POWERFLEX K50

HIGH-PERFORMANCE, DEFORMABLE, WHITE OR GREY CEMENTITIOUS ADHESIVE WITH ZERO VERTICAL SLIP AND EXTENDED OPEN TIME, PARTICULARLY SUITED FOR LAYING LARGE-FORMAT PORCELAIN STONEWARE TILES AND NATURAL STONE. IDEAL FOR OVERLAYS AND UNDERFLOOR HEATING

DESCRIPTION

A white or grey Portland cement-based powder adhesive, whose inert fillers with selected particle size and specific organic additives offer the product excellent water retention features, high deformation ability and non-slip properties. When mixed with water, the product creates a mortar with excellent application properties and extended open time. The product hardens without noticeable shrinkage, creating perfect adhesion between ceramic tiles and substrates commonly used in the building sector.

ADVANTAGES

• Made with very low volatile organic chemical emissions (VOC), conforms to Class A+ (French Regulations).
• Single component, deformable product (class S1 as per EN 12002).
• Maintains excellent workability over time, without any bothersome thickening.
• The special additives offer the product a very creamy texture and facilitate application using a notched trowel.
• The adhesive mortar features excellent thixotropy, allowing ceramics and mosaics to be laid on walls without the need for plastic spacers.

EN 12004 and EN 12002 CLASSIFICATION

Powerflex K50 is a high-performance cementitious adhesive with zero vertical slip, class C2TE extended open time as per EN 12004 and class S1 deformation ability as per EN 12002, for interior and exterior floor and wall ceramic tiling. The product complies with EN 12004 standards reported in the CPR-IT016G (grey) and CPR-IT016B (white) Performance Declarations, as per the European Construction Products Regulation No: 305/2011/EU) and tested by a European body notified as per certification system 3.

PACKAGING

20 kg bags - Standard pallet 1200 kg.

INTENDED USE

Ideal for laying any type of ceramic tiles or natural stones which are resistant to humidity and not subject to efflorescence or staining, indoors and outdoors on flooring and walls. Particularly suited to laying large-format porcelain stoneware tiles with a maximum thickness of 5 mm. Thanks to the high polymer resin content, the product can be used on heated floors and for overlays. The product also features excellent thixotropy which makes it suitable for laying tiles on walls without them slipping and eliminating the need for spacers. The product can also be used for spot-bonding polystyrene, extruded polystyrene, cork and mineral wool insulating panels. Powerflex K50 can be used for laying any type of ceramic tiles and natural stone which are resistant to humidity in the following places.

Interior floors in residential and public/commercial buildings (pedestrian areas)	
Substrates	**Longest allowable tile side (cm)**
Cement-based or Litocem/Litocem Pronto-based screeds without heating	> 120
Cement-based or Litocem/Litocem Pronto-based screeds with heating	≤ 120
Sulphate-based (anhydrite) screeds without heating (1)	> 120
Sulphate-based (anhydrite) screeds with heating (1)	≤ 120
Cast-in-place concrete (2)	> 120
Pre-cast concrete	≤ 60
Pre-existing substrates made of tiles, mosaics, stone, agglomerate floors (3)	≤ 120
Pre-existing substrates with organic adhesive residue (4)	≤ 120
Substrates treated with Litoproof	≤ 120
Substrates treated with Hidroflex, Aquamaster, Elastocem, Coverflex	≤ 120

Interior floors in public/commercial and industrial buildings bearing heavy loads	
Substrates	**Longest allowable tile side (cm)**
Cement-based or Litocem/Litocem Pronto-based screeds without heating	≤ 120
Cast-in-place concrete (2)	> 120
Pre-cast concrete	≤ 60
Pre-existing substrates made of tiles, mosaics, stone, agglomerate floors (3)	≤ 120
Pre-existing substrates with organic adhesive residue (4)	≤ 120
Substrates treated with Litoproof	≤ 120
Substrates treated with Hidroflex, Aquamaster, Elastocem, Coverflex	≤ 120

Interior walls in residential, public/commercial and industrial buildings

Substrates	Longest allowable tile side (cm)
Lime/cement-based render	> 120
Gypsum-based render (1)	> 120
Cast-in-place concrete (2)	> 120
Pre-cast concrete	> 120
Pre-existing substrates made of old tiles, mosaics, stone (3)	≤ 120
Substrates treated with Litoproof	≤ 120
Substrates treated with Hidroflex, Aquamaster, Elastocem, Coverflex	≤ 120
Fibre cement and cement-based panels	≤ 120
Waterproof and non-waterproof gypsum boards (5)	≤ 90
Elements in autoclaved aerated concrete (6)	≤ 90
Thermal insulated and soundproof panels - Lightweight panels	≤ 90

