

FMörtel® S1 (MasterCrete™ TIL S1)

Cement-Based, Polymer-Modified, Flexible and High-Performance Ceramic and Granite Adhesive

Material Description

FMörtel® S1 is a cement-based, polymer-modified, highly stable and high-performance flexible adhesive for bonding ceramics, porcelain tiles, granite, marble, natural stones, glass mosaics, and press bricks.

Complies with EN 12004 - C2TES1 class.

C2: Cement-based adhesive with improved characteristics.

T: With reduced sliding

E: Extended open time

S1: Deformable

Areas of Application

- For indoor and outdoor use, in vertical and horizontal applications.
- For bonding ceramics, granite, marble, porcelain tiles, natural stones, glass mosaics, and press bricks to cement-based substrates exposed to temperature differences.

- For bonding ceramics, granite, marble, natural stone, and glass mosaics on substrates affected by temperature changes such as plasterboard, gypsum plaster, thermal insulation blocks, and gas concrete, after priming with **Astar® A**.
- In wet areas such as swimming pools, water tanks, and bathrooms.
- On underfloor heating systems, heated pools, thermal pools, and swimming pools not emptied during winter.
- On the walls and floors of cold storage facilities.
- For ceramic and granite tile installations and repairs on building façades.
- For tile-on-tile applications.

Characteristics and Benefits

- Easy to prepare and apply.
- Extended open time.
- No slip in vertical applications
- Resistant to freeze-thaw cycles.
- Resistant to stresses and vibrations caused by temperature differences.

Technical Properties

Structure of the Material	Mineral fillers, synthetic additives, powder polymer and special cement.	
Color	Gray, White	
Tensile Adhesion Strength	$\geq 1.00 \text{ N/mm}^2$ (28 days)	
Application Thickness	Min. 3 mm - Max. 8 mm	
Time to Grouting	24 hours	
Application Substrate Temperature	+5°C to +25°C	WK
Service Temperature	-40°C to +80°C	
Slaking Time	3-5 minutes	
Working Time	2 hours	
Open Time	~30 minutes	
Slip	$\leq 0.5 \text{ mm}$	
Water Retention	$\geq 90\%$	
Walkable After	24 hours	
Open to Full Traffic After	3 days	



The above values are given for +23 °C and 50% relative humidity. Higher temperatures shorten these times, while lower temperatures extend them.

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Processing Method

(A) Preparation of Substrate

The substrate must be sound, dry, load-bearing, dust-free, clean, and level. The surface must be free from all kinds of oil, grease, rust, and paraffin traces that can weaken adherence and no loose particles must be present. Uneven areas with 5 to 20 mm depth must be repaired with **MasterCrete™ S88 C** repair mortars two days before the application. If the substrate temperature exceeds +25°C, the surface should be lightly moistened.

Gypsum Based Surfaces

Astar A® is applied on highly absorbent gypsum plasterboard, gypsum plaster, gas concrete, lime plaster, and chipboard surfaces. After 24 hours of **Astar A®** application, tiling/bonding can begin.

Wood-Based Surfaces (OSB and Chipboard)

Wood-based panels must have a maximum moisture content of 10%. Chipboard panels applied on floors (V100) must be 25 mm minimum, and the ones applied on walls 19 mm minimum. Panels must be fixed with screws at 30 cm intervals. Edge joints must be at least 8 mm. Panel joints must be grooved and filled with a suitable sealant.

In dry environments, panels have to be primed with **Astar 303®**. If the plates are in humid environments (exteriors), then **MasterJoint™ WP 306** has to be applied in two layers and reinforced with mesh.

(B) Mixing

The required amount of water is poured into a clean mixing container using a measuring cup. **FMörtel® S1** is slowly added and mixed into the water with a 400-600 RPM mixer for 3-5 minutes until a homogeneous and lump-free mixture is obtained. After resting for approximately 3-5 minutes and mixing again for 30 seconds, the material is ready for use.

Mixing Ratios

FMörtel® S1	Amount of Mixture Water	Density of Mixture
For 1 kg powder	~0.28 L	~1.57 kg/L
For 25 kg bag	~7.00 L	

(C) Processing

A 1 mm layer of **FMörtel® S1** is applied to the substrate with the flat side of the trowel. Within the open time (~30 minutes), **FMörtel® S1** is combed with the notched side of the trowel in a single direction to obtain a uniform layer. When installing ceramics or granite tiles of varying thicknesses, it is recommended to apply an additional 1 mm mortar under each tile to compensate for surface irregularities. During placement, the tiles must be pressed and slightly moved into the mortar to ensure full contact. A joint gap suitable for the tile size must be left. The joints must be filled with **MBT Tech tile grouts**, and grouting can be carried out after approximately 24 hours.

