

Order-No
450

Sopro FF 450

Flexible tile adhesive



Cementitious flexible tile adhesive for installation of ceramic wall/floor coverings and discoloration-resistant natural stone tiles. Suitable for heated wall and floor constructions. Low-chromate to Regulation (EC) No 1907/2006, Annex XVII.

- Complies with German Flexmortar guidelines (lozenge marking) and class C2 TE S1 requirements to DIN EN 12004
- Good workability
- High sag resistance due to fibre reinforcement
- Extended open time
- High coverage
- Deformability ≥ 2.5 mm
- EMICODE system of GEV (German Association for the Control of Emissions in Products for Flooring Installation, Adhesives and Building Materials): EC1^{PLUS} R ("very-low-emission-plus") rating
- DGNB (German Sustainable Building Council): Top quality level 4, Line 8¹⁾
- For indoor and outdoor use

EMISSIONS

German AgBB test	Pass
GEV-EMICODE	EC1 ^{PLUS} R
Swiss eco-bau quality label	eco-1
French VOC ordinance	A+ very-low-emission
VOC content	Max. 65 g/ltr



* Information sur le niveau d'émission de substances volatiles dans l'air intérieur, présentant un risque de toxicité par inhalation, sur une échelle de classe allant de A+ (très faibles émissions) à C (fortes émissions).

EPD · ENVIRONMENTAL PRODUCT DECLARATION

ENVIRONMENTAL PRODUCT DECLARATION TO ISO 14025 AND EN 15804

Product group	Modified mineral mortars of Group 1 for bonding
Owner of the declaration	Deutsche Bauchemie e.V. (DBC) Industrieverband Klebstoffe e.V. (IVK) Verband der deutschen Lack- und Druckfarbenindustrie e.V. (VdL)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DIV-20130109-IBE1-DE
Issue date	20.08.2013
Valid to	01.08.2018
Allocation	The product is covered by the model EPD.

BUILDING CERTIFICATION SYSTEMS

The term "sustainability" refers to the principle of not being entitled to consume more resources than can be renewed or regenerated and made available again in the future (Duden). In this context, the construction and real estate sectors play a key role. In Germany alone, for example, the construction and operation of buildings still account for one-third of energy use. "Sustainable construction" has become the defining concept of our age and sets the bar for all future construction projects. Building certification systems now provide a means of measuring and assessing the sustainability performance of buildings. The scope of the issues examined in this connection covers, at the very least, economic and ecological as well as sociocultural and functional criteria. At the same time, the suitability of construction products is never considered in isolation, but always in relation to the particular context and application in the building.

DGNB - German Quality Label for Sustainable Building

2015/2016 version

Criterion	ENV1.2 Local Environmental Impact	
Criteria matrix	Line 8	
Product type	Laying material – Adhesive below wall and floor coverings	
Requirements	Quality level 1 (low)	GISCODE D1/RU0,5/RU1/RE1/RS10
	Quality level 2	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 3	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 4 (high)	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets quality level 4 requirements through GISCODE ZP1 and EMICODE EC1^{PLUS} R.	
Exceptions	Exceptions to the requirements may be granted in cases where one of the specified product requirements cannot be met for technical or functional reasons (i.e. due to the absence of a functionally equivalent product or a design alternative meeting the requirements) or where the basic data cannot be prepared for a reasonable outlay. The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Product exceptions for purely aesthetic reasons are excluded from this provision. Evidence may, for example, be provided by an up-to-date confirmation by at least three market-relevant manufacturers that no suitable product is available for the targeted quality level, or through proof that use of the suitable product was not technically feasible due to force majeure (weather conditions, natural factors such as hydrostatic pressure in subsoil). The evidence provided for a technical exception may only relate to a single quality level and allows no exemption from compliance with any requirements specified for the lower quality levels. Should it be impossible to comply with the requirement of a lower quality level, for technical reasons, this must be consistently indicated in all three submitted manufacturer confirmations relating to the technical exception.	

2012 version (2013 upgrade)

Criterion	ENV1.2 Local Environmental Impact	
Criteria matrix	Line 7	
Product type	Laying material – Adhesive below wall and floor coverings	
Requirements	Quality level 1 (low)	GISCODE D1/RU0,5/RU1/RE1/RS10
	Quality level 2	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 3	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 4 (high)	GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets quality level 4 requirements through GISCODE ZP1 and EMICODE EC1^{PLUS} R.	
Exceptions	Exceptions to the requirements may be granted in cases where one of the specified product requirements cannot be met for technical or functional reasons (i.e. due to the absence of a functionally equivalent product or a design alternative meeting the requirements) or where the basic data cannot be prepared for a reasonable outlay. The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Product exceptions for purely aesthetic reasons are excluded from this provision. Evidence may, for example, be provided by an up-to-date confirmation by at least two market-relevant manufacturers that no suitable product is available for the targeted quality level, or through proof that use of the suitable product was not technically feasible due to force majeure (weather conditions, natural factors such as hydrostatic pressure in subsoil). The evidence provided for a technical exception may only relate to a single quality level and allows no exemption from compliance with any requirements specified for the lower quality levels.	

