the special mortars of the Aeternum Line, the product has excellent water resistance and is particularly resistant to all classes of environmental exposure, especially water and consequently frost.

METHOD OF USE

SUPPORT CLEANING

- Remove all consistent parts of concrete from the area targeted for restoration, including grout slurry by mechanical chiseling or power washing taking care not to damage the structures.
- Remove stains, efflorescence or impregnation of greasy oil, paint, lime, dust, dirt, etc..;
- Remove any previous restoration work if irreparably damaged or deteriorated;



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SUPPORT PREPARATION

- Roughen the surface by mechanical means such as bush-hammering, chiseling, or hydrodemolition (the latter does not cause injury to the substrate and is recommended for large areas) by reaching sound and compact concrete to promote adhesion between mortar and substrate. The surface should be roughened with roughness of at least 5 mm, while the edges bordering the restoration area should be scarified to a depth of at least 10 mm with a sharp-edged finish. The roughening of the surface layer is necessary both to promote the adhesion of the mortar and to ensure the proper unfolding of the expansive phenomenon.
- Wet the surface with pressurized water until saturated. This procedure prevents the absorption of mixing water by the substrate, which could lead to cracking phenomena and decrease the adhesive capacity of the mortar. The operation also allows the removal of residues due to roughening of the concrete substrate. Excess water must evaporate completely before restoration is carried out.

REINFORCING BARS PROTECTION

Sandblast the reinforcing bars and remove all loose parts such as rust flakes or material fragments that may trigger the corrosion process or affect adhesion. Scarifying the substrate by hydrodemolition also effectively cleans the reinforcing bars, making sandblasting unnecessary.

- Protect reinforcing bars by applying the corrosion inhibitor re-alkalizing treatment.

ADDITIONAL ARMOR

- For carryovers thicker than 2 cm, it is recommended to place an electrowelded mesh with spacers (at least 1 cm from the support) and to provide a cover of at least 1.5-2 cm.

MORTAR PREPARATION

Mixing of GRAUTEK RAPID mortar is done in a site concrete mixer. Pour the mixing water into the concrete mixer according to the recommended mixing ratio (18-19% clean water): 4.5-4.75 liters of water per 25-kg package of GRAUTEK RAPID.

Pour the product little by little without interruption, mixing for at least 4 ÷ 5 minutes with a low-speed mechanical stirrer until the mixture is homogeneous and free of lumps. Check that all the product has been properly mixed and that there is no residual dust on the walls of the concrete mixer.

WARNING

IN HOT CLIMATES

- Store GRAUTEK RAPID in the shade;
- Follow the work in the early morning hours, stopping work during the sunniest hours; it is better to start work in the late afternoon hours, under the condition that the structure has been subjected to continuous wetting for at least 6 hours before work begins;
- To achieve maximum performance of GRAUTEK RAPID, proper curing is required through the use of the additive applied by spray or brush. Since the product guarantees its workability in 20 to 25 minutes after preparation, it is recommended that small quantities be prepared to prevent hardening of the product that has not yet been put to use, especially in summer.

IN COLD CLIMATES

- Store GRAUTEK RAPID in a possibly heated environment;
- Do not install the product in temperatures below 0°C;
- Start work in the late morning;
- Make sure the substrate is not frozen.
- Saturation of the substrate with water: carry out all substrate preparation and saturate the concrete or brickwork with water for at least 6 continuous hours before laying



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GRAUTEK RAPID. Free water on the surface should be removed with compressed air or rags.

- Since the product guarantees its workability in 20-25 minutes after preparation, it is recommended to prepare small amounts of the product to avoid hardening of the product not yet put to use, especially in summer.

APPLICATION

GRAUTEK RAPID can be applied by trowel or spray. The product must be applied on clean, roughened and water-saturated surfaces as indicated in the previous paragraph. Apply the mixture quickly with trowel or trowel: as soon as the mortar sets moisten the surface and finish with trowel. Keep the applied mortar moist in the first 8 hours.

For filling large cavities make a mortar in the proportion: 2 parts GRAUTEK RAPID and 1 part silica or quartz sand. Remember, however, to always apply a coat of our TEKWELD-based primer beforehand.

