

Technological, structural binder with high chemical resistance (Class AARS) suitable for preparing injection slurries, concrete and self-levelling mortars with hyperfluid rheological properties. Expansive. Superior resistance to sulphates.



KERABUILD® BETON FLU

HIGH FLUIDITY – The KERABUILD® BETON FLU technology ensures filling of micrometric sections with a diffuse and constant injection pressure for the entire duration of consolidation operations. The prolonged rheoplastic behaviour of the paste is obtained by means of hyperfluidifying agents with progressive effect. Pumping of fine-grain concrete and concrete prepared with KERABUILD® BETON FLU is ensured by the superior fluidity and cohesive slide characteristics of the mixtures, also at considerable distances from the site of operation.

GUARANTEED LONG LIFE – The durability of injection slurries, of fine-grain concrete and concrete prepared with KERABUILD® BETON FLU is guaranteed by the high levels of resistance to sulphate attack (Class AARS), by the product's high levels of mechanical resistance and by its proven dimensional stability. The use of silicate micro-particles with pozzolanic action, hyperfluidifying agents for the reduction of the water/cement ratio and interstitial crystallisation agents with expansive effect completes the mix design of KERABUILD® BETON FLU, ensuring superior compactness and monolithic characteristics in slurries and concrete.

STRUCTURAL MECHANICAL RESISTANCE – The KERABUILD® BETON FLU technology develops a degree of compressive strength which ensures static reinforcement and structural re-balancing of works. A mix of high-performance binders provides KERABUILD® BETON FLU with a degree of R_{ck} resistance superior to that of structural concrete.

Developed by the Research and Development Division and guaranteed by the Training Center.
Compliant with the CARE Project for the Protection of Health and the Environment:
Building Division (Method M2 – Action E507).

KERABUILD® BETON FLU

AREAS OF USE

Grouting of:

- prestress cable containment shells
- anchoring rods
- internal cavities on rock or earth
- cracks in concrete, rock and masonry, also in millimetric sections
- rigid structural joints in pre-fabrication

Preparation of fine-grain concrete and structural concrete for:

- underpinning
- self-compacting castings
- reinforcement of beams and pillars with caissoned casting
- shaping and restoration of horizontal wall jointing
- pumping from remote locations

Use

For indoor and outdoor use on concrete, rock, brickwork and stone. Inside prestress shells.

Do not use

On dirty or flaky substrates, for high-thickness patching without composite-action reinforcement. As a fine-grain concrete for low-thickness patching when increasing structural sections (use a technological, structural mortar such as KERABUILD® COLABILE).

PREPARATION OF SUBSTRATES

When creating composite-action patching, besides insertion of the required reinforcement materials the substrate must be perfectly cured, free from hygrometric shrinkage, solid (i.e. free from any weak or easily removable parts), clean, roughened and, when possible, also sanded and hack-hammered until the bare stone is uncovered. Check that the concrete contains no traces of parting compound. Moisten to saturation point the substrates to be restored or reinforced. Use of high pressure washer is always recommended. Remove carbonated areas and clean reinforcement rods to eliminate all traces of rust. Oxidised reinforcement rods must always be freed from any residual traces of old concrete over the entire surface, so as to ensure complete protective restoration of the metal.

Passivation treatment of cleaned, old reinforcement rods must be carried out while the metal is still clean, using KERABUILD® FERRI technical passivating mortar, to be applied with a double pass. In patching work on concrete flooring, create a peripheral dividing line around the area to be treated by mechanical cutting, perpendicular to the surface and to a minimum depth of 30 mm. Insertion of reinforcement meshes or rods must be carried out so as to ensure a minimum metal-covering thickness of 15 mm.

For injections in vertical gaps and cracks, damaged parts should be first of all superficially grouted with the technical, paste-form, epoxy system KERABUILD® EPOADESIVO, inserting injection tubes in the position axially corresponding with the cracks. Always carry out the injection operation working in the bottom-up direction to facilitate the expulsion of air and to ensure continuity of the structural bond. Before injecting the consolidation mortar inside the cracks, weakened parts, cavities or detached segments, it is necessary to saturate the whole internal structure with water, using the same access routes created for the mortar itself.

ABSTRACT

On perfectly cured substrates, free from hygrometric shrinkage, which are solid (i.e. free from any flaky or easily removable parts), clean, roughened, possibly sandblasted or hack-hammered until the bare surface has been exposed, carry out consolidation or restoration of concrete structures with a fine-grain, structural, rheoplastic, fluid, anti-shrinkage concrete, which must also be resistant to chlorides, sulphates and carbonation, be a self-levelling, pumpable product with high mechanical resistance and non-segregation properties, prepared with inert filler with a granulometric interval of _____ and binder such as KERABUILD® BETON FLU manufactured by Kerakoll, for a dosage of kg _____/m³.

