

Fugalite® Eco Invisible

Certified, eco-friendly, photochromatic vitreous, high-slide, easy-to-clean grout and adhesive, bacteriostatic and fungistatic, water and stain proof, for joints of between 0 and 3 mm, to guarantee the appearance, functionality and hygiene of glass mosaic and ceramic surfaces, ideal for use in GreenBuilding. With very low volatile organic compound emissions.

Fugalite® Eco Invisible are ultra-fine recycled micro glass beads, with a high refractive power, ideal for bonding and grouting glass mosaic, ceramic wood, and stone tile effect coverings without interrupting the aesthetic, functional and hygienic continuity. Fugalite® Eco Invisible is the solution to keep intact the beauty of artistic glass mosaics and blends.



GREENBUILDING RATING®

Fugalite® Eco Invisible
 - Category: Organic Mineral Products
 - Class: Organic Mineral Grouts
 - Rating: Eco 1

	 Very low VOC emissions				

RATING SYSTEM ACCREDITED BY CERTIFICATION BODY SGS

PRODUCT STRENGTHS

- Ideal to bond and grout glass mosaic
- Ideal to grout thin corrected slabs with narrow or adjacent joints
- Internal floors and walls
- The perfect roundness of the micro glass beads gives an excellent workability
- Ideal to provide bright reflections and nuances when mixed with Fuga-Glitter Gold and Silver
- Impermeable to water, stains and dirt
- Prevents the development of mould and bacteria
- Suitable for guaranteeing the aesthetic continuity of the ceramic wood and stone effect tile coverings

ECO NOTES

- It contains micro glass beads made from recycled glass
- The bacteriostatic and fungistatic properties are obtained without using biocides

AREAS OF USE

Use
 Water-resistant grouting of joints with high chemical and mechanical resistance and a high level of hardness; bonding of glass mosaic.

Materials to be grouted:

- porcelain tiles, low thickness slabs, ceramic tiles, klinker, cotto, glass and ceramic mosaic, of all types and formats
- recomposed materials

Flooring and walls in indoor, domestic, commercial and industrial applications and street furniture subject to permanent or occasional contact with chemical substances, in environments subject to heavy traffic, swimming pools, thermal water baths and fountains, heated floors, also in areas subject to thermal shock and freezing.

Do not use
 On porous flooring for which more specific or alternative chemical resistances are required compared with those listed in the chemical resistances table, to grout elastic expansion or fractionizing joints or on substrates that are not fully dry and subject to moisture rising.

** Centro Ceramico Bologna has passed the test for Resistance to stains following UNI EN ISO 10545-14 (Test Report N° 3685/11)

INSTRUCTIONS FOR USE

Preparation of substrates

As a grout: before grouting joints, check that tiles have been laid correctly and are anchored perfectly to the substrate. Substrates must be perfectly dry. Grout joints in accordance with the recommended waiting time indicated on the relative data sheet for the adhesive used. For mortar substrates, wait at least 7 – 14 days depending on screed thickness, ambient weather conditions and on the level of absorption of the covering and the substrate. Any water or moisture rising can cause vapour pressure to accumulate, which may in turn loosen the tiles on account of the complete non-absorbency of the grout or of the tiles themselves. Joints must be free from any excess adhesive, even if already hardened. Furthermore they must be of an even depth for the whole width of the tile covering, thereby ensuring maximum chemical resistance. Any dust and loose debris must be removed from joints by carefully cleaning them with vacuum cleaner. The surface of the coating material to be grouted must be dry and free from dust or building dirt; any residual protective coatings must first be removed using specific products.

Before grouting joints, check the cleanability of the tile covering, as porous or highly micro-porous surfaces may make cleaning difficult. It is advisable to perform a preliminary test on tiles not to be laid or in a small, concealed area.

