



Sopro FKM XL 444

Multi-purpose eXtraLight flexible tile adhesive



Multi-purpose, flexible, extra-light, extra-high-coverage, low-dust, cementitious, highly polymer-modified adhesive meeting C2 TE S1 requirements to DIN EN 12004. For installation of ceramic wall/floor coverings and discoloration-resistant natural stone tiles. Particularly suitable for large-format fully vitrified stoneware wall and floor coverings. For balconies and patios. Suitable for use in conjunction with wall and floor heating and waterproof membranes. Creamy consistency and exceptionally smooth workability. With celebrated 4-in-1 formulation.

- For walls and floors, indoors and outdoors
- C2: tensile adhesion strength $\geq 1.0 \text{ N/mm}^2$
- T: thixotropic – high sag resistance due to special fibre reinforcement
- E: extended open time ≥ 30 minutes
- S1: deformability $\geq 2.5 \text{ mm}$
- Extra-sag-resistant for laying large-format tiles
- Extra-light with extra-high coverage
- Reduced-dust
- Up to 60 % higher coverage¹⁾
- Universal application: thin-bed, floating-bed and medium-bed laying; filler coats of up to 10 mm thickness²⁾
- Approved as system component and individual product for shipbuilding applications
- Low-chromate to Regulation (EC) No 1907/2006, Annex XVII
- DGNB (German Sustainable Building Council): Top quality level 4, Line 8³⁾
- Recommended by Sentinel Haus Institut

Use

With earthenware, stoneware and fully vitrified stoneware tiles, mosaic, discoloration-resistant natural stone units, cast stone units.

In residential, commercial and industrial facilities, damp and wet spaces, swimming pools, operating theatres, escape routes, on facades, balconies and patios. For indoor and outdoor use. For laying tiles on trowel-on or sheet waterproof membranes.

Suitable for filling and levelling out irregularities on limited wall and floor areas with up to 10 mm thick coats (for drylining/dry construction and mastic asphalt screeds, max. 5 mm coat thickness).

Particularly suitable for heavy, large-format wall and floor tiles on account of its extremely high sag resistance.

Suitable substrates

All substrates. Concrete and lightweight concrete, min. 3 months old; cement screeds; calcium sulphate (anhydrite and self-levelling anhydrite) screeds; mastic asphalt screeds (indoors); board subfloors; heated floor constructions (cement and calcium sulphate screeds); strong existing ceramic, natural stone, terrazzo or cast stone coverings; paperless gypsum panels, gypsum plasterboard and gypsum fibreboard; flush-jointed masonry (no composite masonry); renders made from masonry cement; cement render; lime/cement render; gypsum plaster; rigid foam board. Oriented strand board (OSB) and metal substrates (indoors only); firmly adhering PVC coverings. Waterproof membranes with Sopro FDF 525/527 flexible sealing compound, Sopro TDS 823 two-component turbo sealing slurry, Sopro DSF 423 two-component flexible sealing slurry, Sopro DSF 523 one-component flexible sealing slurry, Sopro DSF 623 one-component flexible rapid-set sealing slurry and Sopro AEB 640 waterproofing and separating membrane.

Mixing ratio

Thin-bed consistency: 7.5 – 8.5 ltr water : 15 kg Sopro FKM XL 444
 Medium-bed consistency: 7.75–8.25 ltr water : 15 kg Sopro FKM XL 444
 Floating-bed consistency: 9.5 – 10.0 ltr water : 15 kg Sopro FKM XL 444
 Surface filler consistency: 7.5 – 8.0 ltr water : 15 kg Sopro FKM XL 444

Maturing time

3–5 minutes

Working life

Approx. 90 minutes; stiffened mortar shall not be retempered by addition of water or fresh mortar to restore workability.

¹⁾ Than standard Sopro thin-bed adhesives without lightweight aggregate.

²⁾ For drylining/dry construction and mastic asphalt screeds, max. 5 mm coat thickness.

