

PRODUCT DATA SHEET

SikaTile®-460 LHT

Superior grade polymer modified large and heavy tile mortar

PRODUCT DESCRIPTION

SikaTile®-460 LHT is a 1-component superior grade polymer-modified mortar featuring extended open time and adjustability for interior and exterior setting of large and heavy tile, natural stone slabs and gauged porcelain slabs on floors. SikaTile®-460 LHT may be applied from 2.4 mm to 12.7 mm (3/32 in to 1/2 in) thickness to provide better support under large and heavy tiles, stones and gauged porcelain slabs.

Developed with the latest generation of polymers and Sika's Fibermesh® technology resulting in excellent adhesion performances and good flexibility. SikaTile®-460 LHT is formulated to provide the user with a smooth and creamy tile-setting mortar.

WHERE TO USE

For setting the following type of tiles:

- Ceramic and porcelain tiles, quarry tile and mosaic tile
- Large and Heavy Tile
- Natural stone and gauged porcelain slabs (on floors only)
- Moisture-insensitive stone tile ^{A)}

For the following applications:

- Residential and commercial interior and exterior floors
- Heated floor (water and electric systems) interior only
- Wet areas (see Sikalastic®-260 Stop Aqua CA liquid applied waterproofing membrane)
- Shopping malls
- Airport terminals

On the following substrates:

- Concrete
- Cement mortar Bed

- Cement Backer Unit ^{B)}
- Exterior Grade Plywood ^{C)}
- SikaLevel® underlayments and toppings
- Over existing ceramic tile, cement terrazzo and natural stone ^{D)}

^{A)} Refer to **LIMITATIONS**

^{B)} Follow the manufacturer's recommendations and limitations. Moreover, refer to TTMAC's guideline detail 305W EXTERIOR for important information (www.ttmac.com)

^{C)} Interior Dry areas only

^{D)} Read **SURFACE PREPARATION**

CHARACTERISTICS / ADVANTAGES

- Time saving features
 - By performing a more rigorous control of the aggregate size in the formula:
 - SikaTile®-460 LHT does not require any slake time. Just mix, trowel and install. Remixing is only necessary after about an hour, without having to add water, which helps maintain its performances.
 - It also provides easier removal of the tile setting mortar between the tiles before grouting compared to most other tile setting mortars in the market.
- Creamy and easy to spread
- Excellent handling characteristics through extended open and adjustment times
- Excellent adhesion performances
- The best option for setting heavy and large format tiles, natural stone slabs as well as gauged porcelain slabs. SikaTile®-460 LHT meets the requirement for a difference in lippage of not more than 0.4 mm [1/64 in] between tiles after complete curing, when applied up to a total embedded thickness ranging from 10 mm to 12.7 mm (0.4 to 0.5 in)
- Water resistant once cured

Note: For rapid back in service requirements or for fast-track conditions refer to SikaTile®-560 LFT Rapid.

APPROVALS / CERTIFICATES

- SikaTile®-460 LHT meets ISO 13007 International standard for the C2EP1 classification
- SikaTile®-460 LHT meets ANSI A118.4EH standard

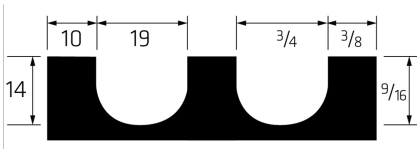
PRODUCT INFORMATION

Composition / Manufacturing	Portland cement, selected aggregates, water retention additives, redispersible polymer
Packaging	20 kg (44 lb) bag
Appearance / Colour	Grey
Shelf Life	12 months from date of production when stored in original, sealed package
Storage Conditions	Store in undamaged, unopened, original sealed packaging in dry conditions at temperatures between 5 °C (41 °F) and 35 °C (95 °F). Protect from direct sunlight, heat and moisture.
CSC MasterFormat®	09 30 00 TILING

TECHNICAL INFORMATION

Pull-Off Strength	ISO 13007 Classification		
	Classification Code	Classification requirements	Results
	C2 (cementitious, improved adhesion)	≥ 1 MPa (145 psi) after standard aging, heat aging, water immersion and freeze / thaw cycles	Pass
	E (extended open time)	≥ 0.5 MPa (72.5 psi) after 30 minutes	Pass
	P1 (normal adhesion to plywood)	≥ 0.5 MPa (72.5 psi)	Pass
Shear Adhesion Strength	ANSI Method / 4 Week Shear Bond Strength		
	Test Method	Requirements	Results
	ANSI A118.4 - shear strength, glazed wall tile	≥ 1.38 MPa (200 psi)	Pass
	ANSI A118.4 - shear strength, quarry tile to quarry tile	≥ 2.07 MPa (300 psi)	Pass
	ANSI A118.4 - shear strength, impervious ceramic (porcelain) mosaics	≥ 1.03 MPa (150 psi)	Pass
	ANSI A118.4E - extended open time (at 30 minutes)	≥ 0.5 MPa (72.5 psi)	Pass
	ANSI A118.4H - mortar for large and heavy tile	Change between 24 hours and 28 days < 0.4 mm (1/64 in)	Pass

