KERAFLEX EXTRA S1 ZERO

High-performance, deformable grey or white cementitious adhesive with variable rheology, with no vertical slip or with high wetting capacity, extended open time, with very low emission of volatile organic compounds and fully offset Greenhouse Gas emissions, for ceramic tiles and stone material including in large format

CLASSIFICATION ACCORDING TO EN 12004

Keraflex Extra S1 Zero is a cementitious (C), grey or white, improved (2), with no vertical slip (T) and extended open time (E) deformable (S1) adhesive. The product is C2TES1 class if mixed with approximately 5.2-5.6 litres of water (for the grey version) / 5.6-6.0 litres of water (for the white version), or C2ES1 class if mixed with approximately 6.4-6.6 litres of water (for the grey version) / 6.8-7.0 litres of water (for the white version).
*The conformity of **Keraflex Extra S1 Zero** (C2TES1 class) is certified by TT certificates n° 1372-CPR-3005/RP for the grey version and n° 1372-CPR-3007/RP for the white one, issued by the Tecno Piemonte (Italy) Laboratory, Notified Body # 1372.*
*The conformity of **Keraflex Extra S1 Zero** (C2ES1 class) is certified by TT certificates n° 1372-CPR-3006/RP for the grey version and n° 1372-CPR-3008/RP for the white one, issued by the Tecno Piemonte (Italy) Laboratory, Notified Body # 1372.*

CO_2 FULLY OFFSET PRODUCTS

Keraflex Extra S1 Zero *is part of the CO_2 Fully Offset in the Entire Life Cycle line of products. CO_2 emissions measured throughout the life cycle of products from the Zero line in 2025 using Life Cycle Assessment (LCA) methodology, verified and certified with EPDs, have been offset through the acquisition of certified carbon credits in support of forestry protection projects. A commitment to the planet, to people and to biodiversity. For more details on how emissions are calculated and on climate mitigation projects financed through certified carbon credits, visit the webpage* zero.mapei.com.

WHERE TO USE

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

Depending on areas of use and amount of mixing water, **Keraflex Extra S1 Zero** can have either a fluid consistency, suitable for a good wetting of large format tiles installed on floors, or a thixotropic consistency that prevents tiles from slipping when applied on walls.

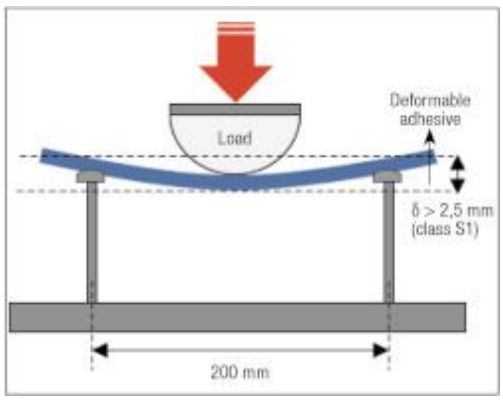
Some application examples

- Bonding ceramic tiles (porcelain, clinker, double-fired, single-fired, ceramic and glass mosaic, etc.), stone material (as long as not sensitive to moisture) and mosaic on the following substrates:
  - "damp earth" consistency and self-levelling cementitious screeds;
  - heated floors;
  - sound, well cured concrete floors;
  - cementitious and lime/cement render on internal and external façades;
  - internal cellular cement block walls treated with **Primer G**;
  - dry gypsum and anhydrite treated with an acrylic primer such as **Primer G** or **Eco Prim T Plus**;
  - **Mapeguard Board**, multi-purpose construction panels;
  - plasterboard fastened to a rigid support;
  - waterproofing membranes made from **Mapegum WPS** or **Mapelastic** range of products;
  - uncoupling, anti-fracture waterproofing membrane such as **Mapeguard UM 35** or **Mapeguard WP 200**.
- 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 Zero 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.
The environmental impacts during the entire life cycle of **Keraflex Extra S1 Zero** have been assessed through the LCA (Life Cycle Assessment) methodology and reported in EPD n° S-P-07612 for the grey version and n° S-P-09632 for the white one (Environmental Product Declaration) in accordance with ISO 14025 standard, certified and published by The International EPD System.
Keraflex Extra S1 Zero is a product with very low emission of volatile organic compounds (VOC), which safeguards the health and safety of installers and final users. It is certified as EC1 Plus by the German association GEV.
Keraflex Extra S1 Zero helps earn important LEED credits.
When mixed with water it forms mortar with the following characteristics:

- good workability;
- if mixed with 5.2-5.6 litres of water (for the grey version) / 5.6-6.0 litres of water (for the white version) (C2TES1 class) it gains high thixotropy: **Keraflex Extra S1 Zero** can be applied on vertical surfaces without dripping or causing tiles to slip;
- if mixed with 6.4-6.6 litres of water (for the grey version) / 6.8-7.0 litres of water (for the white version)(class C2ES1), open time is improved. The excellent transfer of the adhesive allows perfect wetting of the back of tiles;
- 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 EN 12004.



RECOMMENDATIONS

Do not use **Keraflex Extra S1 Zero**:

- on not sufficiently cured concrete;
- 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.

Do not add water to the mix once it starts to set.

