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# Hyperflex K100

## Technical specifications

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**HIGH-PERFORMANCE, HIGHLY DEFORMABLE CEMENTITIOUS ADHESIVE WITH NO VERTICAL SLIP AND LONG OPEN TIME FOR THE INSTALLATION OF CERAMIC AND PORCELAIN TILES, PORCELAIN STONEWARE, LARGE SLABS, MOSAICS AND NATURAL STONES ON INTERIOR AND EXTERIOR WALLS AND FLOORS. PRODUCT WITH VERY LOW VOLATILE ORGANIC COMPOUND EMISSION RATE.**

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### Product description

- Ideal for the installation of large tiles even with fibre-reinforced backing, including overlaying and wall coverings
- Versatile product. Can also be used on underfloor heating and over existing ceramic and porcelain tiles
- Allows the installation of ceramic, porcelain and mosaic wall coverings without the need for plastic spacers
- Suitable for installation on heating screeds
- Suitable for overlaying on existing flooring
- Suitable for interior and exterior floor and wall applications, even in severe operating conditions
- Single component highly deformable product (class S2 according to EN 12002)
- Maintains excellent workability over time, without any bothersome thickening
- The special additives give the product a very fluid texture and facilitate application using a notched trowel
- The Dust Reduction function applied to the product allows a drastic reduction in the amount of dust produced during mixing with water, thus improving the working conditions of installers
- The super white colour enhances the shades of vitreous mosaics
- Its low specific gravity allows a 15% higher yield with respect to traditional cementitious adhesives in class C2
- Product with high deformation and excellent water-resistance properties
- Product with very low volatile organic compound (VOC) emission rate. Compliant with class EC1<sup>PLUS</sup> according to the EMICODE protocol and

## PACKAGES

20 kg bags - 1,200 kg standard pallet

## INTENDED USE

### Installation environments

Interiors - exteriors  
 Floors and walls  
 Underfloor heating  
 Façades  
 Overlaying  
 Terraces and balconies  
 Residential, public, commercial building  
 Ceilings  
 Tanks, swimming pools, fountains  
 SPA and Hammam  
 Indoor wet areas (bathrooms, shower enclosures)  
 Industrial floors  
 Skim coat

### Suitable materials

Ceramic and porcelain tiles  
 Thin laminated stoneware slabs  
 Recomposed stone made with resin or cement  
 Terracotta - Clinker  
 Marble – Granite – Stone  
 Natural stones  
 Slabs 320x160 cm  
 Large sizes  
 Porcelain stoneware  
 Single fired  
 Double fired  
 Slabs with resin backing

### Suitable substrates

Cement screeds  
 Self-levellers  
 Skim coats  
 Existing tiles  
 Waterproofing systems  
 Underfloor heating systems  
 Concrete  
 Gypsum  
 Fibre cement slabs  
 Gypsum and anhydrite  
 Aerated concrete  
 Plasters  
 Insulating panels  
 Lightweight panels  
 Separation membrane

**For example, it can also be used to install suitable materials in the following areas:**

#### Interior floors in residential and public/commercial buildings (walking areas)

Substrates	Longest allowable tile side (cm)
Cement or Litocem/Litocem Pronto-based non-heating screeds	any
Cement or Litocem/Litocem Pronto-based heating screeds	any
Sulphate-based (anhydrite) screed without heating (1)	any
Sulphate-based (anhydrite) screed with heating (1)	any
Cast-in-place concrete (2)	any
Pre-cast concrete	up to 120
Pre-existing tiled, mosaic, stone, marble tile substrates (3)	any
Pre-existing substrates with organic adhesive residue (4)	any
Substrates waterproofed with Hidroflex, Aquamaster, Elastocem, Coverflex, Litoproof Plus	any
Substrates with separation layer or membrane	any

#### Interior floors in public/commercial and industrial buildings bearing heavy loads

Substrates	Longest allowable tile side (cm)
Cement or Litocem/Litocem Pronto-based non-heating screeds	any
Cast-in-place concrete (2)	any
Pre-cast concrete	up to 120
Pre-existing tiled, mosaic, stone, marble tile substrates (3)	any
Pre-existing substrates with organic adhesive residue (4)	any
Substrates waterproofed with Litoproof Plus	any
Substrates waterproofed with Hidroflex, Aquamaster, Elastocem, Coverflex, Litoproof Extreme	any
Substrates with separation layer or membrane	any