TECHNICAL TIMING

Workability time product mixed with water: 20-25 min

Waiting time between coats: 20-30 min.

Waiting time before commissioning: about 1 hr.

Under normal temperature conditions (20-25 °C) GRAUTEK RAPID can be painted with water-based varnishes and paints as early as 4 hours after installation.

PRODUCT FEATURES

APPEARANCE	powder
COLOR	gray
AGGREGATE Dmax	0.5 mm
APPEARING VOLUME MASS	1.2 kg/dm ³
CHLORIDE ION CONTENT ($\leq 0.05\%$)	absent

Optimal performance is achieved at 20°C and 50% RH. Curing and setting times may vary during the winter period. Observe the indicated mixing ratio and do not use the contents of open or damaged bags. Store the product at room temperature in the 24 hours prior to application.

APPLICATION SPECIFICATIONS

COLOR OF THE MIXTURE	Gray
MIXING WATER	18 ÷ 19%
PASTING VOLUME MASS	2.170 Kg/dm ³
PLASTER pH	> 12
UNI EN 13395 PASTING FLOW	175 mm (thixotropic)
TEMP. APPLICATION	15 - 20 min
PASTING DURATION	20 - 25 min (20°C 50% R.H.)
TOTAL HARDENING	28 days (at 20°C)
WAITING TIME	
BETWEEN ONE LAYER AND THE OTHER	20-30 min (23°C 50% R.H.)
THICKNESS OF APPLICATION	4 cm (overhead 2 cm)
CONSUMPTION	19 kg/m ² per cm of thickness



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Determinations on hardened product.

Requirements according to EN 1504-3
- R4 class mortars

Flexural strength (as per EN 12190)

- after 4 hours: 3,00 MPa
- after 8 hours: 3,00 MPa
- after 16 hours: 4,00 MPa
- after 1 day: 4,00 MPa
- after 3 days: 5,00 MPa
- after 7 days: 6,00 MPa
- after 28 days: 7,00 MPa
- after 56 days: 7,00 MPa

Compression strength

- after 4 hours: >4,00 MPa
- after 8 hours: >12,00 MPa
- after 24 hours: >25,00 MPa
- after 48 hours: >35,00 MPa
- after 28 days: >45,00 MPa
- after 56 days: >52,00 MPa

Elastic modulus in compression

(according to EN 13412):
20 GPa

Adhesion on concrete (as per EN 1542)

- on dry concrete: 2,1 MPa
- on wet concrete: 2,2 MPa

Adhesion on concrete (as per EN 12617-4)

- dry after 56 days: 2,4 MPa
- in water after 56 days: 1,8 MPa

Reaction to fire (as per EN 13501-1):

A1 class

PERFORMANCE CHARACTERISTICS MIXING WATER 17%

PERFORMANCE CHARACTERISTIC	TEST METHOD	REQUIREMENTS IN ACCORDANCE WITH EN1504-3 FOR CLASS R4 MORTARS	PRODUCT PERFORMANCE
COMPRESSIVE STRENGTH (MPa)	EN 12190	≥ 45 (after 28 days)	>3 MPa after 4h >20 MPa after 1 day >70 MPa after 28 days
FLEXURAL STRENGTH (MPa)	EN 196/1	None	>1 MPa after 4h >4 MPa after 1 day >7 MPa after 28 days
ADHESION ON CONCRETE (MC type support 0.40 ratio w/c=0.40 according to EN 1766)	EN1542	≥ 2 (after 28 days)	2,4 MPa
REACTION TO FIRE	EN 13501-1	A1 Euroclass	A1

PACKAGING AND STORAGE

GRAUTEK RAPID is packaged in 25-kg polythene bags. In the original packaging and properly stored under cover in a dry place, the product retains its characteristics for one year.

LEGAL NOTES

The information contained in this data sheet, while representing the most advanced stage of knowledge, does not exempt the user from performing accurate preliminary tests under his or her own conditions of use and operation. Therefore, no liability is accepted for improper use of the product.



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