³⁾ Based on DGNB (German Sustainable Building Council) criterion "ENV1.2 Local Environmental Impact" (version 2015).

Open time

Approx. 30 minutes

Walkable/groutable

After approx. 12 hours or after setting of adhesive; take measures to spread loads over floor.

Loadable

After approx. 3 days; in commercial facilities after approx. 14 days, in areas subject to high wet exposure after approx. 7 days, for underwater applications after approx. 21 days, in conjunction with wall and floor heating after approx. 14 days.

Application temperature

Between +5°C and max. +30°C; use of a rapid-set Sopro thin-bed adhesive is recommended for external areas during cold season.

Coverage

Approx. 0.7 kg/m² per mm coat thickness

Shelf life

Approx. 12 months, subject to storage on pallet in dry conditions in original unopened containers

Packaging

15 kg bag

Properties

Low-dust formulation. Particularly suitable for heavy, large-format wall and floor tiles on account of its high sag resistance and excellent contact adhesion. Adhesive consistency may be adjusted for thin-bed, floating-bed and medium-bed (with 20/15 mm medium-bed trowel with round or square serration) method, allowing virtually solid, void-free laying on floors; surface filler consistency is also possible for up to 10 mm thick coats on limited areas. High water retentivity, resistant to water and freeze-thaw cycles, creamy consistency and exceptionally smooth workability, particularly high coverage, thermally insulating due to lightweight aggregate, extended open time.

Substrate preparation

Substrate shall be clean, solid, strong, dimensionally stable and free from any adhesion-impairing substances. Fill any existing cracks in screed with structurally bonding Sopro GH 564 casting resin. Level out any gross irregularities using Sopro RAM 3 454 renovation and levelling mortar, Sopro RS 462 repair filler or Sopro SP 466 lightweight levelling mortar; for floors, use Sopro FS 15 550 floor-levelling compound, Sopro VS 582 self-levelling filler or Sopro FAS 551 fibre-reinforced self-levelling filler.

Cement screeds shall be 28 days old and dry. Screeds incorporating Sopro Rapidur® B1 turbo rapid-set binder are ready for tiling after only 6 – 12 hours. Unheated calcium sulphate (anhydrite and self-levelling anhydrite) screeds shall exhibit a moisture content ≤ 0.5% CM and be adequately ground, vacuum-cleaned and primed. Mastic asphalt screeds shall be blinded with sand.

Cement and calcium sulphate screeds incorporating heating elements shall be heated up to ensure adequate drying out prior to flooring installation: required moisture content for cement screeds ≤ 2.0% CM, for calcium sulphate screeds ≤ 0.3% CM. Unheated cement screeds (min. 28 days old) are already suitable for tiling where moisture content ≤ 2.0% CM. Use with oriented strand board (OSB) and metal substrates is limited to indoor applications. Gypsum plasterwork shall be dry, single-coat and shall not be felt-floated or smoothed.

All relevant standards, guidelines and recommendations shall apply; workmanship shall comply with good practice.

Priming

By virtue of its high polymer modification and "built-in" priming capability, Sopro FKM XL 444 requires no separate priming coat when applied to most standard mineral, cementitious substrates. Use of following primers is recommended for listed substrates:

Sopro GD 749 primer: Calcium sulphate (anhydrite and self-levelling anhydrite) screeds to receive tiles of size not exceeding 0.2 m², paperless gypsum wall panels, gypsum plasterboard/joints and filler, gypsum fibreboard, gypsum plaster, high- or variable-suction (interior) aerated concrete; lime/cement render, renders made from masonry cement, flush-jointed masonry.

Sopro SG 602 primer-sealer: Cement render, lime/cement render, gypsum plaster, homogeneous, flush-jointed masonry (no composite masonry), concrete, aerated concrete, paperless gypsum panels, gypsum plasterboard and gypsum fibreboard, cement screeds, calcium sulphate screeds (for laying tiles up to max. 1 m²). For ceramic tiles, natural stone and timber substrates insensitive to moisture. For large-format tiles (of size > 0.36 m²), use of rapid-set, rapid-drying bedding adhesives is recommended in conjunction with Sopro SG 602.

