

# KERAFLEX EXTRA S1

High-performance, deformable cementitious adhesive with extended open time and no vertical slip for ceramic tiles and stone material including in large format



## CLASSIFICATION ACCORDING TO EN 12004

Keraflex Extra S1 is a cementitious (C), improved (2), with no vertical slip (T) and extended open time (E) deformable (S1) adhesive.

## WHERE TO USE

Internal and external bonding, both on floors and walls, of ceramic tiles of all types and formats (thin ceramic tiles, double-fired, single-fired, clinker, terracotta, porcelain etc.), stone material which is dimensionally stable and not sensitive to moisture or staining and all types of mosaics.

## Some application examples

- Bonding ceramic tiles, stone material not sensitive to moisture and mosaic on the following substrates:
  - well cured, dry cementitious screeds and screeds made from special binders (such as **Topcem** and **Mapecem**);
  - heated floors;
  - sound, well cured concrete floors;
  - cementitious and lime/cement render on internal and external facades;
  - internal cellular cement block walls treated with **Primer G**;
  - dry gypsum and anhydrite treated with **Primer G**;
  - plasterboard fastened to a rigid support;
  - waterproofing membranes made from **Mapegum WPS** or **Mapelast** range of products;
  - Uncoupling, anti-fracture waterproofing membrane such as **Mapeguard UM 35** and **Mapeguard WP 200**.
- Spot-bonding insulating materials such as foam polyurethane, Rockwool, glass fibre wool, polystyrene and cork soundproofing panels, etc.
- Overlaying old floors with ceramic tiles, terrazzo and stone material.
- Bonding tiles in swimming pools and tanks.
- Bonding on façades.

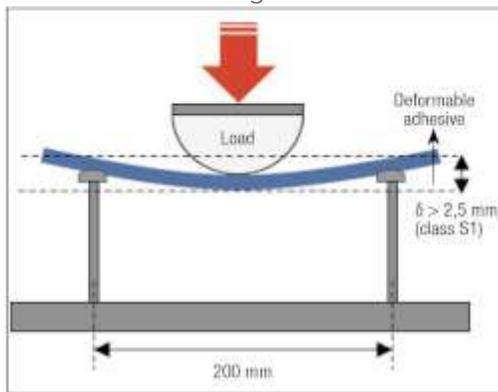
## TECHNICAL CHARACTERISTICS

Keraflex Extra S1 is a grey or white-coloured powder made from cement, selected graded sand, a high rate of synthetic resins and special additives according to a formula developed in MAPEI research laboratories. Keraflex Extra S1 has very low emission of volatile organic compounds (VOC) and safeguards the quality of the air and health of both installers and end users; the product is thus certified as EC1 Plus.

The use of **Keraflex Extra S1** contributes to the earning of important LEED credits.

When mixed with water it forms mortar with the following characteristics:

- good workability;
- high thixotropy: **Keraflex Extra S1** can be applied on vertical surfaces without dripping or causing tiles to slip;
- extended open and adjustment times to make laying operations easier;
- good capacity to absorb deformations in the substrate and tiles. S1 class adhesive: transversal deformability > 2.5 mm measured according to the test method described in TS EN 12004.



## RECOMMENDATIONS

Do not use **Keraflex Extra S1**:

- on not sufficiently cured concrete;
- on precast concrete or concrete subject to large movements;
- on wood or wooden conglomerates;
- on metal, linoleum, rubber or PVC surfaces;
- with marble slabs, natural stone or composite slabs subject to staining, efflorescence or movements caused by damp;
- on floors and dressing materials subject to large movements or vibrations.

## APPLICATION PROCEDURE

### Preparation of the substrate

Substrates must be even, strong and free of crumbling areas, grease, oil, varnish or wax. **Keraflex Extra S1** may take longer to set on damp substrates.

Cementitious substrates must not shrink after laying tiles. Therefore, in good weather, render must be cured for at least one week per cm of thickness, while cementitious screeds must be cured for at least 28 days, unless they are made from MAPEI special binders and ready-mixed screed mortar, such as **Mapecem**, **Mapecem Pronto**, **Topcem** or **Topcem Pronto**. If the surface is too hot due to direct sunlight, cool it down with water.

Gypsum substrates and anhydrite screeds must be perfectly dry (maximum residual humidity 0.5%, 0.3% in case of heated screeds), strong and free of dust. They must also be treated with **Primer G**, **Eco Prim T** or **Eco Prim VG** before applying **Keraflex Extra S1**. In damp environments, use **Mapegum WPS** or products from the **Mapelastic** range to waterproof the substrate.

### Preparation of the mix

Blend **Keraflex Extra S1** with clean water using an electric mixer to obtain a smooth, lump-free mix. Let the mix stand for around 5 minutes, then blend again.