#### Interior walls in residential, public/commercial and industrial buildings

Substrates	Longest allowable tile side (cm)
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Lime/cement plaster	any
Gypsum-based plaster (1)	any
Cast-in-place concrete (2)	any
Pre-cast concrete	any
Pre-existing tiled, mosaic, stone substrates (3)	any
Substrates waterproofed with Hidroflex, Aquamaster, Elastocem, Coverflex, Litoproof Plus	any
Fibre cement and cement panels	any
Waterproof and non-waterproof gypsum slabs (5)	up to 120
Elements in autoclaved aerated concrete (6)	up to 120
Thermal insulating and soundproof panels - Lightweight panels	up to 120

#### Outdoor paving in residential, public/commercial and industrial buildings

Substrates	Longest allowable tile side (cm)
Cement or Litocem/Litocem Pronto-based non-heating screeds	any
Cast-in-place concrete (2)	any
Pre-cast concrete	up to 90
Pre-existing tiled, mosaic, stone, marble tile substrates (3)	any
Substrates waterproofed with Aquamaster, Elastocem, Coverflex, Litoproof Extreme	any
Substrates with separation layer or membrane	any

#### Exterior walls

Substrates	Longest allowable tile side (cm)
Lime/cement plaster	any
Cast-in-place concrete (2)	any
Pre-cast concrete	any
Pre-existing tiled, mosaic, stone, marble tile substrates (3)	up to 60
Substrates waterproofed with Aquamaster, Elastocem, Coverflex	any
Fibre cement panels	up to 90

## 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 Litoscrub EVO.
- (4) After treatment with the adhesion promoter primer Prepara Fondo EVO.
- (5) After treatment with Primer C or Primer X94 for non-waterproof gypsum.
- (6) After treatment with Primer X94.

## INSTALLATION PLANNING

The only way to guarantee the long-lasting performance of ceramic and porcelain tile installations is to properly plan the process. It is therefore advisable to consult the national regulations in force in each country, for example standard UNI 11493 in 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 installing large tiles or low thickness laminated porcelain stone slabs, we recommend consulting paragraphs 7.13.8 and 7.13.9 of Standard UNI 11493. 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 substrates are clean, free of loose fragments,

properly dried and cured, flat and level, and that mechanical strength requirements based on the intended use have been met.

#### **Worksite conditions**

Check the suitability of the 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 the perimeter, expansion, divider and structural elastic joints have been correctly designed and prepared. Usually, separation joints should be provided for sections of 20/25 m<sup>2</sup> or 9-15m<sup>2</sup> outdoors. For exteriors, make sure joints are properly waterproofed and sealed.

#### **Back-buttering**

In the case of exterior installations, large tiles, floors with intense or heavy traffic, vibrating substrates, swimming pools 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 solid bed of adhesive without any air bubbles.

#### **Joints**

In any type of ceramic and porcelain tiling, suitably sized joints must be created based on the following parameters:

- Type, format and size tolerance of tiles
- thermal expansion coefficients of tiling materials
- mechanical properties of installation materials
- position and trajectory of joints
- mechanical features of substrate
- Intended use and operating conditions

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

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## **PREPARATION OF SUBSTRATES**

The substrates must be clean, solid, compact, crack-free, properly cured and without rising damp.

If it becomes necessary to create a slope, for example on balconies or footpaths, a levelling layer can be created using suitable levelling products such as Litoplan Smart.

- Excessively porous and absorbent or powdery substrates must be treated with the consolidating primer Primer C
- Smooth and compact substrates such as smoothed concrete, existing ceramic or agglomerate coverings, must be treated with the adhesion promoter primer Prepara Fondo EVO after being suitably degreased with specific detergents such as Litoscrub EVO
- In the case of anhydrite screeds, check for the presence of a suitable vapour barrier in order to prevent rising damp. Use a carbide method hygrometer to check that the residual humidity is less than 0.5%. The surface must be sanded and treated with Primer C
- Any cracks must be repaired with Multifondo EVO, sprinkling the fresh surface with sand or dried quartz with granulometry 0.4-1 mm

In any case, the technical data sheets must be consulted for correct use of the indicated products.

## MIX RATIO

Grey 20 kg (1 bag) – Water 6.6-7 l (33-35%)

White 20 kg (1 bag) – Water 6.6-7 l (33-35%)

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## PREPARING THE MIX

Pour the right quantity of water, depending on the application, into a clean container and slowly add the powder, stirring with an electric drill with mixing paddle until a consistent mix is obtained without lumps.

Let the mix rest for about 5 minutes and then briefly mix again for a few seconds.

The pot life is about 8 hours at a temperature of +23°C.

Do not use quantities of mixing water greater than those indicated to avoid product shrinkage during curing and the lowering of the final mechanical properties.

Do not add more water to the mix once setting has begun.

