REC TOP 1005

EXTRA HIGH-STRENGTH, SHRINKAGE COMPENSATED, POLYMER REINFORCED, FLOWABLE STRUCTURAL REPAIR MORTAR

DESCRIPTION

REC TOP 1005 is a single component, extra high strength, high modulus, and shrinkage compensated structural repair mortar that meets the requirements of the new European Norm EN 1504 part 3 class R4. **REC TOP 1005** is a ready-to-use material that contains sulphate resistant Portland cement (HSR LA), hydraulic binders, well graded sands, specially selected polymers (PAN – polyacrylonitryl) and special additives to significantly reduce the risk and incidence of shrinkage cracking.
When mixed with water, **REC TOP 1005** forms a mortar with a fluid or flowable consistency which can be easily applied by hand or machine.
REC TOP 1005 can be used in thicknesses from 20 mm up to 200 mm.

PRIMARY APPLICATIONS

REC TOP 1005 is used for the structural repair of concrete elements such as:

- Columns, cross beams and piers of all bridges
- In conjunction with electro-chemical cathodic protection systems
- Marine and other civil structures
- Water treatment and sewerage facilities
- Large area structural repairs using formwork and casting method
- Areas of congested reinforcement where hand or spray application is not possible

FEATURES/BENEFITS

- Formulated with nanotechnology to minimise shrinkage and crack tendency.
- No segregation or bleeding.
- Long open time.
- High flow for full compaction even in areas with congested steelwork.
- For hand or machine application.
- For concrete replacements up to 200 mm thick in one layer.
- Can be extended with clean, dry aggregate for thicknesses greater than 200 mm.
- Good strength development exceeding requirement of class R4 of EN 1504 part 3.
- Extra low shrinkage for durability.
- Only simple standard surface preparation required
- Excellent freeze/thaw resistance.
- High carbonation resistance.
- Sulphate resistant
- Very low permeability to water and chlorides.
- Low chromate (Cr [VI] < 2 ppm).
- `Does not contain chlorides.

EN 1504-3 **Concrete repair product for structural repair CC mortar (based on hydraulic cement)** **EN 1504-3 Principles 3.1 / 3.2 / 4.4 / 7.1 / 7.2**	
Compressive Strength	Class R4
Chloride ion content	≤ 0.05 %
Adhesive bond	≥ 2.0 Mpa
Carbonation resistance	Passes
Elastic modulus	≥ 25 Gpa

Thermal compatibility - Freeze Thaw - Thunder Shower - Dry Cycling	 ≥ 2.0 Mpa ≥ 2.0 Mpa ≥ 2.0 Mpa
Reaction to fire	A1
Dangerour substances	Complies with 5.4

TECHNICAL INFORMATION

PROPERTY		STANDARD	DATA	UNIT
Chemical Base		-	Cement	-
Colour		-	Grey	-
Grain Size	maximum	-	1.5	mm
Chloride Ion Content		EN 1015-17	≤ 0.01	%
Layer Thickness	minimum maximum	-	20 200	mm
Fresh Mortar Density		-	Approx. 2.2	g/cm^3
Mixing Water for 25 kg Bag	flowable fluid	-	ca. 3.1 – 3.5 ca. 3.5 – 4.0	l
Working Time		-	60[1]	Minute
Application Temperature (ambient and substrate)		-	+5 - +30	Celcius
Compressive Strength	1 day 7 days 28 days	EN 12190	≥ 15 ≥ 40 ≥ 55	N/mm^2
Elasticity Modulus	28 days	EN13412	≥ 23,000	N/mm^2
Adhesion to Concrete	28 days	EN 1542	≥ 2.7	N/mm^2
Adhesion to Concrete after Freeze-Thaw (50 cycles with salt)	28 days	EN 13687-1	≥ 3.1	N/mm^2
Adhesion to Concrete after Thunder-Shower (50 cycles)	28 days	EN 13687-2	≥ 3.0	N/mm^2
Adhesion to Concrete after Dry Cycling (50 cycles)	28 days	EN 13687-4	≥ 3.0	N/mm^2
Carbonation resistance	28 days	EN 13295	dk≤ Ref. Concrete	Mm
Capillary Absorption	28 days	EN 13057	≤ 0.5	kg.m^{-2}.h^{-} 0.5
Cracking Tendency (I)		Coutinho Ring	No Cracking	Up to 180 days
Cracking Tendency (II)		DIN type V-channel	No Cracking	Up to 180 days
Electrical Resistivity (DOT spec 5,000-15,000 Ω cm)		Wenner 4 pin method	7,500	Ω cm
Water Quality		BS 6920	Complies	-

Note: Hardening times are measured at 21°C ± 2°C and 60% ± 10% relative humidity. Higher temperatures will reduce these times and lower temperatures will extend them. Technical data shown are statistical results and do not correspond to guaranteed minima. Tolerances are those described in appropriate performance standards.