APPLICATION PROCEDURE

Preparation of the substrate

Substrates must be smooth, strong and free of crumbling areas, grease, oil, varnish or wax.
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. Ensure water is allowed to absorb in to the substrate, there must not be any standing water.
Anhydrite screeds must be perfectly dry (maximum residual humidity of 75% RH or 0.5% W/W, gypsum plaster must be fully cured (4 weeks). They must be strong, free of dust and treated with acrylic primers such as **Primer G** or **Eco Prim T Plus** before applying **Keraflex Extra S1 Zero**.
Boarded substrates, such as tile backer boards or gypsum plasterboards must be constructed of a suitable board designed to receive the intended tiling. They must be fixed fully in line with the board manufacturer guidelines to provide a suitably solid and rigid background to receive tiles.
In damp environments, such as bathrooms, wet rooms and swimming pools, waterproof the areas using products from the Mapei waterproofing range such as **Mapegum WPS** or products from the **Mapelastic** range.

Preparation of the mix

Blend **Keraflex Extra S1 Zero** 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.
If the product is used as C2TES1 class adhesive, mix 26-28 parts of water with 100 parts by weight of grey **Keraflex Extra S1 Zero** (5.2-5.6 litres of water per 20 kg bag of grey powder) or 28-30 parts with 100 parts by weight of white **Keraflex Extra S1 Zero** (5.6-6.0 litres of water per 20 kg bag of white powder). The pot life of the obtained mix is approx. 8 hours.
If the product is used as C2ES1 class adhesive, mix 32-33 parts of water with 100 parts by weight of grey or white **Keraflex Extra S1 Zero** (6.4-6.6 litres of water per 20 kg bag of grey powder or 6.8-7.0 litres of water per 20kg bag of white powder). The pot life of the obtained mix is approx. 8 hours.

Spreading the mix

Apply **Keraflex Extra S1 Zero** 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 Zero** on the substrate using the smooth side of the spreader and then immediately apply a second layer of **Keraflex Extra S1 Zero** 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 Zero**, to help extending the adhesive's open time.
In case of external installation, installation of large format ceramic tiles, 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 Zero** 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 a layer of dry skin forms, run the notched trowel over the adhesive again to re-activate open time, or, if the adhesive has already start to set, remove it and spread a new layer of fresh adhesive. Do not wet the surface of the adhesive if a layer of skin forms: water does not dissolve the skin and creates instead a film that impedes a good bond. Final adjustment of the tiles must be carried out within 60 minutes of bonding. Tiles and stone bonded with **Keraflex Extra S1 Zero** 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.
When installing the tiles, it is recommended to use the levelling systems of **MapeLevel** line to maintain the correct grout size and avoid the formation of unevenness between tile and tile.

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.
If necessary, clean, maintain and protect the surfaces using the specific products from the **UltraCare** range.

SET TO LIGHT FOOT TRAFFIC

Floors set to foot traffic after approximately 24 hours.

READY FOR USE

Surfaces are ready for use after approximately 14 days.
Basins and swimming pools can be filled after 21 days.

CLEANING

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

CONSUMPTION

1.2 kg/m² per mm of thickness.

PACKAGING

Keraflex Extra S1 Zero grey and white are available in 20 kg paper bags.

STORAGE

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

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

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.co.uk**.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

Complies with:
– Euronorm EN 12004 (C2TES1 /C2ES1)
– ISO 13007-1 (C2TES1 /C2ES1)

PRODUCT IDENTITY	
Consistency:	powder
Colour:	grey or white
Bulk density:	1400 kg/m³
Dry solids content:	100%
EMICODE:	EC1 Plus - very low emission

APPLICATION DATA (at +23°C - 50% R.H.)	
Mixing ratio:	– C2TES1 class: 100 parts of grey **Keraflex Extra S1 Zero** with 26-28 parts of water by weight; 100 parts of white **Keraflex Extra S1 Zero** with 28-30 parts of water by weight – C2ES1 class: 100 parts of grey or white **Keraflex Extra S1 Zero** with 28-30 parts of water by weight; 100 parts of white **Keraflex Extra S1 Zero** with 34-35 parts of water by weight
Consistency of mix:	thick paste
Density of mix:	1500 kg/m³
pH of mix:	> 12
Pot life of mix:	over 8 hours
Application temperature range:	+5°C to +40°C
Open time:	> 30 mins.
Adjustment time:	– approx. 45 minutes (C2TES1 class); – approx. 60 minutes (C2ES1 class)
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

FINAL PERFORMANCE	
Adhesion: – initial adhesion (after 28 days): – adhesion after application of heat source: – adhesion after immersion in water: – adhesion after freeze-thaw cycles:	 2.3 N/mm² 2.1 N/mm² 1.2 N/mm² 1.4 N/mm²
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 EN 12004:	S1 – deformable (> 2.5 mm, < 5 mm)

N.B.

Whilst we try to ensure that any advice, recommendations or information given in our literature is accurate and correct, we have no control over the circumstances in which our product is used. It is therefore important that the end users satisfy themselves that the product and conditions are suitable for the envisaged application. No warranty can be given or responsibility accepted other than, that the product supplied by us will meet our written specification. End users should ensure that our latest product data and safety information sheets have been consulted prior to use.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.co.uk

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation.
The most up-to-date TDS can be downloaded from our website www.mapei.co.uk.
ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

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