

## PRODUCT DATA SHEET

# SikaCeram® FLX 441

(formerly MTile FLX 441)

TWO COMPONENT, HIGH PERFORMANCE, FAST SETTING, DEFORMABLE CEMENTITIOUS ADHESIVE FOR CRITICAL NATURAL STONE COVERINGS AND CERAMIC

### DESCRIPTION

SikaCeram® FLX 441 is a 2-component, cement based, polymer modified, highly stable, high performance, deformable cementitious adhesive used for adhesion of natural stones, granites, marbles and glass mosaics. Can also be used to bond ceramics. Suitable for use in hot and tropical climatic conditions.

### USES

- For indoor and outdoor use
- For floors and walls
- To lay natural stone tiles
- To level uneven substrates prior to laying tiles.

Areas of use:

- Villas, hotels, in living areas, on heated screeds, balconies and terraces, in halls, rooms and corridors of industrial buildings, retail outlets, markets, institutional, service and administration buildings and airports.

### FEATURES

- Plastic, workable bedding mortar, the mediumbed mortar is spread with only a notched trowel
- Deformable, compensates fluctuations in temperature and expansion in the substrate
- Good adhesion without pre-wetting or priming on concrete, sand-cement screed or render
- Low shrinkage, no tensions caused by shrinkage between SikaCeram® FLX 441 and the natural stone tile
- Resistant to frost and permanent exposure to wetness
- Multi-purpose use indoors and out, on walls and floors
- Quick setting, reduces penetration of moisture into the material during the installation, thus preventing efflorescence
- Rapid curing, walkable and groutable after approx. 6 hours, able to bear weight after approx. 1 day
- No staining from the adhesive bed with white marble if the installation is carried out in the buttering-floating method

### CERTIFICATES AND TEST REPORTS

SikaCeram® FLX 441 conforms to the requirements of EN 12004 for class C2FTS1

## PRODUCT INFORMATION

<b>Composition</b>	Cement mortar mix with additives. Does not contain asbestos or other mineral fibres. No injurious silica dust during the application.	
<b>Packaging</b>	A component	25 kg bag
	B component	5.5 kg jerry can
<b>Shelf life</b>	6 months from date of production	
<b>Storage conditions</b>	Store in undamaged, unopened, original sealed packaging in dry conditions at temperatures between +5°C and +35°C. Protect from direct sunlight, heat and moisture.	
<b>Appearance and colour</b>	Grey or white powder	
<b>Density</b>	~1.7 kg/l (mixed, at 25°C)	
<b>pH-Value</b>	12	

## TECHNICAL INFORMATION

<b>Compressive strength</b>	1 day	$\geq 10.0 \text{ N/mm}^2$	(BS EN 196 - Part 1)
	7 days	$\geq 20.0 \text{ N/mm}^2$	
	28 days	$\geq 25.0 \text{ N/mm}^2$	
<b>Flexural-strength</b>	1 day	$\geq 2 \text{ N/mm}^2$	(BS EN 196 - Part 1)
	7 day	$\geq 3 \text{ N/mm}^2$	
	28 day	$\geq 6 \text{ N/mm}^2$	
<b>Service temperature</b>	-20°C min. / +80°C max.		

## SYSTEM INFORMATION

<b>System structure</b>	In normal conditions, no primer is required. However, for very high absorbent substrates or non-absorbent substrates, please contact Sika Technical Service Department for recommendation.
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## APPLICATION INFORMATION

<b>Consumption</b>	<p>Powder consumption and coverage depends on the surface profile and roughness of the substrate, size and reverse profile of the tiles and the placing technique (simple placing "floating" or back to back "buttering-floating").</p> <p>As a guide for solid bed application: For 1 mm thickness over 1 m<sup>2</sup> area approximately ~1.7 kg of freshly mixed adhesive is required.</p> <p>This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.</p> <p>Above consumption indications refer to the installation of slightly profiled, non-vitrified or vitrified tiles on flat substrate e.g. render or cement screed.</p> <p>For small sized tiles (side <math>\leq 30</math> cm), use small squared notch size trowel (4 - 6 mm) and progressively increases for medium tiles (side <math>\leq 45</math> cm, trowel 6 - 8 mm) or large tiles (side <math>\leq 60</math> cm, trowel 8 - 10 mm).</p>
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<b>Layer thickness</b>	Min. 5 mm / Max. 20 mm	
<b>Mixing ratio</b>	~5.5 L of gauging liquid per 25 kg bag	
<b>Maturing time</b>	~3 min. (Slake time)	
<b>Pot Life</b>	~45 min	(+23°C/ 50 % r.h.)
<b>Open Time</b>	~20 min	(+23°C/ 50 % r.h.)
<b>Initial set time</b>	~120 min	(+23°C/ 50 % r.h.)
<b>Final set time</b>	~195 min	(+23°C/ 50 % r.h.)
<b>Applied product ready for use</b>	Walkable after	~6 h
	Groutable after	~6 h
	Able to bear weight after	~24 h
Values determined in laboratory conditions: +23°C ± 2°C, R.H. 50 % ± 5 %. Higher temperatures will reduce the indicated waiting times, lower temperatures will increase the indicated waiting time.		

