Starlike® EVO *

Technical specifications



TWO-COMPONENT ACID-RESISTANT EPOXY GROUT FOR INSTALLATION AND GROUTING OF CERAMIC, PORCELAIN AND MOSAIC TILES WITH JOINTS FROM 1 TO 15 mm WIDE. PATENT PENDING. FOR INDOOR AND OUTDOOR USE. SUITABLE FOR UNDERFLOOR HEATING. PRODUCT WITH VERY LOW VOLATILE ORGANIC COMPOUND EMISSION RATE.

Product description

Two-component acid-resistant epoxy grout.
Component A consists of a mixture of epoxy resin, sintered microspheres with fine granulometry and specific organic additives.
Component B consists of an innovative organic catalyst with lower exposure risks for users.
Once mixed together, the two components form a creamy and fluid mix, which is also suitable for vertical application with no dripping.
Once set, the product achieves very high performance in terms of mechanical and chemical resistance.

ADVANTAGES / FEATURES

- Unlike other epoxy grouts on the market, the catalyst (Part B) is labelled only as an irritant
- It is neither corrosive nor hazardous for the environment
- The user can therefore rely on a very safe product to work with
- Bacteriostatic product which prevents the spread of fungi and moulds
- High mechanical strength
- Non-absorbent
- Stain-proof
- Excellent chemical resistance
- Stable and consistent colouring on all types of tiles with exclusive chromatic effects
- Recycled material content ≥ 10%

- The products are coloured by the sintered quartz micro spheres, which are surface-coloured, thus avoiding the release of pigments on the surface of the ceramics or mosaics, making cleaning easier and faster
- Extremely easy application and cleaning, even compared to normal cementitious grouts
- The particular fineness of the sintered quartz micro spheres contained in the product makes it possible to obtain extremely smooth and compact finishes
- The product does not contain cement, thus avoiding the formation of efflorescence typical of cementitious products
- Suitable for interior and exterior floor and wall applications, even in severe operating conditions
- Approved for use on ships as a product with low flame-spread
- Product exempt from restrictions for road, sea, air and rail transport
- Product with very low volatile organic compound (VOC) emission rate. Compliant with class EC1^{PLUS} according to the EMICODE protocol and class A+ (Émission dans l'air intérieur - French regulations)

PACKAGES

2.5 kg buckets (A + B) - 437.5 kg standard pallet
5 kg buckets (A + B) - 500 kg standard pallet

INTENDED USE

Installation environments
Interiors - exteriors
Floors and walls
Underfloor heating
Façades
Overlaying
Terraces and balconies
Residential, public, commercial building
Indoor wet areas (bathrooms, shower enclosures)
Tanks, swimming pools, fountains
SPA and Hammam
Industrial floors
Dairy factories, slaughterhouses, food industry

Suitable materials
Ceramic and porcelain tiles
Single fired
Double fired
Terracotta - Clinker
Marble – Granite – Stone
Natural stones
Porcelain stoneware
Ceramic and vitreous mosaics
Thin laminated stoneware slabs
Large sizes
Slabs 320x160 cm
Recomposed stone made with resin or cement

FIELDS OF APPLICATION

Typical applications include:
Suitable for the installation and acid-resistant grouting of ceramic and porcelain tiles and mosaics with joints between 1 and 15 mm wide, on interior and exterior walls and floors. Suitable for applications where the surfaces are exposed to aggressive chemical substances (see chemical resistance table) such as dairy factories, abattoirs, pubs, food factories in general. Suitable for applications in severe operating conditions such as swimming pools, hammams, jacuzzis, floors subject to heavy traffic, and tiles exposed to extreme temperature fluctuations. Grouting of tiles and mosaics on kitchen tops in wood. Bonding and grouting of ceramic, porcelain and mosaic tiles in swimming pools, including surfaces waterproofed with Elastocem, Coverflex or Aquamaster. Grouting of tiles, mosaics and natural

stones installed on metal surfaces for the construction of prefabricated bathrooms. Also recommended for grouting swimming pools or tanks containing salt or thermal water.

