Torggler

FLEX 1K

Single-component, flexible, fibre-reinforced, waterproofing cementitious mortar, which can be reinforced with fibreglass mesh, for flexible waterproofing and protective smoothing of cementitious substrates.

- New improved formula with new generation fibres
- Excellent workability and easy to apply
- Excellent adhesion to the substrate
- Waterproof even under pressure
- Resistant to frost-thaw cycles
- UV Resistant

FEATURES

Flex 1K is a grey, ready-to-use, single-component, cementitious mortar, with selected fine-grained aggregates, special highly flexible acrylic polymers, specific fibres and additives. A mixture having excellent workability is obtained after mixing with water. It can be easily applied with a trowel, even vertically without dripping and scraps, with excellent adhesion to the substrate. It is featured by high flexibility that allows it to withstand cracks greater than 0.75 mm in the substrate. It is resistant to frost-thaw cycles and thawing salts, and has excellent resistance to the spread of CO_2. It keeps good elasticity even at low temperatures. The product is certified by GEV as EC1 Plus for its very low emissions of volatile organic compounds.

APPLICATION AREA

- Flexible waterproofing of external and internal surface areas, underground and above ground, of cementitious supports and masonry.
- Flexible waterproof skimming of micro-cracked plasters.
- Waterproofing of tanks and water containers in cracked concrete.
- Renovation and waterproofing under ceramic covering of balconies and terraces having medium surface.

IN COMPLIANCE WITH
CM P
EN 14891

GEV-EMICODE EC 1 PLUS very low emission

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TYPES OF SUBSTRATE

- Prefabricated and cast concrete
- Cured cement screeds*
- Cementitious mortars
- Cementitious plasters

* The screeds on which the product can be applied must be sufficiently compact, homogeneous and flat, and must be suitable for treatment with thin-layer coatings and waterproofing, with mechanical strength appropriate to the intended use and reasonably with values in terms of tear resistance in the order of 1 N/mm².

ACHIEVABLE THICKNESSES

Overall thickness 2 mm

WARNINGS

- Never mix Flex 1K with other binders such as cement, hydraulic lime, gypsum, etc.
- Do not further dilute with water when the mixture is firm.
- Stop using the mixed product when it is firm, so take care to prepare each time a quantity of mixture that can be applied within its workability time.
- Never apply Flex 1K in greater thickness.
- Do not use Flex 1K for large surfaces; in this case use Flex 2K.
- Do not use Flex 1K in the case of cementitious substrates and screeds completely impregnated with water or subject to continuous water and humidity.
- Do not apply the product on substrates with a residual moisture content of more than 5%.
- Do not apply Flex 1K at temperatures below +5 °C or above +30 °C.
- Protect against runoff, rain and night-time condensation between the coats, and at least 24 hours after the application.
- In dry climatic conditions, in the presence of direct sunlight, with high temperatures and ventilation, protect the surface from too rapid evaporation of the mixing water for at least 24 hours, using drop cloths.

WAITING TIMES

Waiting time between coats: 4 to 6 hours depending on the porosity of the substrate and environmental conditions. Waiting time before commissioning: at least 7 days.

CONSUMPTION

The consumption of Flex 1K is approx. 1.4 kg/m² each mm of thickness. The total requirement for a minimum total thickness of 2 mm is 2.8-3.0 kg/m².

STORAGE

Flex 1K stored in a dry and repaired environment in the original closed bags will keep for at least 12 months.

PACKAGING

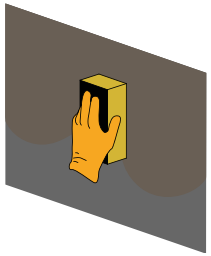
25 kg valve bags

CERTIFICATIONS

The UV resistance is documented by test reports 417/09 and 419/09 issued by Elletipi S.r.l, of Ferrara, available on request.

