



STRUTTURA FLUIDO - FL 170

**MONOCOMPONENT, SUPERFLUID, SHRINKAGE-COMPENSATED
STRUCTURAL MORTAR WITH SYNTHETIC FIBERS, FOR REBAR
ANCHORING, PRECISION CASTING, AND CONCRETE REPAIR.**

COD. FL17-1500
1500 kg big bag



STRUTTURA FLUIDO – FL 170 is a structural grout specifically designed for the anchoring of reinforcement bars and precision anchoring, as well as for thick bonding of metal structures, machinery, prefabricated steel or reinforced concrete elements, wind turbine blades, guardrails, soundproof barriers, etc.

It achieves high mechanical strengths even with short curing times, resulting in excellent adhesion to metal elements and concrete.

It is also suitable for the restoration, repair, thickening, and/or consolidation of concrete and pre-stressed reinforced concrete elements in infrastructure works, including road, railway, civil, industrial, and hydraulic projects.

It is used for interventions on any type of reinforced concrete structure, for horizontal pours or within formwork, for the restoration of significant thicknesses of degraded concrete, or for increasing the cross-section of beams, columns, slabs, etc.

It is applied by pouring in thicknesses greater than 50 mm.



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TECHNICAL CHARACTERISTICS

STRUTTURA FLUIDO - FL 170 achieves its full effectiveness through the proven technology of shrinkage compensation. This technology enables the product to develop a slight expansion, as assessed in accordance with UNI 8148, during the initial curing phase. This property effectively eliminates long-term shrinkage phenomena.

The contrast reinforcement, consisting of a metal or composite mesh securely fixed to the primary reinforcements or directly to the substrate using connectors, plays a crucial role in "storing" the expansion stresses and gradually releasing them over time, preventing the formation of cracks that could compromise the durability and structural effectiveness of the intervention.

INSTRUCTIONS FOR USE

Classification according to UNI-EN 1504-6	Anchoring and embedding concrete
Classification according to UNI-EN 1504-3	Class R4 , type CC
Color	Cement gray
Granulometry	≤ 8,0 mm (EN 12192-1)
Application	Manual or with suitable plastering pump (no continuous cycle plastering machine)
Mixing water	11 - 13 % (2.75 - 3.25 liters per 25 kg bag – 165 - 195 liters per 1500 kg big bag)
Average consumption	21 kg/m ² for each cm of applied thickness
Minimum/maximum thickness per layer	50 mm /100 mm
Application temperature	+ 5 °C / + 35 °C
Pot life of the mixture	60 min at 20°C
Packaging	1,500 kg big bag and 25 km polyethylene paper bags on 1,500 kg pallet
Storage	6 months in big bag and 12 months in original, intact packaging, protected from moisture

PERFORMANCE CHARACTERISTICS

STRUTTURA FLUIDO - FL 170 complies with the performance requirements set by the European standard **EN 1504-6** for anchoring products and those specified in **EN 1504-3** for structural products of class **R4**, type **CC**.

Properties	Value	Test method
Density of hardened product	EN 12190	2.35 kg/l
Chloride ion content	EN 1015-17	< 0,05 %
Bleeding	UNI 8998	Absent
Free expansion in the plastic phase	UNI 8996	1 g > 1%
Expansion controlled in water (Method A)	UNI 8148	> 0,03%
Compressive modulus of elasticity	UNI 6556	29 ± 2 GPa
Adhesion to concrete at 28 days	EN 1542	> 2.0 MPa
Thermal compatibility - Freeze-thaw cycles with de-icing salts - after 50 cycles (measured as adhesion according to EN 1542)	EN 13687-1	> 2.0 MPa
Thermal compatibility - Time cycles (thermal shock) - after 30 cycles (measured as adhesion according to EN 1542)	EN 13687-2	> 2.0 Ma

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Properties	Value	Test method
Thermal compatibility - Dry thermal cycles - after 30 cycles (measured as adhesion according to EN 1542)	EN 13687-4	> 2.0 MPa
Capillary absorption	EN 13057	<0.2 kg/m ² ·h ^{0.5}
Compressive strength at 1, 7, and 28 days	EN 12390-3	> 30/60/70 MPa
Flexural strength at 1, 7, and 28 days	EN 12390-5	6.0/8.0/9.0 MPa
Shear strength of fresh concrete and hardened concrete	UNI EN 12615	8 MPa
Shear strength of hardened concrete and hardened concrete	UNI EN 12615	7.5 MPa
Exposure class	EN 206	X0-XC1-XC2-XC3-XC4-XD1-XD2-XD3-XS1-XS2-XS3-XA1
Resistance to accelerated carbonation	EN 13295	Test passed
Pull-out resistance of reinforcement bars – displacement value at 75 kN – wet concrete	EN 1881	< 0.4 mm
Pull-out resistance of reinforcement bars – displacement value at 75 kN – dry concrete	EN 1881	≤ 0.4 mm
Reaction to fire	EN 1504-3	Class A1

METHODS OF USE

STRUTTURA FLUIDO - FL 170 must always be applied inside formwork, on a solid, clean, macroscopically roughened support, saturated with water, free of stagnation and substances that could compromise adhesion, in the presence of new or existing metal reinforcement.

Filling spaces beneath plates securely anchored using pre-installed anchor bolts can be performed without the need for contrast reinforcement.

The allowable temperatures for application, referring to the product, the environment, and the substrate, range between +5°C and +35°C.