2009 version	
Profile	06 Local Environmental Impact
Product type	Flooring adhesive – Product for surface coverings
Requirements	Quality level 1 (low) VOC content ≤ 25 %
	Quality level 2 VOC content ≤ 15 % and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 3 VOC content ≤ 10 % and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 4 (high) VOC content ≤ 3% and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets quality level 4 requirements through VOC content ≤ 3% and EMICODE EC1^{PLUS} R.
Exceptions	Exceptions to the requirements may be granted in cases where one of the specified product requirements cannot be met for technical or functional reasons (i.e. due to the absence of a functionally equivalent product or a design alternative meeting the requirements) or where the basic data cannot be prepared for a reasonable outlay. The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Product exceptions for purely aesthetic reasons are excluded from this provision.

BNB · German Assessment System for Sustainable Building

2015 version	
Criterion	1.1.6 Local Environmental Impact
Summary table	Line 10a
Product type	Laying material for ceramic wall/floor tiles
Requirements	Quality level 1 (low) Documentation
	Quality level 2 Mineral tile adhesive or GISCODE D1/RU0,5/RU1/RE1/RS10
	Quality level 3 Mineral tile adhesive or GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R
	Quality level 4 Mineral tile adhesive or GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 5 (high) Mineral tile adhesive or GISCODE D1/RU0,5/RU1/RE1/RS10 and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets quality level 5 requirements through mineral tile adhesive criterion, GISCODE ZP1 and EMICODE EC1^{PLUS} R.
Exceptions	Exceptions to the requirements may be granted in cases where one of the specified product requirements cannot be met for technical or functional reasons (i.e. due to the absence of a functionally equivalent product or a design alternative meeting the requirements). The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Product exceptions for purely aesthetic reasons are excluded from this provision.

2011 version	
Criterion	1.1.6 Local Environmental Impact
Product type	Flooring adhesive – Product for surface coverings
Requirements	Quality level 1 (low) Documentation
	Quality level 2 VOC content ≤ 25 %
	Quality level 3 VOC content ≤ 15 % and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 4 VOC content ≤ 10 % and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
	Quality level 5 (high) VOC content ≤ 3 % and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets quality level 5 requirements through VOC content ≤ 3 % and EMICODE EC1^{PLUS} R.
Exceptions	Exceptions to the requirements may be granted in cases where one of the specified product requirements cannot be met for technical or functional reasons (i.e. due to the absence of a functionally equivalent product or a design alternative meeting the requirements) or where the basic data cannot be prepared for a reasonable outlay. The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Product exceptions for purely aesthetic reasons are excluded from this provision.

NaWoh · Quality Label for Sustainable Housing

2013 version (V 3.0)

Criterion	3.2.4 Avoidance of contaminants
Indicator	Avoidance of contaminants
Product type	Flooring adhesive
Requirements	EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets requirements through EMICODE EC1 ^{PLUS} R.

BNK · German Assessment System for Sustainable Small-Scale Residential Developments

2015 version

Criterion	1.1.1 Occupant health: Indoor air hygiene
Requirements	Documentation and specification of VOC emissions
Rating	Meets requirements through EMICODE EC1 ^{PLUS} R.

NBBW · Sustainable Construction in German Federal State of Baden-Württemberg

2011 version

Sustainability criterion	4 Physiologically harmless and environmentally compatible construction materials
Category	D
Product type	Adhesive for floor coverings
Requirements	Construction products of secondary significance to building control EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113 Construction products of significance to building control Ü/CE mark and EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets requirements placed on construction products of significance to building control through CE mark and EMICODE EC1 ^{PLUS} R.
Exceptions	Deviations from the individual requirements for the sustainability criteria are allowable in duly justified exceptional cases, provided such requirements are not prescribed by law. The deviations shall be presented and justified, in no specific form, in writing.

HafenCity Ecolabel · Sustainable Construction in HafenCity Hamburg

2010 version

Category	3 Use of eco-efficient construction materials
Product type	Flooring adhesive
Requirements	Special attainments – silver EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113 Extraordinary attainments – gold EMICODE EC1/EC1R/EC1 ^{PLUS} /EC1 ^{PLUS} R or RAL-UZ 113
Rating	Meets requirements for extraordinary attainments – gold through EMICODE EC1 ^{PLUS} R.
Exceptions	Exceptions to the requirements may be granted in cases where one of the product requirements cannot be met. The deviation from the requirements shall be documented and justified, with details provided of the product, technical application and quantities used. Exceptions are only possible where evidence is provided that no design alternative can meet the requirements or that no functionally equivalent products are obtainable on the market for a reasonable outlay. Exceptions justified by purely aesthetic reasons are excluded from this provision.