APPLICATION INFORMATION

Mixing Ratio	4.4 to 4.9 L (1.16 to 1.29 US gal) of clean potable water per 20 kg (44 lb) bag	
Yield	RECOMMENDED TROWEL SIZE	Coverage*
	Trowel 6 x 6 x 6 mm (1/4 x 1/4 x 1/4 in)	6.8 m ² to 8.1 m ² (73 ft ² to 87 ft ²)
		
	6 x 9 x 6 mm (1/4 x 3/8 x 1/4 in)	4.1 m ² to 4.8 m ² (41 ft ² to 52 ft ²)
		
	13 x 13 x 13 mm (1/2 x 1/2 x 1/2 in)	3.5 m ² to 4 m ² (38 ft ² to 43 ft ²)
		
	19 x 14 x 10 mm (3/4 x 9/16 x 3/8 in)	2.6 m ² to 2.8 m ² (26 ft ² to 28 ft ²)
		
* The consumption depends on the surface profile and roughness of the substrate and on the size of the tiles and the placing technique		
Pot Life	> 2 ½ hours	
Open Time	≥ 30 minutes SikaTile®-460 LHT meets A118.4E and ISO 13007 adhesion performance requirement for Extended Open Time	
Curing Time	Product curing time is affected by ambient and surface temperatures and humidity.	

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

Properties tested at 23 °C (73 °F) / 50 % r.h. unless stated otherwise.

LIMITATIONS

- Do not use where high moisture and hydrostatic conditions and/or recurring moisture problems exist.
- Do not install over moving control joints (with active cracks) or over expansion joints.
- Do not use SikaTile®-460 LHT below 13 °C (55 °F) or above 35 °C (95 °F).
- Do not bond directly to hardwood, Lauan plywood, particle board, strip wood floors, parquet, rubber, cushioned-back vinyl flooring, metal, fiberglass, plastic, OSB panels, or other unstable substrates.

- Do not use SikaTile®-460 LHT in installations that will continually be in immersion conditions such as swimming pools, fountains or in long exposure to water such as gang showers and steam showers. In such case, use SikaTile®-560 LFT.
- Do not use for setting resin-backed tiles. Instead, use Sika's epoxy or urethane adhesives.
- Spot bonding is not an approved installation method.

As well, Sika® recommends:

- To protect stored material from exposure to rain, condensation and high humidity as moisture may penetrate packaging, causing lumps.
- That for best results, condition product to 18 °C (64 °F) to 27 °C (81 °F) prior to mixing and installation.
- That during Pot Life. If remixing is necessary (generally around 60 minutes). To simply remix with drill for 30 - 45 seconds, without the need to add water.
- Cement mortar bed to which SikaTile®-460 LHT is to be applied shall be sound and solid with a direct tensile strength of not less than 0.5 MPa (72.5 lb/in²).
- To wipe the backs of all stone tiles with a clean damp cloth to remove the dusty film that can prevent the adhesive from bonding to the tile.
- That when setting moisture sensitive natural stone (such as green marble, some limestone and granite) or agglomerate tiles. First, prime the back side back of the tile using SikaLevel®-02 EZ Primer CA and the primer dry for at least 60 minutes.
- That flat Back Trowelling marble, granite and natural stone during installation is mandatory.

ENVIRONMENT, HEALTH & 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

JOB SITE CONDITIONS

Maintain environmental conditions and protect work during and after installation. Comply with trade and industry standards and manufacturer's printed recommendations.

When tiling in cold conditions, turn off all forced ventilation and radiant heating systems and protect the work against drafts during installation and for at least 72 hours after completion. When necessary, use indirect auxiliary heaters to maintain an adequate temperature level in the working area (ambient and surface temperatures). Exhaust temporary heaters to the exterior potential harmfulness to the personal and/or to prevent damage to the work from carbon monoxide

emissions. Maintain work area at a temperature no lower than 13 °C (55 °F) for at least 72 hours before and after installation.

For tiling jobs in hot conditions (with temperatures exceeding 35 °C (95 °F), which can be defined as any combination of high air temperature, low relative humidity and wind velocity that can affect the performance of surface preparation, tile setting and grouting materials), consider adjusting the time of application to a cooler or at least shaded time of the day. Protect from adverse weather conditions (such as but not limited to rain) for at least seven (7) days.