Sopro HPS 673 special primer: Smooth and closed-pore substrates, e.g. existing tile, terrazzo, natural and cast stone coverings, adhesive residue from PVC flooring or carpeting. Oriented strand board and metal substrates (indoors).

Sopro MGR 637 multi-purpose primer/Sopro EPG 522 epoxy primer (in either case blinded with Sopro QS 511 coarse silica sand): Calcium sulphate (anhydrite and self-levelling anhydrite) screeds to receive tiles of size exceeding 0.2 m².

Application

Place water in clean mixing container, add Sopro FKM XL 444 and mix thoroughly until required workable, lump-free consistency is achieved. Water requirement is as follows:

Thin-bed consistency: 7.5 – 8.5 ltr water: 15 kg Sopro FKM XL 444

Medium-bed consistency: 7.75–8.25 ltr water : 15 kg Sopro FKM XL 444

Floating-bed consistency: 9.5 – 10.0 ltr water : 15 kg Sopro FKM XL 444

Surface filler consistency: 7.5 – 8.0 ltr water : 15 kg Sopro FKM XL 444

After 3–5 minutes maturing time, remix thoroughly. Apply contact layer with finishing trowel, then apply combed bed with suitable notched trowel (tool angle 45°–60°). Apply only as much adhesive as can be covered by tiles during open time (30 minutes). Press tiles firmly into adhesive bed, position and align. Rake out joints prior to hardening and wash down covering. Sopro FKM XL 444 can be applied in up to 10 mm thick coats on limited areas to even out irregularities in substrate or provide any necessary falls.

Specified times

Apply for normal temperature range of +23°C and 50% relative humidity; higher temperatures shorten and lower temperatures lengthen these times.

Tools

Mixing attachment, notched trowel with suitable serration (tooth size up to 12 mm), medium-bed trowel; wash tools with water immediately after use.

Test certificates, test reports and licences

C2 TE S1 to DIN EN 12004

DIN EN 14891:

FKM XL 444 in conjunction with DSF 423, DSF 523, DSF RS 623, TDS 823 and GD 749 meets requirements, including those for tensile adhesion strength after storage in chlorinated water

PG-AIV-F (Criteria for Award of National Test Certificates for Liquid-Applied Waterproof Membranes Used in Conjunction with Tile Coverings):

National test certificate (abP) for composite waterproofing systems with membrane and tile finish, for structural waterproofing in conjunction with DSF 523, DSF RS 623, DSF 423, TDS 823, ZR 618, FDF 525/527 and other Sopro components.

PG-AIV-B (Criteria for Award of National Test Certificates for Waterproof Sheet Membranes Used in Conjunction with Tile Coverings):

National test certificate (abP) for composite waterproofing systems with membrane and tile finish, for structural waterproofing in conjunction with AEB 640 and other Sopro components.

ETAG:

European technical approval (ETA): System component of ETA no. 13/0155 under ETAG 022 Part 1 and of ETA no. 13/0154 under ETAG 022 Part 2

BG Verkehr (institution for statutory accident insurance and prevention for transport and traffic):

Approval for shipbuilding as system component with HPS 673 and FEP: MED approval no. 118222-02 (wall) and 124096-02 (floor), USCG approval no. 164.112/EC0736/118222-02 (wall) and 164.117/EC0736/124096-02 (floor)

BG Verkehr (institution for statutory accident insurance and prevention for transport and traffic):

Approval for shipbuilding as system component with HPS 673 and FEP plus: MED approval no. 118.405 (wall) and 124.126 (floor), USCG approval no. 164.112/EC0736/118.405 (wall) and 164.117/EC0736/124.126 (floor)