DIRECTIONS FOR USE

SURFACE PREPARATION

- Hardness and durability of concrete are increasingly important parameters for the preparation of the support. This is particularly valid for repair and/or protection of concrete formulated according to the most recent concrete technology. It is therefore recommended to determine a diagnosis in advance, in order to adapt choices and the way how to prepare the support to these parameters. Consult your RECKON Chemicals Private Limited representative for additional information.
- Concrete must be fully cured, clean and sound to ensure good adhesion. All loose traces of concrete or mortar, dust, grease oil, etc. must be removed.
- Concrete must have a minimum direct tensile strength of 1.5 N/mm^2.
- Damaged or contaminated concrete should be removed to obtain a keyed surface. Non-impact/vibrating cleaning methods, e.g. shot blasting, sandblasting or high water pressure blasting are recommended. Aggregate should be clearly visible on the surface of the concrete structure after surface preparation.
- Cut the edges of the repair vertically to a minimum depth of 5 mm.
- If reinforcing steel is visible, clean to a minimum grade of Sa 2 according to ISO 8501-1 / ISO 12944-4. Ensure back of rebar is also clean. Only in case of chloride contamination of the concrete should the reinforcement be protected by using REC COAT 113 (see technical data sheet).
- The formwork shall be sound and watertight. Use a light application of REC release agent to the inner face of the formwork. Fill the formwork with water to test for tightness and pre-soak substrate. Provision must be made for draining of pre-soaking water and air venting during placement. The concrete substrate shall be water saturated, without free standing water, at the moment of application

MIXING

- It is strongly recommended that only full bags are mixed. Damaged or opened bags should not be used.
- Mix **REC TOP 1005** with a suitable paddle attached to a powerful, slow speed electric drill or in a forced action pan mixer for 3 minutes until fluid or flowable consistency is achieved without any lump in the mortar. Only use clean tap water.
- Mixing water needed: 3.5 to 4.0 litres per 25 kg bag are required for fluid consistency.
- A flowable consistency can be achieved by mixing 3.1. to
- 3.5 litres per 25kg bag.
- Note: Add water if necessary but never exceed the maximum water demand!
- For applications exceeding 200 mm, the mix must be extended with clean aggregate with a suitable grading (e.g. 4 – 8 or 8 – 16mm) up to maximum 30 to 35% of the total weight of the dry mix.

APPLICATION

- The prepared substrate should be pre-soaked, preferably for 24 hours, but at least 2 hours before applying **REC TOP 1005**. The surface must be mat-damp, but without standing water.
- For optimum curing of the product the temperatures during application of **REC TOP 1005** are between +5°C and +30°C.
- The material can be placed or pumped behind the formwork, or poured into the patch repair area.
- **REC TOP 1005** is cast in situ continuously with a fluid consistency, placing it inside the formwork from one side only to allow air to escape. It is self-compacting without requiring vibration even in structures that are heavily reinforced or have a complex shape.
- Leave the formwork in place for as long as possible and/or ensure proper curing, using e.g. REC CURE E4 curing compounds.
- **REC TOP 1005** can be also placed in a pourable consistency in horizontal patch repair areas brushing the first poured material into the surface roughness of the substrate. Pour further material up to the required thickness wet in wet.

COVERAGE

- Fluid consistency
  Approximately 76 bags are required to produce 1 m^3 of fresh mortar. 25 kg bag will yield approximately 13 litres of mortar, when mixed with 3.8 litres water/bag.

- Flowable consistency
  Approximately 80 bags are required to produce 1 m^3 of fresh mortar. 25 kg bag will yield approximately 12.5 litres of mortar, when mixed with 3.2 litres/bag.

CURING

- Full cure is reached in 28 days after the application at a constant temperature of 23 ºC.

WORKING TIME

- 60 minutes in 20 ºC ambient and substrate temperature.

CLEANING

Tools and mixer must be cleaned immediately after use with water. Cured material can only be removed mechanically.

PACKING

REC TOP 1005 is available in 25 kg bags.

SHELF LIFE

12 months if stored at following mentioned storage conditions.
Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions and clear of the ground on pallets protected from rainfall prior to application.

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