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## APPLICATION

Spread the mix onto the substrate using the smooth part of the trowel to create a layer approximately 1 mm thick, and then straight after apply the product using the notched part of the trowel.

The trowel notch size will depend on the size of the tiles.

A back coverage of 65-70% is nonetheless required for interior installations, and 100% for exterior installations, floors subject to heavy traffic or particularly stressed, and swimming pools.

In exterior installations or areas subject to high stress, the adhesive should also be applied to the back of the slabs (back-buttering method).

The tiles must be laid on the adhesive when fresh, firmly pressed to ensure good contact.

The product's pot life in normal temperature and humidity conditions is approximately 8 hours.

High temperatures will shorten it, low temperatures will lengthen it.

The product's open time in normal temperature and humidity conditions is approximately 30 minutes.

Very warm or windy climates, or particularly absorbent substrates may drastically reduce it to a few minutes. It is therefore recommended to regularly check that the adhesive has not skinned over.

The tiles must be installed with joint widths suitable for their size.

Take account of any expansion, perimeter, divider or structural joints.

Leave a space of at least 5 mm near walls or any surface elevations.

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 set, to prevent the detachment of the tiles.

Tiled surfaces are ready for use after about 7 days.

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## FOCUS

### **Marble, natural and recomposed stones**

Materials subject to deformation or stains due to water absorption require a quick-setting (C2F) or reactive (R2) adhesive. Marble and natural stones, even if similar in nature, may have different features. In case of doubt, contact the Litokol S.p.A. Technical Help Service for detailed information or to perform a laboratory test. Natural stone slabs with reinforced backing (resin, mesh, etc.) or specific treatments (for example anti-rising damp, etc.), unless otherwise prescribed by the manufacturer must be tested for compatibility with the adhesive. Before installation, check for any traces of dirt or material deposits on the back of the slabs. If so, these must be

removed.

### **Façades**

For exterior wall installations (H>3 m) where tiled surfaces are 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. Referring to Standard UNI 11493 – 7.13.7, follow these general guidelines: the installation substrate must guarantee a cohesive tensile strength of  $\geq 1.0 \text{ N/mm}^2$ . For coverings with side > 30 cm the designer must evaluate the potential need to use suitable mechanical fasteners for safety purposes. Always spread the adhesive directly onto the back of the material also.

### **Underfloor heating**

After at least 4 days from installation of the screed developed with Litocem or Litocem Pronto, the heating system can be used with a variable supply water temperature between +20°C and +25°C, kept constant for at least 3 days.

Then set the maximum design temperature and hold it for another 4 days. At the end of this cycle, bring the screed back to ambient temperature and install the covering (see standard EN 1264-4).

### **Swimming pools**

The product can be applied directly on the concrete substrate or Elastocem, Coverflex, Aquamaster and Litoproof Extreme elastic waterproofing membranes.

- Respect the concrete curing time (minimum 6 months)
- For underground tanks, adopt preventive measures against possible capillary rising damp, which may cause the detachment of the waterproofing membrane applied inside the tank, for example on drains along the side walls of the excavations or waterproofing constituted by osmotic mortars such as OsmogROUT
- Rectify the surfaces using suitable cementitious mortars such as Litoplan Smart
- Waterproof the internal surfaces of the tank with flexible waterproof membranes resistant to contact with chlorinated water such as Elastocem, Coverflex, Aquamaster and Litoproof Extreme
- It is advisable to perform a hydraulic seal test before installing the covering

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## **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, it is possible to use the cementitious grouts Stylegrout 0-8, Stylegrout 3-20, Stylegrout Tech or the ready-to-use polymer mortar FillGood EVO, or, for grouting with special mechanical and chemical resistance, the two-component epoxy grouts Starlike® EVO or EpoxyÉlite EVO.

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## **WARNINGS**

- Spread the product at temperatures between +5°C and +35°C inclusive
- Respect the mix ratio
- The pot life is about 8 hours at a temperature of +23°C
- The product can be used to install separation membranes on various substrates, such as for example: cement screeds, heating screeds and concrete, following the installation instructions of the manufacturer
- Do not use the product on floors that need to quickly set to light foot traffic

- Do not spread the product with thickness greater than 15 mm
  - To identify the adhesive most suitable to the requested type of application, it is recommended to consult the document “Synoptic table for choice of adhesives”
  - In the case of exterior installations, protect the tiled surface against rain wash or direct sunlight for at least 24 hours, and against frost for about 5-7 days
  - Do not use the product for applications not stated in this technical data sheet
  - If in doubt, contact the Litokol S.p.A Technical Help Service.
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## **SAFETY INFORMATION**

Consult the product safety data sheet, available on request.  
PRODUCT FOR PROFESSIONAL USE

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## **ITEM SPECIFICATION**

#Interior and exterior ceramic floor and wall coverings, including large tiles, moisture stable natural stones, low thickness laminated porcelain stoneware slabs, also with glass fibre mat backing, vitreous or ceramic mosaics, will be installed using an improved cementitious adhesive with no vertical slip and extended open time in class C2TE according to EN 12004, with class S2 high deformation ability according to EN 12002, such as Hyperflex K100 by Litokol S.p.A.