Contact with foodstuffs:

Product suitable for direct contact with foodstuffs according to the following EC legislation: Regulation 1935/2004/EC, Regulation (EU) 2018/213, Regulation 1985/2005/EC, Directive 2002/72/EC and subsequent amendments and modifications and under the following Italian legislation: Ministerial Decree 21/03/1973 and subsequent amendments and modifications, Presidential Decree 777/82 and subsequent amendments and modifications. A copy of the certificate may be requested from the Litokol technical department. The product can therefore be used to grout ceramic and porcelain tiles in food-grade environments, e.g. worktops for handling meat, dairy products or flour, tanks for breeding fish, kitchen counter tops in restaurants, fried-food stalls, bakeries, etc.

INSTALLATION PLANNING

The only way to guarantee the long-lasting performance of ceramic and porcelain tile installations is to properly plan the process. It is therefore advisable to consult the national regulations in force in each country, for example standard UNI 11493 in Italy, which provides all necessary instructions regarding the choice of materials, correct planning, use and installation, so as to ensure all quality, performance and durability standards are safely met. Some of the general precautions that need to be followed are listed below as an example.

Substrates

Before installation, check that substrates are clean, free of loose fragments, properly dried and cured, flat and level, and that mechanical strength requirements based on the intended use have been met.

Worksite conditions

Check the suitability of the temperature, humidity, light conditions etc. at the time of the product's application.

Materials

Check that all materials used for tiling (ceramic materials, levelling systems, adhesives, grouts, waterproofing products, etc.) are suitable for the intended use and have been correctly stored.

Expansion joints

Check that the perimeter, expansion, divider and structural elastic joints have been correctly designed and prepared. Usually, separation joints should be provided for sections of 20/25 m^2 or 9-15m^2 outdoors. For exteriors, make sure joints are properly waterproofed and sealed.

Back-buttering

For exterior installations, large tiles, floors with intense or heavy traffic, vibrating supports and situations exposed to high temperature fluctuations, the adhesive mortar must be applied to both the substrate and the back of the tiles so as to obtain a solid bed of adhesive without any air bubbles.

Joints

In any type of ceramic and porcelain tiling, suitably sized joints must be created based on the following parameters:

- Type, format and size tolerance of tiles
- thermal expansion coefficients of tiling materials
- mechanical properties of installation materials
- position and trajectory of joints
- mechanical features of substrate
- Intended use and operating conditions

Butt joints are not allowed. Any plastic spacers must be removed before grouting.

PRELIMINARY CHECKS

Use as sealant

Check that the adhesive or mortar used for tile bonding is completely set and dry. The joints must be clean, free from dust and empty for the entire depth of the tiles. Any traces of adhesive or mortar spilled back into the joints must be removed. Make sure that the ceramic and porcelain tiles can easily be cleaned and their surface is not absorbent. Certain types of tiles (e.g., polished porcelain stoneware) or natural stones have micro-porosities and surface roughness that can cause surface staining and make cleaning very difficult. Spot tests should always be performed.

Use as adhesive

The substrates must be clean, solid, compact, crack-free, properly cured and without rising damp. If the substrate is not perfectly flat or the level is incorrect, it can be evened before installation using suitable levelling or self-levelling products, for example Litoliv S40 Eco, Litoliv Extra 15, Litoliv Express or Litoplan Smart.

MIX RATIO

Component A 93.7 parts by weight.
Component B: 6.3 parts by weight
The two components are pre-batched in their respective packaging.

PREPARING THE MIX

Cut off a corner of the bag containing the catalyst (component B) in the small bucket, and pour it onto component A (paste). The entire contents of the bag should be emptied out by rolling it up and gradually pressing the bag from the sealed side towards the side that has been cut. Mix, preferably using an electric drill with mixing paddle at low speed (≈ 300/min.) until a consistent mix is obtained without lumps. Scrape the sides and the bottom of the container, using a steel trowel, to make sure that all the paste is catalysed. Hand mixing is not recommended. The two components are pre-batched in their packaging, thus preventing mixing errors. The mix has a pot life of approximately 60 minutes at a temperature of about +23°C.