As an adhesive: substrates must be compact and solid, free of dust, oil and grease, dry and free from moisture rising, with no loose debris or flaky parts such as residues of cement, lime and paint coatings, which must be completely removed. The substrate must be stable, without cracks and have already completed the curing period of hygrometric shrinkage. Uneven areas must be corrected with suitable smoothing and finishing products. On screeds and plasters which are highly absorbent and have dusty, flaky surfaces, it is advisable to apply one or more coats of Primer A Eco water-based, eco-friendly surface isolation primer, following the instructions provided, in order to reduce the water absorption and improve spreadability of the adhesive

Preparation

Fugalite® Eco Invisible is prepared by mixing together parts A and B from the bottom upwards, using a low-rev (≈ 400 /min.) helicoidal agitator, respecting the preset ratio of 2.82 : 0.18 of the packs. Pour part B into the bucket containing part A, being careful to mix the two parts uniformly until a smooth, even coloured mixture is obtained. In any case, mix only enough grout that can be used in full within 45 minutes at +23 °C, 50% RH. Fugalite® Eco Invisible product buckets must be stored at a temperature of approx. +20 °C for at least 2-3 days before use. Higher temperatures make the mixture too fluid and shorten hardening times, while lower temperatures make the mixture harder to spread and slow down setting times. At temperatures of less than +5 °C, the product will no longer set.

Application

Fugalite® Eco Invisible must be applied evenly on the tile covering with a hard rubber spreader. Seal the entire surface by completely grout the joints, applying the grout diagonally to the tiles. If grouting is to be on joints only, it is recommended that a test be carried out in advance before laying to ensure the surface can be properly cleaned. Remove most of the excess grout immediately using the spreader, leaving only a thin film on the tile. Begin cleaning the tilework when the grout is still fresh. On completion, clean up the surface using a thick, large-sized sponge, preferably made of cellulose, damped in clean water to avoid removing grout from the joints. Use circular movements to soften the film of grout on the tiles and finish cleaning the joint surface. Specific high-dispersion polymers ensure all grout residues are removed using only a small amount of water. The use of an excessive amount of water when cleaning would impair the final chemical resistances. Rinse frequently and make sure clean water is used at all times, using appropriate trays and grills with cleaning rollers. If necessary, replace the sponge or felt cleaning pad when saturated with grout. Finish cleaning up by dragging the sponge diagonally across the tiles to avoid going into the joints. Wipe the cleaned surface again with a dry cloth to make sure it is completely clean and there are no streaks of resin remaining. Once the grout has dried, any streaks can be removed using Fuga-Soap Eco, to be diluted in accordance with the working time and the amount of grout to be removed. Do not walk on floors that are still damp as dirt could still stick to them.

As an adhesive: Fugalite® Eco Invisible can be applied with a suitable toothed spreader to be chosen according to the size and type of mosaic. Using the smooth part of the spreader, apply a fine layer of product, pressing down onto the substrate in order to ensure maximum adhesion, after which the thickness can be adjusted as required by tilting the spreader at an angle. Apply the adhesive to a surface area that will allow laying of the coating material within the open time indicated. Press down the pieces of mosaic using a rubber coated spreader to allow for maximum coverage of the surface.

Cleaning

Residual traces of grout can be removed from tools with water before the product has hardened.

SPECIAL NOTES

Gold or silver Fuga-Glitter can be used as an additive in Fugalite® Eco Invisible to create a metalized decorative effect; add a 100 g tin to every bucket of grout to obtain a high quality aesthetic finish.

Addition of Fuga-Wash Eco to the cleaning water gives a better detergent action on coating materials, keeps the sponge cleaner, improves the surface finish of grouting and cleans effectively without the need for rinsing.

TECHNICAL DATA COMPLIANT WITH KERAKOLL QUALITY STANDARD

Appearance	part A coloured paste / part B straw-coloured liquid	
Specific weight	part A $\approx 1,69 \text{ kg/dm}^3$ / part B $\approx 0,99 \text{ kg/dm}^3$	UEAtc
Viscosity	$\approx 80200 \text{ mPa} \cdot \text{s}$, rotor 93 RPM 10	Brookfield method
Mineralogical nature of inert material	silicate - crystalline (part A)	
Chemical nature	epoxy resin (part A) / polyamines (part B)	
Grading	$\approx 0 - 250 \mu\text{m}$	
Shelf life	≈ 24 months in the original packaging	
Warning	Protect from frost, avoid direct exposure to sunlight and sources of heat	
Pack	monopack part A 2,82 kg / part B 0,18 kg	
Colour	Neutral	
Mixing ratio	part A : part B = 2,82 : 0,18	
Specific weight of the mixture	$\approx 1,55 \text{ kg/dm}^3$	
Pot life at +23°C	≥ 45 min.	
Temperature range for application	from +5 °C to +30 °C	
joint width	from 0 to 3 mm	
Foot traffic	≈ 12 hrs	
Grouting after laying:		
- with Fugalite® Eco Invisible on coating materials	immediate	
- with Fugalite® Eco Invisible on floors	as soon as foot traffic is allowed	
- with adhesive	see characteristics of adhesive	
- mortar	$\approx 7 - 14$ days	
Interval before normal use	≈ 3 days mechanical resistance / ≈ 4 days chemical resistance	
Coverage:		
- as an adhesive	$\approx 2 - 4 \text{ kg/m}^2$	
- as a grout	see Coverage table	