Injection of hyperfluid, pumpable slurry, free from exudation and shrinkage, with high mechanical resistance, resistant towards sulphates, chlorides and nitrates, suitable for filling prestress cable containment shells and for the protective containment of tie rods, specifically designed to prevent the phenomenon of stress-corrosion of taut cables such as KERABUILD® BETON FLU manufactured by Kerakoll.

INSTRUCTIONS FOR USE

Preparation

Slurry keys: prepare KERABUILD® BETON FLU by mixing 25 kg of powder with approximately 7 – 5 litres of clean water. The mixture is obtained by pouring the water into a clean container and then gradually adding the powder. The mixing process can be performed in a bucket (working manually or with a mechanical, low-rev agitator) or using a continuous mixer until a homogeneous, lump-free mortar is obtained. It is also possible to use a plaster sprayer to mix and simultaneously pump the product, using a stator-rotor suitable for the required capacity.

Fine-grain concrete / concrete: consult the dosage table below to obtain mortars of different granulometry, workability and mechanical resistance.

Application

In the case of consolidation and grouting, KERABUILD® BETON FLU must be applied by injection, using mechanical pumps with pressure or gravity tanks. When the mortar comes out of the upper injector, injection is stopped, the injector in use is closed and operation is continued with the higher injector. The operation is continued in this manner until the uppermost point of the damaged area is reached. KERABUILD® BETON FLU ensures workability and pumping times with working intervals longer than 1 hour, and does not become segregated inside the pumps also in the presence of working pressure. The product may also be pumped from considerable distances and to high points of discharge, thus allowing for setup of the point of operation at the ground level of the building site and avoiding manual movement of bags and equipment. Fine-grain concrete obtained with KERABUILD® BETON FLU can be easily pumped with worm-screw or piston-type pumping equipment. Fine-grain concrete can also be applied with power-shovel buckets, wheelbarrows or hand buckets with free-fall application, achieving in all cases self-compacting and monolithic castings.

Cleaning

Residual traces of KERABUILD® BETON FLU can be removed from tools with water before the product has hardened.

DOSAGES

	Dosage of KERABUILD BETON FLU kg/m ³					
	500	500	400	400	300	300
Granulometric interval, mm	0 – 5	0 – 5	0 – 14	0 – 14	0 – 30	0 – 30
Water-cement ratio	0.36	0.41	0.36	0.41	0.43	0.50
Slump test UNI 9418 mm	160 – 200	≥ 210	160 – 200	≥ 210	160 – 200	≥ 210
Consistency of mixture UNI 9417	S4 fluid	S5 hyperfluid	S4 fluid	S5 hyperfluid	S4 fluid	S5 hyperfluid
Compressive strength UNI-EN 196/1 – R _{ck}						
- after 24 h	25 MPa	22 MPa	22 MPa	15 MPa	25 MPa	18 MPa
- after 7 gg	54 MPa	50 MPa	46 MPa	44 MPa	40 MPa	35 MPa
- after 28 gg	66 MPa	64 MPa	61 MPa	53 MPa	50 MPa	42 MPa

SPECIAL NOTES

Store the product in places protected against the heat in summer months and against the cold during the winter. Use running water not subject to the influence of outside temperatures.

In the case of pressure injection, maximum pumping pressure must be monitored and automatically checked to impede the formation of over-pressure or hammering inside the structure being worked on.

The most common control systems are:

- application of a pressure gauge connected with a solenoid valve inside electric pumps
- adjustment of outlet air pressure on the pressure tank compressor (system recommended at low pumping pressures on account of its simplicity of use and sensibility of adjustment).

TECHNICAL CHARACTERISTICS

Appearance	Ready-mixed	
Apparent volumetric mass	≈ 1.17 kg/dm ³	UEAtc
Chemical nature	Ferric cement AARS type I	
Granulometric interval	≈ 0 – 500 µm	UNI 10111
CARE	Method M2 – Action E507	
Storage	≈ 12 months in the original packaging in dry environment	
Packaging	Bags 25 kg	

TECHNICAL DATA compliant with Kerakoll Quality Standard

Mixing water	≈ 7.5 l / 1 bag 25 kg	
Fluidity of mixture (Marsh cone):		
- 0 min.	≈ 28 s	ASTM C-939
- 30 min.	≈ 27 s	ASTM C-939
- 60 min.	≈ 28 s	ASTM C-939
Specific weight of the mixture	≥ 2.05 kg/dm ³	UNI 7121
pH of mixture	≥ 12	
Segregation	none	
Exuded water	none	
Pot life	≥ 1 h	
End setting time	≤ 8 h	
Expansion in the plastic phase	≥ 0.5%	
Contrasted expansion	≥ 0.06%	
Temperature range for application	from +5 °C to +35 °C	
Coverage	≈ 1.6 kg/dm ³	

At a temperature of +23 °C, 50% R.H. and no ventilation.