SUBSTRATE QUALITY (for concrete or for cement mortar bed)

Surface treatments or any friable areas of the substrate must be mechanically eliminated. Aggressive mechanical preparation (such as but not limited to using a scarifier or a chipping hammer may invite micro bruising of the substrate) Contact Sika's Technical Services for additional information.

Resurfacing, patching, levelling or areas requiring a mortar bed should be prepared using appropriate Sika®Level self-levelling, patching, or SikaScreed®-40 screed mortar. Expansion joints should comply with detail 301MJ Movement joint guidelines per TTMAC.

Warning: Refer to the Regulations Made Under the Canada Labour Code for additional information regarding requirements for handling surface containing or suspected of containing lead-based paints or any flooring, substrate or substances that may contain asbestos.

SURFACE PREPARATION

All supporting surfaces should be structurally sound, solid, stable. Surfaces shall be flat, plumb and true with a maximum permissible variation of 6 mm (1/4 in) in 3.05 m (10 ft) or no more than 3 mm (1/8 in) in 600 mm (24 in) from the required plane. However, any tile or stone with at least one edge greater than 380 mm (15 in) requires more stringent tolerances of the substrate with a maximum permissible variation of 3 mm (1/8 in) in 3.05 m (10 ft) or more than 1.5 mm (1/16 in) in 600 mm (24 in). Surfaces should be clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent and any deleterious substance or conditions that may prevent, reduce or inhibit adhesion or performance.

Before work commences, examine the areas to be covered and report any improper condition(s) in writing to the general contractor, architect or engineer (or otherwise, the owner). User shall not proceed with the work until surfaces and conditions comply with the

requirements indicated in this document; applicable industry standards; federal, provincial and local regulations, as well as good trade practices. By starting work, the Applicator/User acknowledges that the conditions are acceptable.

Localized substrate repair variations of 5 mm (13/64 in) or less can be levelled with SikaTile®-460 LHT and allow to set at least 18 hours (or as soon as 3 hours when using SikaTile®-560 LFT Rapid).

Concrete (and cement mortar bed)

Concrete must be cured for a minimum of 28 days (up to 14 days for cement mortar bed or only 5 hours when using SikaScreed®-40 screed mortar). On grade or below grade concrete slabs must be installed over an effective and continuous vapour barrier. On a clean and dust-free substrate, place a single drop of portable water (quarter size) on the substrate using a pipette. The concrete should turn dark. If the drop is absorbed within 60 seconds, the substrate can be considered porous (or absorptive) and acceptable for using SikaTile®-460 LHT. Otherwise, a bond test should be performed to confirm an adequate bond. If an adequate bond cannot be achieved, the concrete surface should be abraded, and additional bond tests should be conducted. If an adequate bond cannot be achieved or in doubt, contact Sika's Technical Services.

Note: As per TTMAC (Tile Terrazzo Marble Association of Canada) 09 30 00 guide. Concrete should have a steel trowel and fine broom finish for thin-set applications. Indeed, although not mandatory, a light surface profile can positively impact bond performances of cementitious tile setting adhesives.

Plywood floors (interior residential floor in dry areas only)

Wooden substrates should consist of two layers of wood panels. A suitable Subfloor (immediately over joists) shall be a minimum 16 mm (5/8 in) thick Douglas Fir plywood (CSA 0121), Canadian Softwood plywood 0151), Poplar plywood (CSA 0153), Construction sheathing or APA Sturd-I-Floor, Exposure 1 OSB. Joists to be spaced 406 mm (16 in) on center. Subfloor sheet ends and edges should be gapped 3 mm (1/8 in). The subfloor should be attached with 30 mm (1 3/16) screws placed 150 mm (6 in) o.c. around the perimeter and 200 mm (8 in) o.c. throughout the body of the panel. All sheet ends and edges must be supported by a framing member.

Suitable Underlayments (over the subfloor) shall be a minimum 16 mm (5/8 in) thick Group 1 exterior grade plywood, Select (SEL) or Select Tight Face (SEL TF) CANPLY classified exterior grade plywood conforming to CSA- 0121 standard for Douglas Fir (DFP) for direct bond applications. Before purchasing/ordering plywood, note

that the certification information (such as but not limited to CSA standard) can generally be found on the underside of the plywood. Offset underlayment joints from joints in subfloor and stagger joints between sheet ends. Underlayment should be attached with 30 mm (1 3/16 in) screws placed 150 mm (6 in) o.c. around the perimeter and 200 mm (8 in) on center, throughout the body of the panel. Underlayment screws to go through the total thickness of the assembly but should not penetrate the joists or cross bridging/solid blocking. Underlayment sheet edges should be gapped 6 mm (1/4 in) to any abutting surfaces (ex: walls, counter, etc.).