CLASSIFICATION LEGEND ACCORDING TO EN 14891
TYPES
CM = Waterproofing product for liquid cementitious modified-polymer application
DM = Waterproofing product for liquid dispersion application
RM = Waterproofing product for liquid application based on reactive resins
CLASSES
01 = Waterproofing product applied liquid with crack bridging capacity at -5 °C
02 = Waterproofing product applied liquid with crack bridging capacity at -20 °C
P = Waterproofing product applied liquid resistant

INSTRUCTIONS FOR USE

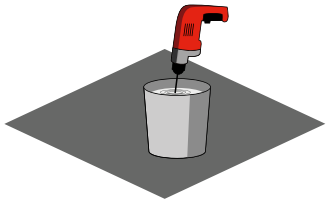


PREPARATION FOR USE

Substrates must be damp, solid and regular but sufficiently roughened, clean and sound, free of oil and grease, dust, crumbly material and dirt in general, and free of residues of paint film, and must be suitably cured and free of significant shrinkage. In case of efflorescence these must be carefully removed on the surface by mechanical cleaning. Imperfections and surface irregularities such as gravel nests, eroded or deteriorated points, spacer holes in the reinforcement formworks, must be repaired beforehand and evened out with a suitable mortar, e.g. Umafix, Rinnova or Monorasante. Where possible, round off the floor-wall connections in a concave ("shell") shape. Just moisten the surface to be waterproofed, taking care to remove any film of surface water with a dry sponge.

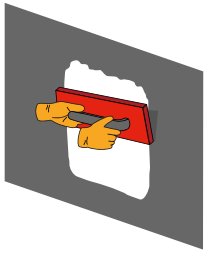
PRODUCT PREPARATION

Mix Flex 1K with 14-16% clean water (equal to 3.50-4.00 litres for each 25 kg bag). It is recommended to prepare the mixture in the following way: in a special container pour all the mixture water, then pour the powder product slowly stirring at the same time the mixture being forming using a mechanical stirrer (low-speed drill with a specific propeller). Once all the powder has been poured, stir until the mixture is homogeneous and free of lumps, taking particular care to remove lumps of unmixed material from the walls and bottom of the container. Allow to stand for approx. 10 minutes, then mix briefly and if necessary correct the consistency with a small addition of water. The mix thus prepared remains workable for about 1 hour under normal conditions (at 20 °C); at higher temperatures the workability time is shortened, at lower temperatures the workability time is extended.



INSTRUCTIONS FOR APPLICATION

Apply the product in two coats with an American trowel, in a maximum thickness of 2 mm each coat, waiting between one coat and the other long enough to allow the previous coat to harden (about 4 to 6 hours at 20 °C). In case of application on micro-cracked substrates, in waterproofing of tanks and water containers, and in all outdoor applications, it is recommended to always bury in the first coat, still fresh, an alkali-resistant fiberglass or synthetic mesh, with basis weight not less than 150 g/m² and sufficiently pre-treated to ensure a good adhesion between the polymer-cement matrix and the mesh. In the presence of pre-existing perimeter joints, expansion joints or connection joints, apply the appropriate coats of Flex 1K applied to the edges and first millimetres of the sides of the joint, avoiding clogging, possibly with the help of a polystyrene and/or polyurethane strip. After sufficient hardening of the last coat of the waterproofer, remove the strip, clean and remove the residues, if any, from the joint and then seal it, after filling the gaps, with Silicone Low Modulus.



It is advisable and, in cases of highly stressed joints and/or in situations where adhesion may be critical, it is necessary to primer the sides of the joint with Silicone Primer, before applying the sealant, in order to guarantee maximum performance in terms of mechanical seal and waterproofing of the system.
Particular attention must be paid to waterproofing at corners and/or floor-wall connections if these, even in the absence of expansion joints, are characterised by a certain mobility; in this case, before applying the various coats of Flex 1K, it is necessary to install Self-adhesive Perimeter Tape on top and along the line at the connection.
The area adjacent to the connecting line must be sufficiently regular and uniform to ensure adequate positioning and correct adhesion of the self-adhesive tape; if this is not possible, the area should first be regularised with other mortars and/or skimming such as Rinnova, Monorasante, Multifinish or Mastofix, opting for the most suitable product according to the nature and condition of the substrate, the level of irregularity and the mechanical strength guaranteed by it. The surface waterproofed with Flex 1K, while having good mechanical resistance, is not suitable to withstand the continuous traffic of people and vehicles and its impact resistance is limited, so if it is to be walked on, it must be suitably protected with a ceramic coating or other protective flooring.
On the surface waterproofed with Flex 1K and hardened for at least 7 days, ceramic floor and/or wall tiles can be bonded with Tile 900, Tile 700, Tile 500, Tile 480, Tile 450, Tile 350, Tile 250 or with Tile 50 mixed with Flex. When installing ceramic floor and wall tiles, respect pre-existing expansion joints. In case of doubt about the most appropriate type of adhesive, contact the Technical Department of Torggler S.p.A. In the case of subsequent processing, contact the Technical Department of Torggler Chimica S.p.A. The tools used for laying can be cleaned with water before the mortar hardens; afterwards cleaning can be carried out only by mechanical removal.