Exterior floors in residential, public/commercial and industrial buildings	
Substrates	**Longest allowable tile side (cm)**
Cement-based or Litocem/Litocem Pronto-based screeds without heating	≤ 120
Cast-in-place concrete (2)	≤ 120
Pre-cast concrete	≤ 60
Pre-existing substrates made of tiles, mosaics, stone, agglomerate floors (3)	≤ 120
Substrates waterproofed with Aquamaster, Elastocem, Coverflex	≤ 120
Substrates waterproofed with resins treated with dry-shake quartz topping	≤ 120

Exterior walls	
Substrates	**Longest allowable tile side (cm)**
Lime/cement-based render	≤ 90
Cast-in-place concrete (2)	≤ 90
Pre-cast concrete	≤ 90
Pre-existing substrates made of tiles, mosaics, stone, agglomerate floors (3)	≤ 30
Substrates treated with Aquamaster, Elastocem, Coverflex	≤ 90
Fibre cement panels	≤ 60

Key
(1) After treatment with Primer C or Primer X94. Maximum humidity = 0.5%
(2) Curing time: minimum 6 months.
(3) After cleaning and degreasing with a water and caustic soda solution.
(4) After treatment with Prepara Fondo (adhesion promoter primer).
(5) After treatment with Primer C or Primer X94 in the case of non-waterproof gypsum boards.
(6) After treatment with Primer X94.

INSTALLATION PLANNING

The only way to guarantee the long-lasting performance of ceramic installations is to properly plan the process. We, therefore, recommend that national regulations currently in force in each country be carefully read, for example UNI 11493:2013 for Italy, which provides all necessary instructions regarding the choice of materials, correct planning, use and installation, so as to ensure all quality, performance and durability standards are safely met. When laying large tiles or low thickness laminated porcelain stone slabs, we recommend paragraphs 7.13.8 and 7.13.9 of regulation UNI 11493 be carefully read. Moreover, certain producers of thin slabs provide installation manuals indicating the adhesive classes that need to be used depending on the size, characteristics and intended use of the slabs.

Some of the general precautions that need to be followed are listed below as an example.

Substrates - Before installation, check that the substrates are clean, free of loose fragments, properly dried and cured, flat and level, and that mechanical resistance requirements based on the intended tiling use have been met.

Worksite conditions - Check the suitability of temperature, humidity, light conditions etc. at the time of the product's application.

Materials - Check that all materials used for tiling (ceramic materials,

levelling systems, adhesives, grouts, waterproofing products, etc.) are suitable for the intended use and have been correctly stored.

Expansion joints - Check that elastic perimeter seals, expansion joints, divider and structural joints have been properly designed and prepared. Divider joints are normally needed for 20/25 m^2 sections in interiors, and 9 m^2 sections in exteriors. For exteriors, make sure joints are properly waterproofed and sealed.

Back-buttering - For exterior installations, large tiles, floors with intense or heavy traffic, vibrating supports and situations exposed to high temperature fluctuations, the adhesive mortar must be applied to both the substrate and the back of the tiles so as to obtain a full layer of adhesive without any air pockets.

Joints - In any type of ceramic tiling, suitably sized joints must be developed based on the following parameters:

- type, format and size tolerance of tiles;
- thermal expansion coefficients of the tiling materials being used;
- mechanical properties of installation materials;
- position and trajectory of joints;
- mechanical properties of substrate;
- environment of use and expected operating conditions.

Butt joints are not allowed. Any plastic spacers must be removed before grouting.

MIX RATIO

POWERFLEX K50 20 kg. (1 bag) – **WATER** 5.8 l (29%)

MIX PREPARATION

Pour the right quantity of water into a clean container and slowly add the powder, stirring with an electric drill fitted with a mixing paddle until obtaining a smooth and consistent mix without any lumps. Leave the mix to settle for about 5 minutes and then briefly mix again for a few seconds.

APPLICATION

Spread the mix onto the substrate using the smooth part of the trowel to create a layer approximately 1 mm thick. Immediately afterwards, comb the product onto the surface using the notched part of the trowel. The trowel notch size will depend on the size of the tiles. In any case, consider that 65-70% of the reverse side of tiles needs to be covered for interior installations, and 100% for exterior installations or floors subject to intense traffic. In exterior installations, areas subject to high stress, or the installation of low thickness laminated porcelain stone slabs, it is recommended to also apply the adhesive on the back of the tiles (back-buttering method).