Note on deflection: The general rule for ceramic is that the maximum allowable deflection criterion is L/360 when exposed to live and dead loads (such as but not limited to kitchen islands for example) unless, if any one side is longer than 380 mm (15 in) then use the following recommendation for stone. For stone, the maximum allowable deflection criterion is L/720 (which, in essence, requires the substrate to be twice as rigid). This is especially important for installation involving heavy tiles whereas the wood framing must have adequate strength and load bearing capacity.

Over existing ceramic, cement terrazzo and natural stone (interior dry or wet areas only)

Existing ceramic, cement terrazzo and natural stones should be sound and firmly laid, thoroughly cleaned the surface to eliminate the accumulation of soap (cleaner) residues which can build up to an inconspicuous film. Follow preparation by abrading the surface sanding by hand. For larger flooring jobs, a light shot blasting may be considered. Finish preparing by eliminating any residues on the surface and apply Sika®Level-02 EZ Primer (CA) (consult product data sheet for additional information) before using SikaTile®-460 LHT.

Note: Contact Sika's Technical Service for installation recommendations in writing concerning substrates or conditions not listed.

MIXING

In a clean container, add between 4.4 to 4.9 L (1.16 to 1.29 US gal) of clean potable water. Then add 1/2 bag of SikaTile®-460 LHT and mix at slow speed until a wet slurry is obtained. Add 1/4 bag and mix between 200-300 rpm until powder comes to a loose paste consistency. Add final 1/4 bag and mix thoroughly to a smooth and homogeneous consistency. SikaTile®-460 LHT consistency shall be such that when applied with the recommended notched trowel to the substrate, the ridges formed in the mortar do not flow or slump. During use, stir mortar mix occasionally. Do not add additional water.

NOTE: No Slake Technology - No wait, just mix, trowel

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and install.

APPLICATION

Choose a notched trowel with sufficient depth to achieve more than 80 % mortar coverage from SikaTile®-460 LHT and transfer to substrate and back of tile for all interior applications.

For exterior, commercial floor, in applications in wet areas, for tiles that are going to be subjected to heavy traffic or exposed to high impact or for tiles with any edge longer than 380 mm (15 in), a minimum of 95 % coverage must be achieved. "Flat back trowelling" the tile which consists of applying a thin layer of SikaTile®-460 LHT to the back of each tile before setting it in place may be necessary to meet these requirements and it may also help improve adhesion to tiles with bond breakers such kiln release agents.

With pressure, apply a coat of mortar SikaTile®-460 LHT by using the flat side of the trowel to key the mortar into the substrate. With the notched side of the trowel, apply additional mortar SikaTile®-460 LHT by combing it in a single direction parallel to the shortest dimension of the tile. Spread only as much SikaTile®-460 LHT as can be tiled before the product skins over.

Place the tiles firmly into the wet bond coat freshly applied SikaTile®-460 LHT. Push the tiles back and forth in a direction perpendicular to trowel lines, to collapse the ridges which can help achieve better coverage with edges and corners fully supported. Ensure proper contact of the mortar to the back of the tile and to the substrate by periodically lifting a few tiles to check for acceptable coverage and verify that corner and edges are fully supported. Open time can vary with job site conditions. Remove excess mortar SikaTile®-460 LHT from the joint areas so that at least 2/3 of the tile depth is available for grouting. Always allow bond coat SV name to cure sufficiently before grouting and eventually opening to traffic.

MOVEMENT JOINTS

All expansion, control, construction, cold, saw-cut, isolation, contraction, and seismic joints in the structure should continue through the tilework, including such joints at vertical surfaces, as specified per TTMAC's Specification Guide 09 30 00 Tile Installation Manual, Detail 301MJ. Do not cover movement joints with mortar. Use a suitable sealant instead (following manufacturer's written instructions). Always test a small inconspicuous area for staining or leaching before use to ensure compatibility on natural stones.

GROUTING AND PROTECTION

Protect from impact and vibration for at least 48 hours. Allow at least 18 hours before grouting. Then protect grouted area at least 18 hours before allowing foot traffic and at least 24 hours before allowing light traffic depending on temperatures and humidity conditions. Protect from heavy traffic for at least seven (7) days. As necessary, use load distributing protection over the installation when moving heavy equipment across tiled assembly. Protect from rain or temperature below 5 °C (41 °F) for at least seven (7) days.

Note: Extended protection and downtime requirements before grouting may be required depending on temperature and humidity conditions and on the porosity and size of the tile or stone being installed.

PROTECTING NEW TILED FLOOR

Upon completion of tile floor, it is the responsibility of the owner/agent or general contractor to protect the floor from damages (TTMAC's Specification Guide 09 30 00 Tile Installation Manual).

CLEAN UP

Clean all tools and equipment after use with water. Once hardened, the product 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.

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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 recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: www.sika.ca

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