## BASIS OF PRODUCT DATA

- All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.
- Internal Reference - Version: MBS\_CC UAE/MTile\_FLX441\_03\_20

## FURTHER DOCUMENTATION

- General Method Statement (GMS)

## IMPORTANT CONSIDERATIONS

- Do not apply SikaCeram® FLX 441 at substrate temperatures below +5°C and above +40°C or under exposure to extremem heat and strong winds.
- The open time reduces with absorbent substrates (recommendation: priming with SikaCeram® P 302 (formerly MasterTile® P 302), diluted 1:1 with water.
- In case of high layer thicknesses, the amount of SikaCeram® FLX 441 Part B can be reduced, however, the open time will decrease.
- When laying natural stones on substrates which set through hydration and which have not yet reached the specified minimum age and/or the specified residual moisture level please consider the use of SikaCeram® WP 680 membrane.
- Never add additional liquid SikaCeram® FLX 441 (Part B) or dry powder to a SikaCeram® FLX 441 mix which has already begun to set. Apply SikaCeram® FLX 441 within approx. 30 minutes (at +40°C) after mixing.
- The technical data sheets for the respective grouts and/or sealants should be followed when grouting natural stones.
- Protect from adverse weather conditions, such as extremely high or low temperatures, rain, direct exposure to sun, wind, etc. after application.
- Avoid application in direct sunlight and/or strong wind / draughts.
- Make a test area prior to carrying out any work with natural stones.

- For facade tiles installation and fixing, follow the recommendations stated in BS 5385-1:2018 and/or DIN 18 515-1 "Outwall claddings" standards.

## ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

## APPLICATION INSTRUCTIONS

### EQUIPMENT

Select the most appropriate equipment required for the project:

#### Substrate preparation equipment:

- Grinding equipment
- Abrading equipment
- Power washing equipment
- Sandblasting equipment

#### Mixing equipment:

- Low speed electric single or double paddle mixer (300–400 rpm) with a spiral mixing paddle.

#### Application equipment:

- Notched trowel, various sizes

### SUBSTRATE QUALITY

Minimum age of the substrate:

- SikaLevel® range – 3 days
- Cement screed - 28 days

Note: The screed drying time is subject to the screed thickness and site conditions. For applications before 28d please contact Sikas Technical Service Department.

Newly applied cement screeds must not have a residual moisture content over 4%, anhydrite and/or gypsum-based screeds not more than 0.5% (measured with a CM meter).

## SUBSTRATE PREPARATION

- Cementitious substrates must be sufficiently cured and dried.
- All substrates must be structurally sound, able to support the weight of the new tiling and provide a firm and securely fixed background.
- The substrate must be flat, tight and free from easily removable parts, non-deformable and correctly aged.
- Substrates must be clean, dry, free of any loose or friable particles, contaminants such as dust, dirt, oil, wax polish, grease, cement laitance or efflorescence.
- Use adequate mechanical preparation techniques to remove from the substrate, all traces of any materials that could reduce the product's adhesion to the substrate.
- The substrate must be plumb and flush in accordance with BS 5385. Plaster substrates should be approved by the plaster manufacturer for fixing ceramic tiles and must be suitable for the intended area of use.
- Smooth surfaces must be roughened lightly to improve adhesion.
- To confirm adequate surface preparation and adhesion, carry out a small trial before full application.
- For larger and thicker areas of substrate re-profiling, use suitable mortars from the Sika MonoTop® or SikaEmaco® range. Level concrete floors with SikaScreed® range or SikaLevel® range.
- For any repairs of the substrate materials of SikaEmaco®, SikaRep® or Sika MonoTop® range should be used, applied at least 24 hours before laying the ceramic tiles.
- Identify cracks in the substrate and seal appropriately with Sikadur® epoxy resins.
- For applications in hot climates / environments, or on absorbent substrates, thoroughly pre-dampen (saturate) the substrate before product application. Avoid any ponding / standing water on the substrate. Surface must not be damp to touch.
- For tiling in constantly damp or wet rooms, a suitable Sika® waterproofing product / system must be applied to the substrate before tiling.

## MIXING

- Mix a bag (Part A) with gauging liquid (Part B), using an electric blender with a suitable mixing spiral at low speed, in a clean bucket, to obtain a smooth paste free of lumps.
- Use a blender at 400 rpm maximum; do not mix at faster rate because of mechanical strength decay of the cured product.
- Allow a maturing time (slake time) of approx. 3 minutes for SikaCeram® FLX 441 in the mixing container, then remix briefly prior to application.
- The obtained mix results should be very creamy, easily spreadable and thixotropic.
- Do not mix more material than can be used within 45 minutes.

## APPLICATION

### INSTALLATION OF NATURAL STONE TILES

#### Medium-bed method

- Apply SikaCeram® FLX 441 as a scratch coat onto the substrate, section by section.
- Spread as much mortar as can be covered with natural stones within the open time using a medium-bed trowel or any other suitable notched trowel which enables almost full bedding.
- Check the open time with your fingertip.
- Position tiles with a twist and slide motion to obtain almost full bedding.

#### Bedding method

- Apply SikaCeram® FLX 441 to the required thickness with a medium-bed or flat trowel both to the substrate and the reverse side of the tile.
- Press down and align the natural stone tile and wedge if necessary.
- Apply only as much mortar as can be covered with tiles within the open time.
- Check the open time with your fingertip. The application of SikaCeram® FLX 441 to the reverse side of the tile prevents staining from the adhesive bed and enables an almost void free adhesive bed.

#### Grouting

- For joints from 1 to 8 mm width, use one of Sika® epoxy or cementitious grouts.
- Seal corner joints (floor/wall, wall/wall, wall/soffit) and connection joints (fixtures/tiling, wood/tiling) with a suitable elastomeric sealant from Sika® range.

#### CLEANING OF EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be removed mechanically.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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ISO 9001, 14001, 45001 – SGS  
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- Sika Gulf B.S.C. (c)  
ISO 9001, 14001 – SGS  
- Sika Saudi Arabia Limited  
ISO 9001, 14001 – TÜV  
- Sika MB Construction Chemicals LLC  
- Sika Construction Chemicals for Manufacturing LLC  
- Master Builders Solutions LLC

All products are supplied under a management system certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and ISO 45001.



### Product Data Sheet

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