Values taken at +23 °C, 50% R.H. and no ventilation. Data may vary depending on specific conditions at the building site, i.e. temperature, ventilation and absorbency level of the substrate and of the materials laid.

COVERAGE TABLE

	Format	Thickness	grammes/m ² joint width		
			1 mm	2 mm	3 mm
Mosaic	2x2 cm	3 mm	≈ 530	≈ 1.060	≈ 1590
	5x5 cm	4 mm	≈ 290	≈ 580	≈ 870
Tiles	30x60 cm	4 mm	≈ 40	≈ 80	≈ 120
	50x50 cm	4 mm	≈ 30	≈ 60	≈ 90
	60x60 cm	4 mm	≈ 25	≈ 50	≈ 75
	100x100 cm	4 mm	≈ 15	≈ 30	≈ 45
	20x20 cm	8 mm	≈ 150	≈ 300	≈ 450
	30x30 cm	9 mm	≈ 110	≈ 220	≈ 330
	40x40 cm	10 mm	≈ 90	≈ 180	≈ 270
	30x60 cm	10 mm	≈ 90	≈ 180	≈ 270
	60x60 cm	10 mm	≈ 60	≈ 120	≈ 180
	60x90 cm	10 mm	≈ 50	≈ 100	≈ 150
	100x100 cm	10 mm	≈ 35	≈ 70	≈ 105
	120x120 cm	10 mm	≈ 30	≈ 60	≈ 90
	20x20 cm	14 mm	≈ 260	≈ 520	≈ 780
30x30 cm	14 mm	≈ 170	≈ 340	≈ 510	
Klinker	30x30 cm	15 mm	≈ 185	≈ 370	≈ 555
	12,5x24,5 cm	12 mm	≈ 270	≈ 540	≈ 810

PERFORMANCE

VOC INDOOR AIR QUALITY (IAQ) - VOLATILE ORGANIC COMPOUND EMISSIONS

Conformity EC 1-R plus GEV-Emicode GEV certified 4450/11.01.02

HIGH-TECH

static modulus of elasticity	≈ 570 N/mm ²	ISO 178
Resistance to abrasion	≈ 215 mm ³	EN 12808-2
Water absorption after 240 min.	≈ 0,04 g	EN 12808-5
Working temperature	from -40 °C to +110 °C	
Colour Fastness	1	UNI EN ISO 105-A05
Resistance to fungal contamination	class F+	CSTB 2011-002
Resistance to bacterial contamination	class B+	CSTB 2010-083
Porcelain tiles/concrete tensile strength	≥ 1,5 N/mm ²	EN 1348
Initial shear strength	≥ 5 N/mm ²	EN 12003
Shear strength after water immersion	≥ 3 N/mm ²	EN 12003
Open time: tensile adhesion	≥ 2 N/mm ²	EN 1346
Resistance to iodine stains	class 4	ISO 10545-14
Resistance to olive oil stains	class 5	ISO 10545-14
Resistance to chromium stains	class 3	ISO 10545-14

Values taken at +23 °C, 50% R.H. and no ventilation. Data may vary depending on specific conditions at the building site.

CHEMICAL RESISTANCE (EN 12808-1)

Acids	Concentration	Permanent contact	Occasional contact
Acetic	2,5%	••	•••
	5%	•	••
	10%	•	•
Hydrochloric	37%	•••	•••
Citric	10%	••	•••
Formic	2,5%	••	•••
	10%	•	•
Phosphoric	50%	•••	•••
	75%	•	••
Lactic	2,5%	••	•••
	5%	•	••
	10%	•	•
Nitric	25%	••	•••
	50%	•	•
Oleic	100%	•	•
Sulphuric	50%	•••	•••
	100%	•	•
Tannic	10%	••	•••
Tartaric	10%	••	•••