FINAL CHARACTERISTICS

Compressive strength after 24 h	$R_{cm} \geq 25$ MPa	UNI-EN 196/1
Compressive strength after 7 days	$R_{cm} \geq 46$ MPa	UNI-EN 196/1
Compressive strength after 28 days	$R_{cm} \geq 62$ MPa	UNI-EN 196/1
Shear strength after 28 days	≥ 6 MPa	UNI 6132
Resistance to carbonation K	≤ 0.6 mm year ^{-0.5}	Boll.cem 8/88- ICTS/TFB
Resistance to sulphates (expansion)	≤ 0.03%	
Resistance to frost/thaw cycles with de-freezing salts:		
- weight loss after 25 cycles	≤ 0.5 mg/mm ²	RILEM CDC 2/77
- depth of splintering after 25 cycles	≤ 1.5 mm	RILEM CDC 2/77

Values taken at +23 °C, 50% R.H. and no ventilation. Data may vary depending on specific conditions at the building site.

WARNING

- **Product for professional use**
- use at temperatures between +5 °C and +35 °C
- make sure the substrate is not frozen
- protect surfaces from direct sunlight and wind
- do not add different binders or additives to the mixture
- use clean inert materials with continuous granulometric curve
- do not add water to the product during the hardening phase
- do not apply on dirty or loose surfaces
- allow the product to cure, keeping it moistened during the first 24 hours of hardening
- if necessary, ask for the safety data sheet
- for further information please consult the **Kerakoll Worldwide Global Service +39-0536.811.516**

GALLERIA DI CAVALESE

Cavalese, Trento - ITALY

KERABUILD® FERRI

Technological, single-component mortar with continuous, passivating anti-rust action for iron reinforcement rods

KERABUILD® EPOADESIVO

Technological, two-component structural epoxy system in paste form, suitable for high-resistance bonding and grouting on concrete. Thixotropic, water-resistant and acid-resistant

KERABUILD® BETON FLU

Technological, structural binder with high chemical resistance (Class AARS) suitable for preparing injection slurries, concrete and self-levelling mortars

KERABUILD® FINITURA

Technical mortar with BME (Low Elastic Modulus) Technology used to create protective levelling coats on concrete and reinforced concrete. Superior level of resistance to chemical attack



THE KERAKOLL GLOBAL SERVICE

Wherever you are, and whatever your project needs are, you can always rely on the Kerakoll Service: highly-efficient, global customer support matching the high quality of our products.

Technical Service +39-0536.811.516 - Technical assistance in real time

Training Service - Professional training to support our quality

Guarantee Service - A long-lasting warranty

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KERAKOLL QUALITY STANDARD

In all units of the Kerakoll Group, before being considered suitable for production, products undergo stringent testing in accordance with the very high requirements set by the Kerakoll Quality Standard: a process supported by the Centre for Applied Technology which assists the work of researchers with its sophisticated resources and laboratories. At the Kerakoll laboratories the various elements of formulations are carefully analysed to identify and eliminate any factors of weakness by means of simulation of real working conditions in building sites. After the testing cycles, the new products are submitted to the extreme fatigue of the Safety-Test process.



SAFETY, HEALTH AND THE ENVIRONMENT

For an industrial system such as Kerakoll it is vitally important to ensure that human health and the environment are protected. The Kerakoll company policy is to ensure that every possible safeguard be taken to make sure that these factors are always considered, and regulations and specific methods have been developed over the years for this purpose at all levels of the organisation. The CARE Project is the result of the Group's concern for human health and the environment, and ensures that the Group's products are perfectly safe for use and that the building materials supplied to builders ensure a very high level of safety before, during and after their use.

The information given here is based on our technical and practical knowledge. As it is not possible for us to directly check the conditions in your building yards and the execution of the work, this information represents general indications that do not bind our Company in any way. Therefore, it is advisable to perform a preliminary test to verify the suitability of the product for your purposes.

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