APPLICATION

Use as sealant

Apply the mix in the joints using a special rubber float until saturation, making diagonal movements with respect to the direction of the joints and removing any excess material from the surface of the ceramic covering. For large surfaces, a single disc machine with abrasion-resistant rubber brusher can be used. The product's pot life and setting time is strongly dependent on the ambient temperature. Low temperatures will lengthen the setting time, high temperatures will shorten it. The ideal temperature for application is between +18 and +23°C. At temperatures less than +10°C, the product is very dense and difficult to apply. The setting time is also considerably lengthened. Do not add water or solvents to improve workability. In hot weather, it is advisable to spread the product on the flooring as quickly as possible so as not to shorten the workability time even further due to the heat of reaction within the packaging. Do not apply if the temperature is forecast to drop below +10°C in the following 24 hours. At a temperature of +15°C, 3 days are required to set to light foot traffic and 10 days until it is ready for use.

Use as adhesive or setting material

Spread the mix onto the substrate using the smooth part of the trowel to create a layer approximately 1 mm thick, and then straight after apply the product using the notched part of the trowel. In exterior installations or areas

subject to high stress, the adhesive should also be applied to the back of the slabs (back-buttering method). The trowel notch size will depend on the size of the tiles. The tiles must be laid on the adhesive when fresh, firmly pressed to ensure good contact. The joints can be grouted after about 24 hours. At normal temperature and humidity conditions, the product has a pot life of approximately 1 hour. Take account of any expansion, perimeter, divider or structural joints. In the case of mosaics mounted on adhesive paper or film, this must be removed at least 24 hours after installation once the adhesive has sufficiently set, to prevent the detachment of the tiles.

FOCUS

Finishes

If the Spotlight, Gold, Galaxy and Night Vision finishes are used, add the product as the third component after mixing the catalyst (component B). Be sure to pour it in slowly as these additives are very volatile, and use a mixing paddle at low speed to avoid splashing the product.

Metallic Collection

To obtain the metallic finishes Platinum, Shining Gold, Bronze, Copper and Rusty, the respective additives must be mixed only with Starlike® EVO 113 Neutro. Add the product as the third component after mixing in the catalyst (component B). Be sure to pour it in slowly as these additives are very volatile, and use a mixing paddle at low speed to avoid splashing the product.

CLEANING AND FINISHING

The grouting must be cleaned and finished while the product is still fresh and in any case in the shortest possible time, taking care not to empty the joints and without leaving stains on the surface of the tiles. It can be performed either manually or using a single disc machine with felt disc pad.

Manual method

First sprinkle clean water over the grouted surface. If necessary, perform initial cleaning using a float fitted with a moistened white felt pad (art. 109 GBNC). Make circular movements in both clockwise and anticlockwise directions in order to seal the sides of the tiles perfectly and to remove excess grout from the surface of the tiles. Then wipe a second time with a sweepex sponge (Art. 128G0001) in order to obtain a smooth, closed surface and to remove the product completely from the surface of the tiles, without removing it from the joints, as well as to dry off the excess water. To facilitate the cleaning operation, we recommend using two buckets full of water, one for rinsing the felt pad and sponge, as well as to collect any dirty water, and the other filled with clean water for the final surface cleaning. Replace the felt pad and sponge when they become soaked with resin and can no longer be cleaned. Any halos or clear product residue can be removed from the surface of the tiles after about 24 hours or after the joint has set (depending on the temperature), using the special detergents Litonet EVO (for floors) and Litonet Gel EVO (for walls). Refer to the technical data sheet for information on how to used them correctly.

Method with single-disc machine

After removing any excess grout from the surface, sprinkle plenty of clean water over the grouted surface. Then start cleaning with the single disc machine with white felt disc pad. Replace the felt pad when it is completely impregnated with the product. If necessary, the Litonet EVO detergent can be used to remove any stains after 24 hours, or in any case after the joint has set (depending on the temperatures).