Legend ••• Excellent
 •• Good
 • poor

Values taken at: - ambient +23 °C / 50% R.H. - chemical aggressive agent +23 °C

CHEMICAL RESISTANCE (EN 12808-1)

Foodstuffs		Main foodstuffs (temporary contact)	
Vinegar		••	
Citrus fruits		••	
Ethyl alcohol		•••	
Beer		•••	
Butter		•••	
Coffee		•••	
Casein		•••	
Glucose		•••	
Animal fat		•••	
Fresh milk		••	
Malt		•••	
Margarine		•••	
Olive oil		••	
Soya oil		••	
Pectin		•••	
Tomato		••	
Yoghurt		••	
Sugar		•••	
Fuels and Oils		Permanent contact	Occasional contact
Petrol		•	•••
Diesel oil		••	•••
Coal tar oil		••	••
Mineral oil		••	•••
Petroleum		••	•••
mineral spirit		•	•••
Turpentine		•	•••
Alkalis and Salts	Concentration	Permanent contact	Occasional contact
Oxygenated water	10%	••	•••
	25%	•	•••
Ammonia	25%	•••	•••
Calcium chloride	Saturated Sol.	•••	•••
Sodium chloride	Saturated Sol.	•••	•••
Sodium hypochlorite (Active chlorine)	0,63%	••	•••
	13%	•	••
Caustic soda	50%	•••	•••
Aluminium sulphate	Saturated Sol.	•••	•••
Potassium hydroxide	50%	•••	•••
Potassium permanganate	5%	••	•••
	10%	•	••
Legend	•••	Excellent	
	••	Good	
	•	poor	
<i>Values taken at: - ambient +23 °C / 50% R.H. - chemical aggressive agent +23 °C</i>			

CHEMICAL RESISTANCE (EN 12808-1)

Solvents	Permanent contact	Occasional contact
Acetone	•	•
Ethyl alcohol	••	•••
Benzol	•	••
Chloroform	•	•
Methylene chloride	•	•
Ethylene glycol	•••	•••
Perchloroethylene	•	••
Carbon tetrachloride	•	••
Tetrahydrofuran	•	•
Toluol	•	••
Trichloroethylene	•	•
Xylene	•	••

Legend ••• Excellent
 •• Good
 • poor

Values taken at: - ambient +23 °C / 50% R.H. - chemical aggressive agent +23 °C

RESISTANCE TO STAINS (ISO 10545-14)

Staining agents	Time exposed to staining agent: 24 hours	Time exposed to staining agent: 30 min.
Red wine	5	5
Mineral oil	5	5
Tomato ketchup	2	5
Mascara	3	5
Coffee	2	5
Hair dye	1	2

Legend

5 can be cleaned under a running hot tap while gently rubbing with a sponge
 4 can be cleaned with a mild detergent while gently rubbing with a sponge
 3 can be cleaned with a basic detergent while vigorously rubbing with a sponge
 2 to clean, treat first with a solvent or aggressive acid or basic solution, then vigorously rub with a sponge
 1 cannot be cleaned by any of the aforementioned methods

WARNING

- **Product for professional use**
- abide by any standards and national regulations
- use at temperatures between +5 °C and +30 °C
- use packs which have been stored for 2/3 days before use at +20 °C
- respect the mixing ratio of 2.82 : 0.18. For partial mixing, weigh the two parts precisely
- workability times may vary considerably, depending on ambient conditions and the temperature of the tiles
- do not walk on floors that are still damp as dirt could still stick to them
- do not lay on substrates subject to moisture rising or which are not completely dry
- if necessary, ask for the safety data sheet
- for any other issues, contact the Kerakoll Worldwide Global Service - globalservice@kerakoll.com

The Eco and Bio classifications refer to the GreenBuilding Rating® Manual 2013. This information was last updated in April 2013 (ref. GBR Data Report - 05.13); please note that additions and/or amendments may be made over time by KERAKOLL SpA; for the latest version, see www.kerakoll.com. KERAKOLL SpA shall therefore be liable for the validity, accuracy and updating of information provided only when taken directly from its institutional website. The technical data sheet given here is based on our technical and practical knowledge. As it is not possible for us to directly check the conditions in your building yards and the execution of the work, this information represents general indications that do not bind Kerakoll in any way. Therefore, it is advisable to perform a preliminary test to verify the suitability of the product for your purposes.