SNBS · Standard for Sustainable Construction in Switzerland

2016 version (V 2.0)

Criterion	303.3 Environment-, disposal- and health-relevant ingredients
Measurement parameter	4 Solvent emissions from construction and ancillary materials
Requirements	No application of solvent-thinned products in heated interiors. Following products meet criteria: Laying materials with EMICODE EC1/EC1 R/EC1 ^{PLUS} /EC1 ^{PLUS} R label; construction materials with Eco product rating eco-1, eco-2 or basis.
Rating	Meets requirements through EMICODE EC1 ^{PLUS} R and eco-1.

SWISS MINERGIE-ECO LABEL

2016 version (V 1.3)

Criterion	NA exclusion criterion
Criteria matrix	NA1.050 Solvent emissions from construction and ancillary materials
Requirements	Excluded: Application of solvent-thinned products in heated interiors. Following products meet criteria: Laying materials with EMICODE EC1/EC1 R/EC1 ^{PLUS} /EC1 ^{PLUS} R label; construction materials with Eco product rating eco-1, eco-2 or basis.
Rating	Meets requirements through EMICODE EC1^{PLUS} R and eco-1.

Criterion	NI Indoor environmental conditions
Criteria matrix	NI5.050 Construction product label
Requirements	EMICODE EC1/EC1 R/EC1 ^{PLUS} /EC1 ^{PLUS} R
Rating	Meets requirements through EMICODE EC1^{PLUS} R.

2015 ECO-BKP guidance papers	281 Floor finishes
Product type	Adhesive for tile coverings
Requirements	Thin- or medium-bed laying with cementitious adhesives, with or without synthetic resin additives
Rating	Meets requirements through cementitious formulation

2015 ECO-BKP guidance papers	282 Wall finishes/coverings
Product type	Thin-bed adhesive for tiling
Requirements	Cementitious products, with or without synthetic resin
Rating	Meets requirements through cementitious formulation

2014 version (with 2015 additions)

Criterion	NA exclusion criterion
Criteria matrix	NA 08 Solvent emissions from construction and ancillary materials
Requirements	No application of solvent-thinned products in heated interiors. Laying materials with the EMICODE EC1/EC1 R/EC1 ^{PLUS} /EC1 ^{PLUS} R label meet the criterion.
Rating	Meets requirements through EMICODE EC1^{PLUS} R.

Criterion	NM Materials and construction processes
Criteria matrix	NM 06 Construction product label for floor covering adhesives
Requirements	EMICODE EC1/EC1 R/EC1 ^{PLUS} /EC1 ^{PLUS} R
Rating	Meets requirements through EMICODE EC1^{PLUS} R.

2015 ECO-BKP guidance papers	281 Floor finishes
Product type	Adhesive for tile coverings
Requirements	Thin- or medium-bed laying with cementitious adhesives, with or without synthetic resin additives
Rating	Meets requirements through cementitious formulation

2015 ECO-BKP guidance papers	282 Wall finishes/coverings
Product type	Thin-bed adhesive for tiling
Requirements	Cementitious products, with or without synthetic resin
Rating	Meets requirements through cementitious formulation

LEED · Leadership in Energy and Environmental Design

2014 version (v4)

Credit	MR: Building product disclosure and optimization – environmental product declarations	
Requirements	1–2 points	Existence of EPD (environmental product declaration) to ISO 14025/14040/14044 and EN 15804 or ISO 21930 – at least "cradle-to-gate" life cycle assessment
Rating	Meets requirements as product is covered by model EPD.	
Credit	EQ: Low-emitting materials	
Product type	Wet-applied adhesive	
Requirements	1–3 points	Pass in AgBB (German Committee for Health-Related Evaluation of Building Products) test and compliance with Paints Directive (2004/42/EC).
Rating	Meets requirements as AgBB test passed and product does not fall under Paints Directive.	

2009 version (2013 update)

Credit	MR 4: Recycled content	
Requirements	1 point	10 % recycled content (by weight)
	2 points	20 % recycled content (by weight)
Rating	–	
Credit	MR 5: Regional materials	
Requirements	1 point	10 % regional materials (Manufacturing location is at max. distance of 800 km from construction site)
	2 points	20 % regional materials (Manufacturing location is at max. distance of 800 km from construction site)
Rating	Manufacturing location is Wiesbaden, Germany.	
Credit	IEQ 4.1: Low-emitting materials – adhesives and sealants	
Product type	Ceramic tile adhesive	
Requirements	VOC content (without water)	Max. 65 g/ltr
Rating	Meets requirements through max. 65 g/ltr VOC content.	