BG Verkehr (institution for statutory accident insurance and prevention for transport and traffic):

Approval for shipbuilding as system component with HPS 673, FAS 551 and TF+: MED approval no. 124.125, USCG approval no. 164.117/EC0736/124.125 (floor)

BG Verkehr (institution for statutory accident insurance and prevention for transport and traffic):

Approval for shipbuilding as individual product: MED approval no. 118220-02 (wall and floor)

EMICODE system of GEV (German Association for the Control of Emissions in Products for Flooring Installation, Adhesives and Building Materials): EC1^{PLUS} ("very-low-emission-plus") rating

Labelling in accordance with Regulation (EC) No 1272/2008 (CLP)

GHS05, GHS07

Signal word: Danger

Contains Portland cement, Cr (VI) < 2 ppm. Contains calcium formate. Exhibits strong alkaline reaction upon contact with moisture/water; protection required for skin and eyes. All standard precautions for the handling of construction materials/chemicals shall be taken.

Hazard statements: H315 Causes skin irritation. H318 Causes serious eye damage. H335 May cause respiratory irritation.

Precautionary statements: P102 Keep out of reach of children. P261 Avoid breathing dust. P280 Wear protective gloves/protective clothing/eye protection/face protection. P302+P352 IF ON SKIN: Wash with plenty of water and soap. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor. P332+P313 If skin irritation occurs: Get medical advice/attention. **GISCODE (German hazardous substances classification):** ZP 1 - Low-chromate to Regulation (EC) No 1907/2006, Annex XVII

Safety precautions

Disposal

13.1. Waste treatment methods

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

91/156/EEC, 91/689/EEC, 94/62/EC and subsequent amendments.



Disposal of hardened product (EC waste code) : 17 01 07

Disposal of not hardened product (EC waste code) : 17 01 06*

The suggested European waste code is just based on the composition of the product.

According to the specific process or application field a different waste code may be necessary

CE marking

 1211 0767	 Sopro Bauchemie GmbH Biebricher Straße 74 - 65203 Wiesbaden (Germany) www.sopro.com
	04 CPR-DE3/0444.1.eng EN 12004 Sopro FKM XL 444 Improved deformable cementitious adhesive with reduced slip and extended open time for tiling internal and external floors and walls
Reaction to fire	Class A2-s1, d0/A2 _{s1}
Bond strength as: Tensile adhesion strength after dry storage	≥ 1.0 N/mm ²
Durability for: Tensile adhesion strength after water immersion Tensile adhesion strength after heat ageing Tensile adhesion strength after freeze-thaw cycles	≥ 1.0 N/mm ² ≥ 1.0 N/mm ² ≥ 1.0 N/mm ²

Please observe the current version of the product information, the currently valid declaration of performance under the EU Construction Products Regulation, and the latest version of the relevant safety data sheet to EC Regulation No 1907/2006, also available from the internet at www.sopro.com! This document serves as a product description and sets out general details, based on empirical and test data, that take no account of specific cases of application. No liability may be construed and no claims shall be accepted in respect of these details. Should you require assistance, please contact our Technical Counselling Service.

Sopro FKM XL 444 multi-purpose eXtraLight flexible tile adhesive



Thin-bed laying

Floating-bed laying

Medium-bed laying

Surface filling

Thin-bed laying of large-format fully vitrified stoneware wall coverings



1 Comb Sopro FKM XL 444 in wall consistency onto pre-applied contact layer.



2 Place large-format fully vitrified stoneware units into adhesive bed and align. Rake out joints prior to hardening.



3 Finish joints in covering using Sopro tile grout (e.g. Sopro DF10 flexible designer tile grout or Sopro Brillant® water-repellent tile grout).

