



Keraflex Maxi S1 zero

Special high performance, deformable, non-slip grey adhesive with extended open time, Low Dust technology, very low emission of volatile organic compounds and offset residual greenhouse gas emissions for bonding ceramic tiles and large stone slabs



CLASSIFICATION ACCORDING TO EN 12004

Grey **Keraflex Maxi S1 zero** is a C2TES1 class cementitious (C), improved (2), non-slip (T), extended open time (E) deformable (S1) adhesive.

Conformity of grey **Keraflex Maxi S1 zero** is certified according to certificates **ITT No. 25070387/Gi (TUM)** and **No. 14/8330-551-S (LGAI)** issued by the Technische Universität laboratory (München, Germany).

WHERE TO USE

- Bonding all types and sizes of ceramic tiles up to 15 mm thick (double-fired, single-fired, porcelain tiles, klinker, terracotta, etc.) on irregular internal and external substrates and render without skimming the surface prior to bonding.
- Bonding stone on internal and external surfaces (stable stone not sensitive to humidity).
- Spot-bonding insulating materials such as expanded polystyrene, fibreglass, Rockwool and Eraclit® and soundproofing panels in polystyrene, cork, etc.

Some application examples

- Bonding ceramic tiles (double-fired, single-fired, porcelain, klinker, etc.) and stone (if stable in damp environments) on conventional substrates, such as:
 - cementitious screeds and heated floors;
 - cementitious render and lime/cement mortar;
 - plasterboard if on a solid support system.
- Overlaying ceramic and stone on existing floors (ceramic, marble, etc.).
- Bonding floors subjected to intense traffic.

- Bonding ceramic in areas with poor ventilation close to homes where the amount of dust given off must be reduced to a minimum.
- Bonding wall and floor tiles on surfaces waterproofed with product of **Mapelast** line.
- Bonding tiles and strips with profiled or hollow backs (porcelain tiles, klinker, single-fired and terracotta) on internal and external surfaces.

TECHNICAL CHARACTERISTICS

Grey **Keraflex Maxi S1 zero** is a grey coloured powder made from cement, selected graded sand, a high amount of synthetic resins and special admixtures according to a formula developed in the MAPEI research laboratories.

The environmental impact of **Keraflex Maxi S1 zero** during its entire life cycle has been measured using the LCA (Life Cycle Assessment) method and the results are reported in the EPD (Environmental Product Declaration in compliance with ISO 14025 and EN 15804 standards) N° S-P-00907, certified and published by EPD International. Also, the amount of residual Greenhouse Gases (CO₂ equivalent) released by **Keraflex Maxi S1 zero** is offset every year by purchasing certified carbon credits.

Keraflex Maxi S1 zero also has very low emission of VOC (Volatile Organic Compounds), from a perspective of safeguarding the health of both those who apply the product and those who use areas in which it is applied, and is certified EC1 R Plus by the German association GEV.

Keraflex Maxi S1 zero



Bonding porcelain tiles with Keraflex Maxi S1 zero



Viareggio Promenade – Italy



Central Station - Milan - Italy

The innovative **Low Dust** technology which characterises this adhesive considerably reduces the amount of dust given off during mixing compared with conventional MAPEI adhesives to make floor-layers' work easier and safer.

When mixed with water, grey **Keraflex Maxi S1 zero** forms a mortar with the following characteristics:

- low viscosity and, therefore, good workability;
- high thixotropy; grey **Keraflex Maxi S1 zero** may be applied on vertical surfaces without slumping and without allowing tiles to slip, even large, heavy tiles. Tiles may be bonded in place starting from the upper part of surfaces working downwards without having to place spacers;
- excellent capacity to absorb deformation in the substrate and in the tiles;
- adheres perfectly to all materials normally used in the building industry;
- thick layers of adhesive harden without any significant shrinkage and without reducing in thickness to form a very strong layer;
- particularly long open and adjustment times to make laying operations easier.

RECOMMENDATIONS

Do not use grey **Keraflex Maxi S1 zero** in the following cases:

- on wood or wooden conglomerates;
- on metal, rubber, PVC and linoleum surfaces;
- for slabs of marble and natural stone which are subject to efflorescence or staining;
- with natural stone or composite slabs subject to movements caused by damp;
- on precast concrete or concrete with high levels of movements;
- when floors need to be put back into service quickly.

APPLICATION PROCEDURE

Preparation of the substrate

Substrates must be cured, sufficiently dry, strong and have no crumbling areas or traces of grease, oil, varnish or wax.

Cementitious substrates must not shrink after bonding tiles. Therefore, in good weather, render must be cured for at least one week per cm of thickness and cementitious screeds must be cured for at least 28 days, unless they are made using special MAPEI screed binders 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, hard enough for the final intended use and free of dust. They must also be treated with **Primer G** or **Eco Prim T**; surfaces in areas with high humidity must be primed beforehand with **Primer S**.

Preparation of the mix

Blend grey **Keraflex Maxi S1 zero** with clean water to obtain a smooth, lump-free mix. Let the mix stand for approximately 5 minutes then blend again.

Use approximately 7-8 litres of water for each bag of powder. When mixed as described above the mix lasts approximately 8 hours.