BREEAM · Building Research Establishment Environmental Assessment Methodology

2013 version (2014)

For further details, please contact our sustainability experts by phone on +49 (0)6 11 1707-130 or by e-mail at nachhaltigkeit@sopro.com.

Further information

INGREDIENTS

CAS numbers	14808-60-7 65997-15-1 65996-69-2 1305-62-0	Quartz Portland cement Complex mixture of calcium and magnesium silicates and aluminates Calcium hydroxide
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PRECAUTIONARY STATEMENTS

Labelling	Labelling in accordance with Regulation (EC) No 1272/2008 (CLP) GHS05, GHS07 Signal word: Danger Contains Portland cement. Contains complex mixture of calcium and magnesium silicates and aluminates. 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.
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GISCODE	ZP1 · Low-chromate to Regulation (EC) No 1907/2006, Annex XVII
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German Water Hazard Class (WGK)	WGK 1 · Slightly hazardous to water
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PUBLIC-SECTOR REGULATIONS

Test certificates	Technische Universität München: <ul style="list-style-type: none">– C2 TE S1 to DIN EN 12004– National test certificate (abP) under PG-AIV (Criteria for Award of National Test Certificates for Waterproof Membranes Used in Conjunction with Tile Coverings) for use with Sopro FDF flexible sealing compound, Sopro DSF 523, Sopro DSF 623, Sopro DSF 423 and Sopro TDS 823 sealing slurries, Sopro GD 749 primer and other Sopro components– Test report: Sopro FF 450, in conjunction with Sopro DSF 523, Sopro DSF 623, Sopro DSF 423 and Sopro TDS 823 sealing slurries and Sopro GD 749 primer, meets requirements to DIN EN 14 891, including those for tensile adhesion strength after storage in chlorinated water SFV e.V. institute for wall/floor coverings, Großburgwedel: <ul style="list-style-type: none">– National test certificate (abP) based on system test under PG-AIV for sheet membranes in conjunction with tile coverings: combinations featuring Sopro AEB 640, Sopro AEB 641, Sopro AEB 642/643, Sopro AEB 644/645, Sopro AEB 112/129 – 133, Sopro DWF 089 with Sopro FF 450 as tile adhesive and Sopro RMK 818, Sopro MKS 819 or Sopro TDS 823 as adhesive and sealing product at laps MPA Dresden (Materials Test Institute Dresden): <ul style="list-style-type: none">– Reaction to fire class A1/A1_n.
CE mark	CPR-DE3/0450.2.eng

CORPORATE SUSTAINABLE RESPONSIBILITY

Guiding principle	Sustainability is a cornerstone in Sopro Bauchemie's corporate philosophy. This is always understood by the company as the simultaneous pursuit, with equal priority, of environmental, social and economic goals.
Engagement in sustainability (memberships)	EUF · Federation of European Tile Fixers' Associations GEV · German Association for the Control of Emissions in Products for Flooring Installation, Adhesives and Building Materials DGNB · German Sustainable Building Council MINERGIE · Swiss Association for Sustainable Construction Umweltallianz Hessen · Hessian Environmental Alliance, seminal project initiated by the Hessian Federal State government Ökoprofit-Klub · Environmental counselling scheme for companies in the Hessian Federal State capital of Wiesbaden Deutsche Bauchemie e.V. · German Construction Chemicals Manufacturers' Association
Quality management	Certified to DIN EN ISO 9001
Energy management	Certified to DIN EN ISO 50001

DOCUMENTATION

Technical data sheet
Safety data sheet
Declaration of performance
Sustainability data sheet
EPD declaration of conformity
All documents are available for downloading at www.sopro.com.
For further details, please contact our sustainability counselling service on +49 (0)6 11 17 07-130.

NOTE ON USE

This sustainability data sheet does not constitute an official product certificate. It contains a summary of the available information, based on our current state of knowledge and experience. Although this information has been prepared and presented with all due care, Sopro Bauchemie GmbH shall accept no liability for its correctness or up-to-dateness. The details presented in the relevant technical and safety data sheets shall take precedence. Moreover, the requirements pursuant to the various building certification systems are amenable to different interpretations and always depend on the specific project and application. Sopro Bauchemie GmbH shall therefore accept no liability for the product assessment under any particular building certification system. Accordingly, the users of this sustainability data sheet shall not be relieved of their obligation to check, on their own responsibility, the suitability of the product for the envisaged application. The content presented here does not establish any legal relationship. The issue of a new version of the sustainability data sheet shall automatically invalidate all information presented in the previous version. The current version is available on the Internet.

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