

HYGROSMART® - MAK - FLOW

One-Component, Non-shrink, High Strength, R4 Flowable Mortar for structural concrete repairs and anchoring

DESCRIPTION

HYGROSMART®-MAK-FLOW is a cement based, one component, highly flowable and shrinkage compensated mortar, it is certified according to EN 1504-6 and EN 1504-3 (Class R4).

HYGROSMART®-MAK-FLOW is ideal for structural concrete repairs, precision grouting and anchoring of reinforcement.

COMPLIANCE-CERTIFICATION

The product is **CE** certified according to the European Standard **EN 1504-6** and **EN 1504-3** (Class R4).

RECOMMENDED FOR

- Repair mortar on damaged concrete
- Anchoring
- Bridges, Tunnels, Buildings
- Gas or steam turbines, generators, milling machines
- Stake support
- Filling of imperfections in concrete elements
- For exterior and interior use

FEATURES AND BENEFITS

- High bending and compressive strength (class R4)
- One component, ready to use
- Shrinkage compensated

- Impermeable
- No bleeding of water or segregation
- High flow for full compaction
- Maximum 2.5mm aggregate to improve application and finish

LIMITATIONS/OBSERVATIONS

- Apply only to sound, prepared substrates.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- Do not add water over recommended dosage.
- Do not mix the product with dirty or salty water.
- Avoid application in direct sun and/or strong wind and/or rain.
- The temperature of the grout and elements coming into contact with the grout should be in the range of +10°C to +35°C.
- After casting, **HYGROSMART®-MAK-FLOW** must be cured. The exposed to the air surface of grout should be protected from rapid water evaporation that can cause the formation of surface cracks.

PREPARATION OF MORTAR

Substrate Preparation:

The surface onto which the grout is to be applied should be completely cleaned, so that the aggregate is exposed. The surface must be free from dust, loose material etc. and structurally sound. The edges of the surface to be repaired should be cut vertically to a depth of at least 10 mm. The cavity of the surface to

HYGROSMART® – MAK- FLOW

be repaired should be at least 10 mm thick. Remove the deteriorated concrete or mortar by hand or mechanical methods also ensuring the appropriate surface roughness. The area that is about to be grouted should be soaked with water for 24 hours prior to grouting to minimize localized absorption and assist in the free flow of the grout. Be sure that the surfaces are damp but free of standing water. Clean the reinforcement from rust and any other loose materials or make sure that new bars are added if the existing ones are no longer appropriate. Formwork must be secure to prevent movement during the placing and curing of the grout. Ensure that the area is free of excessive vibration. Shut down adjacent machinery until the grout has hardened.

Mortar Preparation:

Before applying **HYGROSMART®-MAK-FLOW** the substrate should be dampened with water. Also, ensure the mixer is damp but free of standing water. Then add the pre-measured quantity of water (3.5 – 3.75 Kg water per 25kg of grout).

HYGROSMART®-MAK-FLOW (25 Kg) is gradually added under mechanical mixing for at least 5 minutes until desired consistency is achieved.

The product is casted in situ continuously, placing it inside the formwork from one side only to allow air to escape. Hand mixing of the product is not recommended.

APPLICATION

Pour the mixed **HYGROSMART®-MAK-FLOW** into the prepared repair area as soon as it has been mixed to maintain flow properties and no more than 20 mins to benefit from the shrinkage compensating properties. Use lengths of metal strapping in the formwork prior to placing the grout to assist grout flow over large areas and elimination of air pockets. Pour **HYGROSMART®-MAK-FLOW** from one side only in a continual flow to avoid trapping air into the appropriate area. For cold weather working use warm water to raise the mixed grout temperature to >10°C. For warm weather working use cold water to bring the mixed grout temperature to <30°C. **HYGROSMART®-MAK-FLOW** should be placed and compacted by light rodding and tapping of formwork faces only. Mechanical vibration should not be utilized.

CONSUMPTION

Depending on the substrate roughness and thickness of layer applied.

PACKAGING

25 kg Bags. **Color:** Grey powder

STRENGTH DEVELOPMENT

The developed strength depends on many factors such as water addition, mixing, temperature, humidity. The table presented below shows the average strength of **HYGROSMART®-MAK-FLOW** at 25°C, when mixed with 3,5 liters (fluid) per 25kg bag.

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For the measurement of compressive strength and flexural strength, 40 x 40 x 160mm prisms were used.

Days	Compressive strength (N/mm ²)	Flexural strength (N/mm ²)
1 day	≥ 35	≥ 5
7 days	≥ 65	≥ 7
28 days	≥ 75	≥ 8

SHELF LIFE

Can be kept for 12 months in the original unopened bags in dry places and at temperatures of 5-25°C.

SAFETY INFORMATION

Contains cement: May cause skin irritation due to alkaline reaction. Use protective gloves and goggles. The MSDS (Material Safety Data Sheet) is available upon request.

CLEANING

Clean brushes and tools with plenty of water after use. Hardened material can only be removed by mechanical means.

TECHNICAL SPECIFICATIONS

PROPERTY	RESULT
Appearance/Color	Grey Powder
Water requirement	14-15%
Compressive strength (After 28 days)	> 75 MPa (Class R4)
Maximum grain size (mm):	~ 2,5
Density of dry mix (kg/lt)	1,6 ± 0,2
Density of wet mix (kg/lt)	2,3 ± 0,2
Adhesion strength	≥ 2 MPa
Pot life in the pail (at 20°C)	>30 min

Certified quality, environmental and occupational health & safety management systems:
ISO 9001/14001 & ISO 45001.

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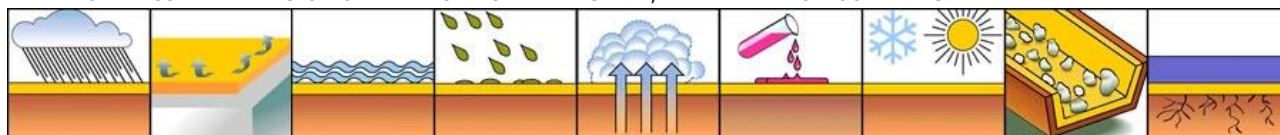
HYGROSMART[®] –MAK- FLOW

Essential characteristics	Performance	Harmonized technical specification
Compressive strength	Class R4	EN 1504-3:2005
Adhesive bond	≥2.0 MPa	
Capillary absorption	≤0,5 kg/m ² .h ^{0,5}	
Chloride ion content	≤0.05%	
Carbonation resistance	Pass	
Thermal compatibility (freeze-thaw cycling)	≥2.0 MPa	
Reaction to fire	Class A1	
Dangerous substances	See SDS	

HYGROSMART® –MAK- FLOW

Essential characteristics	Performance	Harmonized technical specification
Pull-out displacement	$\leq 0.6\text{mm}$ at load 75kN	EN 1504-6:2006
Chloride ion content	$\leq 0.05\%$	
Reaction to fire	Class A1	
Dangerous substances	See SDS	

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