Spreading the mix

Apply grey **Keraflex Maxi S1 zero** on the substrate with a notched spreader. Use a spreader with a notch size which guarantees optimum buttering of the back of the tile. To guarantee a good bond, apply a thin layer of grey **Keraflex Maxi S1 zero** on the substrate using the smooth side of a spreader and then immediately apply a further layer of grey **Keraflex Maxi S1 zero** in the thickness required using a suitable spreader, depending on the type and size of the tiles.

When bonding ceramic tiles on external surfaces, tiles larger than 900 cm², floors that need to be ground in situ or subjected to heavy loads or when bonding tiles in swimming pools and tanks, the adhesive must also be spread on the back of the tiles to ensure complete buttering.

As an alternative, when bonding large tiles on internal surfaces, buttering of the back of the tiles may be improved by adding more water to the adhesive to make it more fluid.

Bonding tiles

Tiles do not need to be wet before they are laid. However, if the backs of the tiles are particularly dusty, wash them by dipping them in clean water.

When applying the tiles press down firmly to guarantee good buttering.

The open time for grey **Keraflex Maxi S1 zero** is at least 30 minutes in normal weather and humidity conditions. When bonding conditions are not ideal (direct sunlight, dry wind, high temperatures, etc.), or if the substrate is particularly absorbent, this time may reduce to only a few minutes.

Keep checking the adhesive to make sure skin does not form on the surface and that it is still wet. If the adhesive is no longer wet spread it again with the notched spreader.

Do not wet the surface of the adhesive if skin forms. Water does not dissolve the skin but creates a film which impedes bonding. Final adjustment of the tiles must be carried out within 60 minutes of bonding.

Floor and wall coverings bonded with grey **Keraflex Maxi 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.

Spot-bonding insulating materials

When bonding insulating or soundproofing panels, apply spots of grey **Keraflex Maxi S1 zero** with a trowel or spreader in the thickness required, depending on the flatness of the substrate and the weight of the panels.

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 special MAPEI sealant.

SET TO FOOT TRAFFIC

Floors set to foot traffic after approximately 24 hours.

TECHNICAL DATA (typical values)

Complies with the following standards:

- Euronorm EN 12004 (C2TES1)
- ISO 13007-1 (C2TES1)

PRODUCT IDENTITY

Consistency:	powder
Colour:	grey
Bulk density (kg/m ³):	1400
Dry solids content (%):	100
CO ₂ emissions fully offset:	0.50 kg CO ₂ eq./kg*
EMICODE:	EC1 R Plus - very low emission

APPLICATION DATA (at +23°C and 50% R.H.)

Mixing ratio:	100 parts in weight of grey Keraflex Maxi S1 zero with 28-32 parts in weight of water
Consistency of mix:	paste
Density of mix (kg/m ³):	1500
pH of mix:	more than 12
Pot life of mix:	more than 8 hours
Application temperature:	+5°C to +35°C
Open time (according to EN 1346):	> 30 minutes
Adjustment time:	approximately 60 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 for service:	14 days

FINAL PERFORMANCE

Adhesion according to EN 1348 (N/mm ²):	
– initial adhesion (after 28 days):	2.6
– adhesion after application of heat source:	2.5
– adhesion after immersion in water:	1.1
– adhesion after freeze-thaw cycles:	1.3
Resistance to alkalis:	excellent
Resistance to oils:	excellent (poor for vegetable oils)
Resistance to solvents:	excellent
In-service temperature range:	-30°C to +90°C
Deformability according to EN 12004:	S1 - deformable



*The Interlace
Residence - Singapore*

* EPD n° S-P-00907 certified and published by EPD International.

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POLISHING

Surfaces may be polished after approximately 14 days.

WAITING TIME BEFORE PUTTING INTO SERVICE

Surfaces may be put into service after approximately 14 days.

Cleaning

Clean tools and containers with water while grey Keraflex Maxi S1 zero is still wet. Clean the surface of wall and floor coverings with a damp cloth before the adhesive hardens.

CONSUMPTION

Bonding ceramics:

– 1.2 kg/m² per mm of thickness.

Bonding panels:

– Spreader (rounded notches): 6-7 kg/m²
– Trowel: 4-6 kg/m²

PACKAGING

Grey Keraflex Maxi S1 zero is supplied in 25 kg paper bags.

STORAGE

Grey Keraflex Maxi S1 zero may be stored for 12 months in its original packaging in a dry place.

This product conforms to the prescriptions of Reg. (EC) N. 1907/2006 (REACH) - Annex XVII, item 47.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Grey Keraflex Maxi S1 zero contains cement that when in contact with sweat or other body fluids causes irritant alkaline reactions and allergic reactions to those predisposed. It can cause damage to eyes. It is recommended to wear protective gloves and goggles and to take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin, wash immediately with plenty of water and seek medical attention. For further and complete information about the safe use of our product please refer to

the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

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

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.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.



This symbol is used to identify Mapei products which give off a low level of volatile organic compounds (VOC) as certified by GEV (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.), an international organisation for controlling the level of emissions from products used for floors.

All relevant references for the product are available upon request and from www.mapei.com



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