Recommended Notched Trowel Sizes

Tile Dimensions	Notched Trowel Size	Mortar Bed Thickness
Up to 15 cm x 15 cm	6 mm	~ 2-3 mm
Up to 30 cm x 30 cm	8 mm	~ 3 mm
Over 30 cm x 30 cm	10 mm	~ 4 mm

Recommended Joint Width

Tile Dimensions	Joint Width
Up to 5 cm x 5 cm	3 mm
Up to 15 cm x 15 cm	4 mm
Over 15 cm x 15 cm	6-8 mm

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Consumption

Approx. 1.23 kg/m² per 1 mm thickness

FMörtel® S1	Notched Trowel Size and Consumption (kg/m ²)		
	6 mm	8 mm	10 mm
25 kg	3.68	4.91	6.13

Adhesive Usability Test (Open Time)

Press a finger onto the applied adhesive surface. If adhesive sticks to the finger, tiling can be continued. If the finger remains clean, the open time of the adhesive has expired. In this case, the adhesive must be removed from the surface and replaced with fresh material.

Points to Consider

- FMörtel® S1 must not be applied if the ambient or substrate temperature is below +5°C or above +25°C; application should only be carried out under suitable conditions.
- Application must not be carried out in excessively hot, rainy, or windy weather.
- Under no circumstances should water or fresh material be added to a FMörtel® S1 mixture that has started to set.
- The applied thickness of FMörtel® S1 must be between 3–8 mm and must not exceed 8 mm.
- Tiles with high water absorption must be lightly moistened prior to application; no free water should remain on the surface.
- In exterior applications, the tiled surface must be protected from direct sunlight, strong wind, freezing, and rain for the first 24 hours.

Cleaning of Tools

All the tools and equipment must be cleaned with water after the application. After FMörtel® S1 is hardened, it can only be removed from the surface mechanically.

Packaging

25 kg polyethylene-reinforced kraft bags.

Shelf Life

Shelf life is 12 months from the date of production when stored under appropriate conditions in unopened packaging. Once opened, the bag must be tightly sealed, stored under proper conditions, and used within one week.

Storage

Must be stored in unopened original packaging, and in cool and dry environment protected from freezing. For short-term storage, a maximum of 3 pallets may be stacked, and the "first in, first out" system must be applied. In long-term storage, pallets must not be stacked.

Health and Safety

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles and masks which comply with the Occupational Health and Safety Rules should be used. Due to the irritation effect of the uncured materials, the mixture should not come into contact with skin and eyes; in case of a contact, the affected area should be washed with plenty of water and soap; in case of swallowing, a physician should be consulted immediately. No food or beverages should be brought to the application area. The product should be stored and kept out of reach of children. For detailed information please consult the Material Safety Data Sheet.

Disclaimer

The technical information given in this publication is based on the present state of our best scientific and practical knowledge. **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is only responsible for the quality of the product. **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is not responsible for results that may occur because the

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product is used other than advised and/or out of instructions regarding the place and the method of use. This technical form is valid only till a new version is implemented and nullifies the old ones.

Contact

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FMörtel® S1 (MasterCrete™ TIL S1)	
Kayma Özelliği Azaltılmış, Uzatılmış Açık Bekletme Süreli, Şekli Bozulabilen, İç ve Dış Kullanım İçin uygun Geliştirilmiş Çimentolul Yapıştırıcı Tip ve Sınıfı; C2TES1 (Improved Cementitious Adhesive for Internal and External use with Reduced Slip Feature, Extended Open Time, DeformableType and Class; C2TES1)	
Yangına Karşı Tepki (Reaction To Fire)	A1
Başlangıç Çekme Yapışma Kuvveti (Initial tensile adhesion strength)	≥ 1,0 N /mm ²
İsı ile yaşılandırdıktan sonra çekme yapışma kuvveti (Tensile adhesion strength after heat ageing)	≥ 1,0 N /mm ²
Suya daldırıldıktan sonra çekme yapışma kuvveti (Tensile adhesion strength after water contact)	≥ 1,0 N /mm ²
Donma-çözünme çevriminden sonra çekme yapışma kuvveti (Tensile adhesion strength after freeze-thaw cycles)	≥ 1,0 N /mm ²
Enine şekil değiştirme (Transverse deformation)	≥ 2,5 mm and/ve < 5 mm
Kayma (Slip)	≤ 0,5 mm
Uzatılmış Açıkta Bekletme Süresi-Yapışma Mukavemeti(30 Dakika Sonra) (Extended Open Time: Tensile Adhesion Strength(After 30 Minutes))	≥ 0,5 N /mm ²

Part of