



Ultraite  
Technology™

# Ultralite S1



**One-component, high-performance, flexible, lightweight, cementitious adhesive with no vertical slip and long open time, Low Dust technology and extremely high yield. Easy to apply by trowel with excellent wetting properties, very low emission of volatile organic compounds for ceramic tiles, stone and thin porcelain tiles**



#### CLASSIFICATION ACCORDING TO EN 12004

**Ultralite S1** is a C2TES1-class cementitious (C), improved (2), slip-resistant (T), extended open time (E), deformable (S1) adhesive.

Conformity of **Ultralite S1** is declared in **ITT** certificate **n° 25080237/Gi (TUM)** and **n° 251 10057/AG (TUM)** issued by the Technische Universität München laboratory (Germany).

#### WHERE TO USE

- Bonding all types and sizes of ceramic tiles (double-fired, single-fired, porcelain, klinker, terracotta, etc.) on uneven internal and external substrates, without having to even out the surface before fixing.
- Bonding all types of mosaic on internal and external surfaces even in swimming-pools.
- Bonding natural stone on internal and external surfaces (for stone which is stable and not sensitive to humidity).
- Bonding thin porcelain tiles on floors and walls, including external façades.

#### Some application examples

- Bonding ceramic tiles (double-fired, single-fired, porcelain, klinker, ceramic and glass mosaic, etc.), stone (if stable in damp environments) and thin porcelain tiles on conventional substrates, such as:
  - cementitious and anhydrite screeds (after preparation and applying a suitable primer);
  - heated screeds;
  - cementitious render or lime-mortar render;
  - gypsum-based plaster (after applying a suitable primer);
  - plasterboard, pre-fabricated panels, cement-fibre panels;
  - waterproofing membranes **Mapelastic**, **Mapelastic**

#### Smart, Mapelastic Turbo, Mapelastic AquaDefense and Mapegum WPS.

- Laying ceramic and natural stone on old floors (in ceramic, marble, etc.).
- Laying on marine plywood, wooden agglomerates and old, stable wooden floors.
- Laying ceramic and natural stone on balconies and terraces and paving slabs exposed to direct sunlight and thermal gradients.
- Laying on prefabricated concrete walls and concrete substrates.
- Laying ceramic in environments with poor ventilation close to homes, where the amount of dust given off must be reduced to a minimum during mixing operations and when moving the bags.

#### TECHNICAL CHARACTERISTICS

**Ultralite S1** is a grey or white powder made from cement, selected graded sand and a high amount of synthetic resin, with recycled silica micro-spheres which helps to make the mix lighter, according to a special formula developed in MAPEI's own Research & Development laboratories, as a contribution towards a sustainable building industry.

The innovative **Low Dust** technology which characterises this adhesive considerably reduces the amount of dust given off when mixing the product compared with standard MAPEI cementitious adhesives, making floor-layers' work easier and healthier.

The special technology used to manufacture **Ultralite S1** gives it a low density, a characteristic which offers two main advantages:

- 1) bags of **Ultralite S1** have the same volume but weigh less (15 kg) than bags of conventional cementitious adhesive (25 kg). This makes for easier handling and savings in transport costs;

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Spreading Ultralite S1 with a notched trowel on wall



Spreading adhesive on the back of the tile



Laying large-sized tiles on walls

2) higher yield: yield is approximately 60% higher compared with conventional MAPEI cementitious adhesives.

**Ultralite S1** mix has a low viscosity, which makes it easier and quicker to apply. In spite of the above characteristics, the thixotropic nature of **Ultralite S1** means there is no vertical slip when fixing on walls, even with large-sized tiles. Its excellent back-buttering capacity and thixotropic consistency make **Ultralite S1** particularly suitable for laying thin porcelain tiles. In fact, the application of **Ultralite S1** using the double-buttering technique on flat substrates ensures that there are absolutely no voids in the adhesive on the back of the tiles, thus avoiding the risk of fracture when subject to load.

Its excellent non-slip properties also make it particularly easy and safe to fix tiles on vertical surfaces.

When mixed with water, **Ultralite S1** forms a mortar with the following characteristics:

- excellent capacity of absorbing deformation in the substrate;
- excellent back-buttering property of the tiles;
- bonds perfectly to all materials normally used in the building industry;
- particularly long open and adjustment times, to make installation easier.

## RECOMMENDATIONS

Do not use **Ultralite S1** in the following cases:

- on metal, rubber, PVC and linoleum;
- for slabs of marble and natural stone which are subject to efflorescence or staining;
- for natural agglomerate stone with high coefficients of moisture expansion.
- when the floored surface must be put quickly back into service.

Do not use **Ultralite S1** for installing thin porcelain tiles with reinforcement mesh larger than 5000 cm<sup>2</sup> on internal surfaces and heated screeds. Use an "S2" deformability class adhesive for this type of application such as **Ultralite S2**, **Ultralite S2 Quick**, **Kerabond/Kerabond T** mixed with **Isolastic**, **Elastorapid** or **Keraquick S1 + Latex Plus**. When installing thin porcelain tiles on external facades and for further information on how to choose the correct adhesive, refer to the MAPEI technical manual "Systems for the installation of thin porcelain tiles" or contact MAPEI Technical Services Department.

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

## APPLICATION PROCEDURE

### Preparation of the substrate

Substrates must be mechanically strong, free of loose parts, grease, oil, paintwork, etc. and must be sufficiently dry.

Cementitious substrates must not shrink after fixing 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 binders for screeds, such as **Mapecem** or **Topcem**, or pre-blended mortars, such as **Mapecem Pronto** 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 and laitance.