TECHNICAL SPECIFICATIONS

POWDER PRODUCT VARIATIONS	
Colour	grey
Consistency	powder
Bulk density (according to MIT 13)*	1.15 kg/l
Particle size (according to MIT 10)*	0 – 0.5 mm
FRESH MIXTURE VARIATIONS	
Mixing water	14-16 % equal to 3.50-4.00 l each 25 kg bag
Mixing water to obtain a consistency of 21 cm (according to MIT 042)*	14.0 % equal to 3.75 l each 25 kg bag
Mixture consistency:	plastic - workable with trowel
Fresh mixture density	1.650 kg/l
Mixture workability time:	approx. 1 hour under normal conditions (at +20 °C)
Waiting time between coats:	4 to 6 hours depending on the porosity of the substrate and the environmental conditions.
Full curing time:	28 days
Application temperature:	+5 °C to +30 °C
HARDENED PRODUCT VARIATIONS	
Operating temperature:	-20 °C to +90 °C
Tear resistance - direct traction adhesion (according to DIN 24624)**	0.8 N/mm²
Tensile strength at 23°C and 50% r.h. (according to DIN 53455) - after 28 days:	0.70 N/mm²
Tensile strength - 7 days at 23 °C and 50% r.h. + 21 days Immersion in water (according to DIN 53455) - after 28 days:	0.30 N/mm²
Elongation % at break at 23 °C and 50% r.h. (according to DIN 53455) - after 28 days:	20.0 %
Elongation % at break - 7 days at 23 °C and 50% r.h. + 21 days immersion in water (according to DIN 53455) - after 28 days:	7.0 %
Percentage reduction of elongation at break after 2000 hours of UV exposure (according to EN 1062-11)	0 %
Change in appearance after 2000 hours of UV exposure (according to EN 1062-11)	No bubble formation or cracking, no exfoliation. Exposed area colour variation.
Water vapour permeability μ (according to EN 1015-19):	270
Waterproofing (according to DIN 1048)** - 28 days at 1.5 bar positive hydrostatic pressure: - maximum load under positive hydrostatic pressure: - maximum load under negative hydrostatic pressure:	resists 3 bars 0.5 bars

HARDENED PRODUCT VARIATIONS (EN 14891)	VALUES	REQUIREMENTS
Adhesion by initial traction*** (EN 14891 A.6.2)	1.5 N/mm²	⩾ 0.5 N/mm²
Tensile adhesion after immersion in water*** (EN 14891 A.6.4)	0.8 N/mm²	⩾ 0.5 N/mm²
Tensile adhesion after exposure to heat*** (EN 14891 A.6.5)	2.0 N/mm²	⩾ 0.5 N/mm²
Tensile adhesion after freeze-thaw cycles*** (EN 14891 A.6.6)	0.8 N/mm²	⩾ 0.5 N/mm²
Tensile adhesion after immersion in lime water*** (EN 14891 A.6.9)	1.0 N/mm²	⩾ 0.5 N/mm²
Waterproofing according to EN 14891 A.7	no penetration, weight increase 5 g	no penetration, weight increase ⩽ 20 g
Crack bridging ability under standard conditions: (EN 14891 A.8.2)	> 0.75 N/mm²	⩾ 0.75 N/mm²
Tensile strength after immersion in chlorinated water*** (EN 14891 A.6.8)	1.0 N/mm²	⩾ 0.75 N/mm²
Certification (EN 14891)	CM P	

* Torggler's Internal Methods (MIT) are available on request.
** According to the specifications, the parameters have been determined with the amount of water required to obtain a consistency of 21 ± 1 cm (consistency workable with trowel).
*** Values obtained with cementitious adhesive type C2 according to EN 12004 (Tile 700 + Flex diluted 1:1)

The information contained in this brochure is, to the best of our knowledge, exact and accurate, but every recommendation and suggestion given is without any guarantee, since the conditions of use are not under our direct control. In case of doubt, it is always advisable to make preliminary tests and/or ask for the intervention of our technicians. Torggler Chimica S.p.A. reserves the right to modify, replace and/or delete the items, as well as to change the product data in this document without prior notice; in this case the indications given here may no longer be valid. This printed document replaces the previous one.
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