The tiles are laid on the adhesive and firmly pressed to ensure good contact. The product's open time in normal temperature and humidity conditions is 30 minutes. In very warm or windy climates, or in the case of particularly absorbent substrates, the open time may be drastically reduced to just a few minutes. It is, therefore, recommended to regularly check that the adhesive has not skinned over. In this case, the surface of the adhesive will need to be combed again using the notched trowel. The joints between laid tiles must be of a suitable width. Take account of any expansion, perimeter, control or structural joints. The tiled surface must be protected for at least 24 hours against any water infiltration, and for approximately 5-7 days against any frost and direct sunlight. In the case of mosaics mounted on adhesive paper or film, this must be removed at least 24 hours after installation once the adhesive has sufficiently hardened, to prevent the detachment of the tiles.

GROUTING

Joints can be grouted after approximately 6-8 hours in the case of wall tiles and after 24 hours in the case of floor tiles. For grouting, cement-based grouts can be used, such as Litochrom 0-2, Litochrom 1-6 and Litochrom 3-15, or water-based polyurethane grouts, such as Monomix or two-component epoxy mortars, such as Epoxystuk X90 or Starlike®.

WARNINGS

- Do not add lime, cement or other foreign materials to the product.
- Apply the product at temperatures between +5°C and +35°C.
- Always respect the mix ratio.
- For exterior wall installations, where tiled surfaces are characterised by a significant vertical slip (> 3m) subject to high levels of tension in expansion joints due to the variations in air temperature and relative humidity and considering the safety risks posed by any eventual detachments, it is recommended to consult the Litokol S.p.A technical help service in order to precisely define the safest type of installation.
- Do not apply the product directly to plastic, elastic, wooden, metal materials or resin-treated surfaces without dry-shake quartz topping. In these cases, treat the substrates first with the single-component, adhesion promoter Prepara Fondo.
- Do not use the product to lay natural stones which are subject to deformations, efflorescence or staining.
- Do not use the product to lay resin composite materials.
- Do not use the product to create layers more than 5 mm thick.
- Do not use the product on floors that need to quickly set for light foot traffic.
- Do not use the product for applications not stated in this technical sheet
- If in doubt, contact the Litokol S.p.A technical help service.

SAFETY INFORMATION

Consult the product safety data sheet, available on request.

PRODUCT FOR PROFESSIONAL USE

ITEM SPECIFICATION

Ceramic wall and floor tiles, including large-format tiles and humidity-resistant natural stone, will be laid using an improved cementitious adhesive for zero vertical slip and extended open time that is Class C1 compliant with EN 12004 standard and has Class S1 deformation ability as per EN 12002, such as Powerflex K50 by Litokol S.p.A.

IDENTIFICATION DATA	
Appearance	Powder
Colour	White - Grey
Classification as per EN 12004	C2TE – Improved cementitious adhesive with extended open time and zero vertical slip.
Classification as per EN 12002	Class S1 deformable adhesive
Customs code	3824 5090
Shelf life	12 months in original packaging when stored in a dry place

APPLICATION DATA	
Mixing ratios	Water = 29% (5.8 litres of water per 20kg bag)
Mixing time	5 minutes
Mix consistency	Very creamy
Pot life	Over 8 hours
Application temperatures allowed	From +5°C to +35°C
Open time (EN 1346)	≥ 0.5 N/mm^2 after 30 minutes
Maximum application thickness	5 mm
Adjustability time	Approx. 40 minutes
Consumption	6 mm trowel: 2.5 kg/m^2 10 mm trowel: 4 kg/m^2 Back-buttering: 5.5 kg/m^2
Walk on time	24 hours
Ready for use	14 days
Ready for grouting	Floors: approx. 24 hours Walls: approx. 6 - 8 hours

PERFORMANCE	
Adhesion after 28 days (EN 1348)	≥ 1 N/mm²
Adhesion after water immersion (EN 1348)	≥ 1 N/mm²
Adhesion after heat action (EN 1348)	≥ 1 N/mm²
Adhesion after freeze/thaw cycles (EN 1348)	≥ 1 N/mm²
Transverse deformation (UNI EN 12002)	≥ 2.5 mm
Temperature of use	From – 30°C to +90°C
Resistance to acids	No
Resistance to alkalis	Good

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