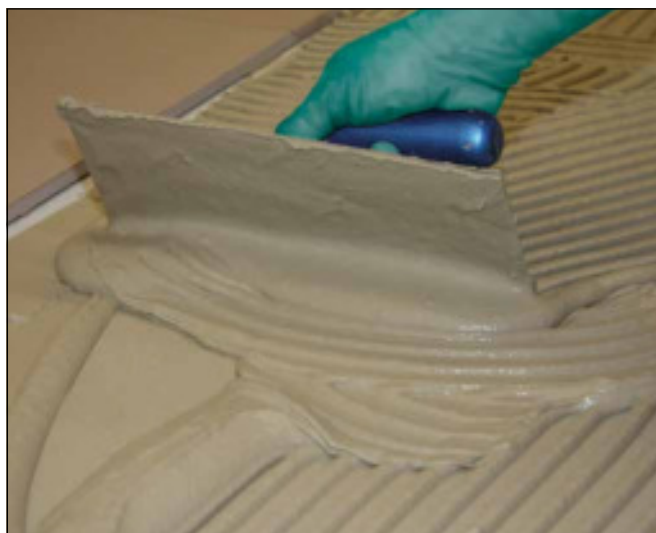


4 Allow adequate drying time for applied Sopro grout, then wash down tiled surface.

Floating-bed laying of large-format fully vitrified stoneware floor coverings



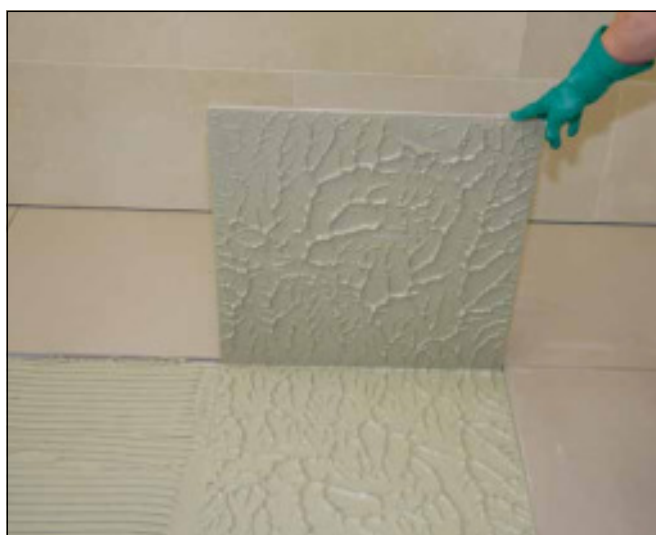
1 Pour Sopro FKM XL 444 in floating bed consistency onto properly prepared substrate.



2 Easy combing of adhesive bed thanks to fluid material consistency.



3 Place large-format fully vitrified stoneware units into adhesive bed and align. Rake out joints prior to hardening.



4 Sopro FKM XL 444 ensures optimum, practically void-free laying.



5 Finish joints in covering using Sopro tile grout (e.g. Sopro DF10 flexible designer tile grout or Sopro Brillant® water-repellent tile grout).



6 Allow adequate drying time for applied Sopro grout, then wash down tiled surface.

Medium-bed laying of discoloration-resistant natural stone units



1 Apply Sopro FKM XL 444 in medium bed consistency using medium-bed trowel to pre-applied contact layer.



2 Place natural stone tiles into adhesive bed and align. Rake out joints prior to hardening.



3 Tap stone units into place and check for levelness.



4 Sopro FKM XL 444 can also be trowel-applied for greater coat thicknesses of up to 10 mm.



5 Finish joints in stone covering using Sopro tile grout (e.g. Sopro DF10 flexible designer tile grout or Sopro Brillant® water-repellent tile grout).



6 Allow adequate drying time for applied Sopro grout, then wash down stone covering.

Surface filler application to falls on limited areas



1 Before applying filler coat to falls on limited areas, trowel on Sopro FKM XL 444 as contact layer.



2 Then apply Sopro FKM XL 444 in surface filler consistency to substrate ...



3 ... and work to required falls, with max. filler thickness of 10 mm, prior to installation of waterproof membrane.

bringing european innovation

smet

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