They must also be treated with **Primer G** or **Eco Prim T**, while areas subject to high humidity must be primed with **Primer S**. Substrates on which thin porcelain is to be

laid must be perfectly flat. Therefore, where necessary, even out the substrate before laying the floor with a self-levelling compound from the MAPEI range.

### Preparation of the mix

Blend **Ultralite S1** with clean water to obtain a smooth, lump-free mix. Let the mix stand for approximately 5 minutes, then blend again. Approximately 8.1-8.4 liters of water are required for each 15 kg bag of **Ultralite S1** grey and 7.8-8.1 per **Ultralite S1** white. When blended as described above, the mix lasts for approximately 8 hours.

### Spreading the mix

Apply **Ultralite S1** on the substrate using a notched trowel. Use a trowel with a notch size which guarantees complete buttering of the back of the tile.

To guarantee a good bond, apply a thin layer of **Ultralite S1** on the substrate using the smooth side of the trowel, and then immediately apply a further layer of **Ultralite S1** to the thickness required using a suitable trowel, according to the type and size of the tiles.

When laying external flooring, for tile sizes larger than 900 cm<sup>2</sup> and floors subject to heavy loads, spread the adhesive also on the back of the tile to ensure complete buttering.

When laying thin porcelain floor tiles, we recommend that the adhesive is also spread (with the suitable notched trowel) on the backs of the tiles to guarantee there are no gaps to avoid the risk of fracture when in service.

### Laying tiles

The tiles do not need to be wet before they are laid. However, if the back faces are particularly dusty, dip them into clean water. Ensure they are dry before fixing.

When laying tiles, apply a firm pressure to guarantee good contact.

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

Therefore, check often to make sure a layer of skin does not form on the surface of the adhesive, and that it is still fresh. If a layer of skin forms, spread the adhesive again with the notched trowel. Do not wet the surface of the adhesive if a layer of skin forms. Water does not dissolve the skin, and impedes a good bond. Final adjustment of the tiles must be carried out within 45 minutes of laying.

Tiles laid using **Ultralite 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.

Expansion joints must be sealed using a special MAPEI sealant.

### SET TO LIGHT FOOT TRAFFIC

Floors may be stepped on after approximately 24 hours.

### READY-TO-USE

Surfaces are ready-to-use after approximately 14 days.

## TECHNICAL DATA (typical values)

Conforms to the following standards:

- European EN 12004 (C2TE S1)
- ISO 13007-1 (C2TE S1)

### PRODUCT IDENTITY

Consistency:	powder
Colour:	white or grey
Bulk density (kg/m <sup>3</sup> ):	870
Dry solids content (%):	100
EMICODE:	EC1 R Plus - very low emission

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

Mixing ratio:	100 parts of <b>Ultralite S1</b> grey with 54-56 parts of water by weight 100 parts of <b>Ultralite S1</b> white with 52-54 part of water by weight
Consistency of mix:	creamy paste
Density of the mix (kg/m <sup>3</sup> ):	1,200
pH of mix:	more than 12
Pot life of mix:	more than 8 hours
Application temperature range:	from +5°C to +40°C
Open time (according to EN 1346):	> 30 minutes
Adjustment time:	45 minutes
Grouting tile joints on walls:	after 4-8 hours
Grouting tile joints on floors:	after 24 hours
Set to light foot traffic:	24 hours
Ready-to-use:	14 days

### FINAL PERFORMANCE

Bond strength according to EN 1348 (N/mm <sup>2</sup> ):	
- initial bond (after 28 days):	2
- bond after application of heat source:	2
- bond strength after immersion in water:	1.3
- bond strength after freeze-thaw cycles:	1.5
Resistance to alkalis:	excellent
Resistance to oils:	excellent (poor with vegetable oils)
Resistance to solvents:	excellent
In service temperature range:	from -30°C to +90°C
Deformability according to EN 12002:	S1 - deformable (> 2.5 mm, < 5 mm)



Spreading the adhesive on floor with a 9 mm round-tooth notched trowel



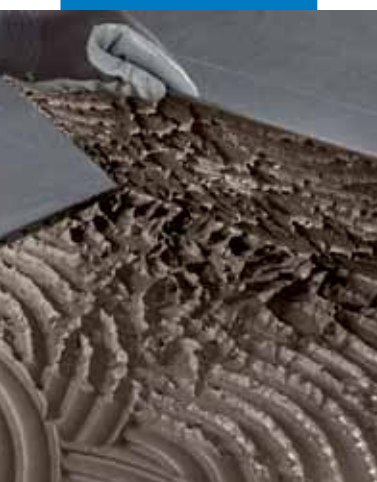
Spreading the adhesive on the back of the tile



# Ultralite S1



Installing thin porcelain tile on floor



Checking the complete back-buttering of thin porcelain tile



## Cleaning

Tools and containers may be cleaned using water while **Ultralite S1** is still fresh. Clean the surfaces of the floor using a damp cloth before the adhesive sets.

## PACKAGING

**Ultralite S1** is available in 15 kg paper bags with handle.

## CONSUMPTION

0.8 kg/m<sup>2</sup> per mm of thickness, equal to 1.5-2.5 kg/m<sup>2</sup>.

## STORAGE

**Ultralite S1** may be stored for up to 12 months in its original packaging in a dry place. The product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH), item 47.

## SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

**Ultralite S1** 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 use 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 web site [www.mapei.com](http://www.mapei.com)



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



**Our Commitment To The Environment**  
MAPEI products assist Project Designers and Contractors create innovative LEED (The Leadership in Energy and Environmental Design) certified projects, in compliance with the U.S. Green Building Council.

**Contains more than 20% of recycled material**

**All relevant references for the product are available upon request and from [www.mapei.com](http://www.mapei.com)**



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