Mix 28-30 parts of water with 100 parts by weight of **Keraflex Extra S1** (7-7.5 litres of water per 25 kg bag of grey and white version). The pot life of the obtained mix is approx. 8 hours.

### Spreading the mix

Apply **Keraflex Extra S1** on the substrate with a notched trowel. Use a trowel that allows complete wetting of the back of the tile. To guarantee a good bond, apply a thin layer of **Keraflex Extra S1** on the substrate using the smooth side of the spreader and then immediately apply a second layer of **Keraflex Extra S1** to form the thickness required using a notched trowel suitable for the type and size of tiles to be bonded.

In case of highly absorbent substrates and high temperatures, it is recommended to dampen the substrate before spreading **Keraflex Extra S1**, to help extending the adhesive's open time.

In case of external installation, installation of large ceramic tiles, thin ceramic tiles, ceramic tiles with pronounced reliefs on the back, heated floors, floors to be polished after laying or subject to heavy loads, application in water tubs or swimming pools, apply the back-buttering technique by spreading the adhesive on the back of the tiles to ensure complete wetting.

### Bonding tiles

Tiles do not need to be wet before they are laid. However, if the back of the tiles is particularly dusty, it is recommended to wash them by dipping them in clean water. When bonding tiles, apply firm pressure to guarantee good wetting. The open time for **Keraflex Extra S1** is approximately 30 minutes in normal weather conditions. When laying conditions are not ideal (direct sunlight, dry wind, high temperatures, etc.), or if the substrate is particularly absorbent, this time may reduce to just a few minutes. Therefore, check often to make sure skin does not form on the surface of the adhesive and that it is still

fresh. If skin forms, spread the adhesive again with the notched spreader. Do not wet the surface of the adhesive if a skin forms. Water does not dissolve the skin and impedes correct adhesion. Final adjustment of the tiles must be carried out within 45 minutes of bonding. Tiles and stone bonded with **Keraflex Extra S1** must be protected from water and rain for at least 24 hours and from freezing weather and direct sunlight for at least 5 to 7 days.

### Grouting and sealing

Tile joints may be grouted after 4 to 8 hours on walls and after 24 hours on floors. Use a MAPEI cementitious or epoxy grout, available in a wide variety of colours. Seal expansion joints using a suitable MAPEI sealant.



## SET TO FOOT TIMES

Floors may be stepped on after around 24 hours.

## WAITING TIME BEFORE USE

Surfaces are ready to use after approx. 14 days.  
Water tubs and swimming pools can be filled after 21 days.

## Cleaning

Clean tools and containers with water while **Keraflex Extra S1** is still fresh. Clean the surface of tiles with a damp cloth before the adhesive hardens.

## PACKAGING

Keraflex Extra S1 (grey and white) is available in 25 kg paper bags.

## CONSUMPTION

1.2 kg/m<sup>2</sup> per mm of thickness.

## STORAGE

**Keraflex Extra S1**, under normal conditions and in its original 25 kg paper bags, can be stored for 12 months.

## SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website [www.mapei.com](http://www.mapei.com).

PRODUCT FOR PROFESSIONAL USE.

<b>TECHNICAL DATA (typical values)</b> Conformity with: · Euronorm EN 12004 (C2TES1 /C2ES1)	
<b>PRODUCT IDENTITY</b>	
Consistency:	powder
Colour:	white or grey
Bulk density (kg/m <sup>3</sup> ):	1400
Dry solids content (%):	100
EMICODE:	EC1 Plus - very low emission
<b>APPLICATION DATA (at +23°C - 50% R.H.)</b>	
Mixing ratio:	100 parts of Keraflex Extra S1 with 28-30 parts of water by weight (grey/white)
Consistency of mix:	thick paste
Density of mix (kg/m <sup>3</sup> ):	1500
pH of mix:	>12
Pot life of mix:	over 8 hours
Application temperature range:	between +5°C to +40°C
Open time:	> 30 mins.
Adjustment time:	approx. 45 minutes
Grouting joints in wall tiles:	after 4-8 hours
Grouting joints in floor tiles:	after 24 hours
Set to foot traffic:	24 hours
Ready-to-use:	14 days
<b>FINAL PERFORMANCE</b>	
<b>Tensile adhesion strength (N/mm<sup>2</sup>):</b> – initial tensile adhesion strength (after 28 days): – tensile adhesion strength after heat ageing: – tensile adhesion strength after water immersion: – tensile adhesion strength after freeze-thaw cycles:	2.3 2.1 1.2 1.4
Resistance to alkalis:	excellent
Resistance to oils:	excellent (poor to vegetable oils)
Resistance to solvents:	excellent
Service temperature:	-30°C to +90°C
Deformability according to TS EN 12004:	S1 - deformable

## WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website [www.mapei.com](http://www.mapei.com)

## LEGAL NOTICE

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