PREPARATION OF THE SUBSTRATE

- Remove the degraded concrete using hydrodemolition or careful mechanical chiseling, until reaching the sound and compact layer. In conditions of particularly severe environmental exposure, it may be necessary to remove layers of concrete that are still resistant but have been carbonated or contaminated with chlorides and are no longer able to protect the reinforcements from corrosion.
- Clean the exposed reinforcement of any traces of rust by sandblasting or using a wire brush, ensuring that there is sufficient space between the bars and the substrate for the subsequent application of the mortar.
- Perform a thorough pressure washing of the surfaces, ensuring they are completely free from dust and any loose or detached material.
- Treat the exposed reinforcement by applying, in two coats with a brush, the specific passivator with corrosion inhibitors **INTEGRA FERRO - FR 718**.
- Position any additional reinforcement, securely connected to the primary reinforcement or directly to the substrate using mechanical connectors or chemical anchors from the **INTEGRA FIXA** line, and the contrast reinforcement for expansion if the application thickness requires it.
- Position the formwork, made non-absorbent with water or an appropriate form release treatment, ensuring a perfect seal and the correct spacing for the subsequent application of the mortar.
- Before laying the product, perform a final pressure wash of the surfaces to ensure they are fully saturated with water, removing any standing water with compressed air jets.

MIXING

STRUTTURA FLUIDO - FL 170 must be thoroughly mixed before application.

The product is not suitable for use with continuous-cycle plastering machines or those equipped with instantaneous mixing during transport.

- Introduce the minimum required amount of mixing water into the concrete mixer, truck mixer, or the mixing compartment of the plastering machine, which is 2.75 liters per 25 kg bag or 165 liters per 1500 kg big bag. Add any aggregates, if required, and then the product. Continue mixing for several minutes after a homogeneous, lump-free, and sufficiently workable, mixture is obtained. Add any remaining water without exceeding the maximum dosage of 3.25 liters per 25 kg bag or 195 liters per 1500 kg big bag.

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- For small quantities, never less than full bags, preparation can be done using a mixer with a low-speed whisk
- Always avoid manual mixing.
- When applying the product at temperatures close to the allowable limits, pay particular attention to the mixing water temperature, which should not be excessively hot in summer or excessively cold in winter.

APPLICATION AND SMOOTHING

- Ensure the continuous filling of the formwork, preferably from one side, to facilitate the proper filling of cavities and prevent the formation of voids, until the predetermined level is reached.
- When planning the work phases, consider that at a temperature of 20 °C the product maintains workability for about 60 minutes, which decreases in hot weather and increases in cold weather.
- The optional addition of **INTEGRA SPECIAL GH 1020** aggregate, recommended for large pours with thicknesses starting from 100 mm, does not alter the workability time.
- For applications in environmental conditions close to the allowable limits, apply the product during time slots with ascending temperatures in winter and descending temperatures in summer.
- To facilitate the filling of narrow or intricate spaces, the mortars can be guided into place using rods, strips, chains, or by applying gentle external vibration.

CURING

After setting and until full hardening is achieved, protect the application by covering the surface with a damp cloth or a polyethylene sheet, or by spraying a fine mist of water at regular intervals. For application within formwork, it is recommended not to expose the cast to the environment until it has cooled down completely.

FINISHING

Upon completion of the intervention, it is possible to apply the most suitable protective treatment for the specific environmental exposure, selected from those available in the **PROTECTION** line.

COMPLIANCE

STRUTTURA FLUIDO – FL 170 fully complies with the performance requirements set by the European standard EN 1504-6 for anchoring products and EN 1504-3 for structural mortars of class R4, type CC (EN 1504-1) under the 2+ accreditation system (AVCP), certified as 0925-CPR-ch n°3/2020.

Additional features and performance characteristics make **STRUTTURA FLUIDO – FL 170** compliant with the specifications outlined in major public and private contracts for the restoration and maintenance of infrastructure.

For verification of further compliances, please contact our Technical Department.

WARNINGS

- Do not apply at temperatures below +5 °C or above +35 °C.
- Do not apply on substrates at risk of freezing within the next 24 hours.
- Do not remix the mixture if the product is in the process of hardening, as this may compromise its characteristics.
- Do not apply on gypsum supports, inconsistent or crumbling substrates.
- Do not apply on surfaces that have not been roughened or without reinforcement.
- Do not apply in case of strong winds or excessive direct sunlight.
- Do not apply on large surfaces without providing construction joints.
- Do not use in thicknesses other than those indicated.

SAFETY INSTRUCTIONS

PRODUCT FOR PROFESSIONAL USE

During handling and application, wear protective clothing and gloves, safety goggles, and dust masks. In case of skin contact, wash with soap and water. In case of eye contact, rinse immediately with water and seek medical attention if irritation persists.

For safety information and for the use and storage of the product, the user must refer to the latest Safety Data Sheet.

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SPECIFICATION VOICE

STRUTTURA FLUIDO - FL 170, a compensated shrinkage concrete, reinforced with synthetic fibers, highly fluid, and designed for high durability. It is ideal for precision embedding and anchoring of metal structures, machinery, prefabricated steel and reinforced concrete elements, as well as for the restoration and repair of concrete components.

STRUTTURA FLUIDO - FL 170 fully meets the performance requirements set by the European standard **EN 1504-6** for anchoring products and **EN 1504-3** for structural mortars of class **R4**, type **CC** (EN 1504-1). It is certified under the 2+ accreditation system (AVCP), with certification 0925-CPR-ch n°3/2020.

Applied by pouring or using suitable pumps, in the presence of appropriate reinforcements and on macroscopically roughened substrates, for pours with thicknesses between 50 and 100 mm. For greater thicknesses, it is recommended to integrate with coarse aggregate > 10 mm to control hydration heat.

For further information on specifications, cost analysis, construction details, and maintenance plans, please contact the Technical Department of Fibre Net SpA.

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