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## IDENTIFICATION DATA

Appearance	Powder
Colour	White or grey
Customs code	38245090
Shelf life	12 months in original packaging in a dry place.

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## APPLICATION DATA

Mix ratio	Water = 33-35% (6.6 - 7 litres of water per 20 kg bag) White
Mix ratio	Water = 33-35% (6.6 - 7 litres of water per 20 kg bag) Grey
Consistency of mix	Creamy thixotropic mortar
Mix curing time	5 minutes
pH of mix	13
Specific gravity of mix	1.47 kg/dm <sup>3</sup>
Bonding time	60 minutes
Pot life	Approx. 8 hours
Applicable thicknesses	From 1 to 15 mm
Application	Notched trowel
Application temperatures	From +5°C to +35°C
Waiting time for grouting	Wall: 6-8 hours – Floor: 24 hours
Ready for light foot traffic	24 hours
Ready for use	7 days - Pools 7 days
Temperature of use	From -30°C to +80°C
How to clean equipment	With water when product is fresh. Mechanically when product has set.
Consumption	3.5 mm trowel: 1.6 kg/m <sup>2</sup>
Consumption	6 mm trowel: 2.1 kg/m <sup>2</sup>
Consumption	10 mm trowel: 3.2 kg/m <sup>2</sup>
Consumption	Back-buttering: 4.5 kg/m <sup>2</sup>

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## PERFORMANCE

Compliance	EN 12004 – ISO 13007	C2 TE S2
Initial tensile adhesion strength after 28 days	≥ 1.0 N/mm <sup>2</sup>	EN 1348
Tensile adhesion strength after water immersion	≥ 1.0 N/mm <sup>2</sup>	EN 1348
Tensile adhesion strength after heat action	≥ 1.0 N/mm <sup>2</sup>	EN 1348
Tensile adhesion strength after freeze/thaw cycles	≥ 1.0 N/mm <sup>2</sup>	EN 1348
Open time	≥ 0.5 N/mm <sup>2</sup> after 30 minutes	EN 1346
Slip	≤ 0.5 mm	EN 1308
Transverse deformation	≥ 5 mm	EN 12002
Resistance to alkalis	Excellent	
Resistance to solvents	Excellent	
Resistance to acids	Low	

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## PERFORMANCE

Compliance		ANSI A118.15
Open time	≥ 75 psi (0.5MPa) spreadable and water cleanable at 80 min	5.3
Extended open time	≥ 75 psi (0.5MPa)	5.3
Slip	≤ 0.02 in (0.5 mm)	6.0
Shear adhesion strength of glazed tiles	Shear adhesion strength of glazed tiles	Shear adhesion strength of glazed tiles
Initial tensile adhesion strength after 7 days	≥ 450 psi	7.1.2
Tensile adhesion strength after water immersion (7 days)	≥ 250 psi	7.1.3
Tensile adhesion strength after heat action	≥ 450 psi	7.1.4
Shear adhesion strength of porcelain mosaic	Shear adhesion strength of porcelain mosaic	Shear adhesion strength of porcelain mosaic
Shear adhesion strength (24 hours)	≥ 100 psi	7.2.2
Shear adhesion strength (7 days)	≥ 300 psi	7.2.3
Shear adhesion strength after water immersion (7 days)	≥ 200 psi	7.2.4
Shear adhesion strength (28 days)	≥ 400 psi	7.2.5
Shear adhesion strength after freeze/thaw cycles (28 days)	≥ 250 psi	7.2.6
Shear adhesion strength after heat action (28 days)	≥ 400 psi	7.2.7
Shear adhesion strength of absorbent tiles	Shear adhesion strength of absorbent tiles	Shear adhesion strength of absorbent tiles
Shear adhesion strength (28 days)	≥ 150 psi	7.3.2
Shear adhesion strength after freeze/thaw cycles (28 days)	≥ 100 psi	7.3.3

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## NOTES

Data detection at temperature +23 °C, R.H. 50% and with no wind. May vary depending on the specific conditions of the installation site.

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Data sheet **n. 015**  
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