WARNINGS

- Spread the product at temperatures between +10°C and +30°C inclusive
- Before application, make sure that the adhesive used to install the ceramics or mosaics has completely dried
- Change the cleaning water frequently
- Change the felt pad and sponge when they are impregnated with product
- Protect against direct sunlight or strong air currents for the first 12 hours after application
- Respect the mix ratio
- Do not use the product on damp surfaces or surfaces subject to rising damp
- Do not use the product for widths greater than 15 mm
- Do not add lime, cement or other foreign materials to the product
- Do not walk on the newly grouted surface to avoid staining the floor with epoxy resin
- Do not cover the freshly grouted surface with sheets or other materials to avoid the formation of condensate, which could cause problems in the resin cross-linking. Wait at least 48-72 hours, depending on the temperature, before protecting the surface with breathable materials
- The product cannot be used for grouting Tuscan terracotta tiles or other porous materials and articles, such as cement curbing
- The product cannot be used to grout tanks containing aggressive substances for which only occasional contact is allowed (see chemical resistance table)
- Before grouting natural stones, a spot test must be carried out in order to check for any absorption of the epoxy rein by the stone slabs
- In these cases, it is advisable to perform a spot test
- Certain types of tiles (e.g., polished porcelain stoneware) or natural stones, have micro-porosities and surface roughness that can cause surface staining and make cleaning very difficult.
- Given the many types of tiles and mosaics available on the market today, in case of doubt it is recommended to perform a spot grout test in order to determine any incompatibility or cleaning difficulties
- For the maintenance and cleaning of surfaces grouted with Starlike® EVO, it is advisable not to use bleach. If not properly diluted and well rinsed, the grouting may turn yellow which is especially noticeable on light colours
- Do not use aggressive detergents during the first 5 days of the grout curing time
- Do not use Spotlight, Gold and Galaxy additives and Platinum, Shining Gold, Bronze, Copper and Rusty metallic finishes for exterior applications (terraces, balconies, façades, swimming pools, etc.) because they have poor resistance to UV rays
- Avoid any dust or polluting materials generated by concomitant processes, from coming into contact with the grouting before it has set
- Promptly remove any excess product from the surface of the tiles insofar as the product, once set, can only be mechanically removed, posing serious risks to the end result
- Do not use the product for applications not stated in this technical data sheet
- If in doubt, contact the Litokol S.p.A Technical Help Service: assistenzatecnica@litokol.it

SAFETY INFORMATION

Consult the product safety data sheet, available on request.
PRODUCT FOR PROFESSIONAL USE

ITEM SPECIFICATION

#The installation and acid-resistant grouting of ceramic, porcelain and mosaic tiles with joints between 1 and 15 mm wide must be carried out with a two-component coloured epoxy grout in class RG according to EN 13888 and class R2T according to EN 12004, such as Starlike® EVO by Litokol S.p.A.

IDENTIFICATION DATA

Appearance	Component A: coloured paste
Appearance	Component B: thick liquid
Colour	See colour chart
Customs code	35069190
Shelf life	24 months in original packaging in a dry place. Protect against frost.

APPLICATION DATA

Mix ratio	Component A: 93.7 parts by weight
Mix ratio	Component B: 6.3 parts by weight
Consistency of mix	Thixotropic paste
Specific gravity of mix	1.55 kg/dm
Pot life	Approx. 60 minutes
Joint width	From 1 to 15 mm
Application	Grout rubber float
Application temperatures	From +10°C to +30°C
Recommended application temperatures	From +18°C to +23°C
Waiting time for grouting	24 hours
Ready for light foot traffic	24 hours
Ready for use	5 days - Pools 7 days
Temperature of use	From -20°C to +100°C
How to clean equipment	With water when product is fresh. Mechanically when product has set.

CONSUMPTION TABLES

CONSUMPTION AS GROUT lb/ft²

Joints (inch)

LENGTH	WIDTH	THICK	1/16	1/8	3/16	1/4	5/16	3/8	1/2
in	in	in	0.063	0.125	0.188	0.250	0.313	0.375	0.500
0.50	0.50	0.125	0.25	0.50	0.76	1.01	1.26	1.51	2.01
0.50	0.50	0.250	0.51	1.01	1.51	2.01	2.52	3.02	4.02
0.75	0.75	0.125	0.17	0.34	0.50	0.67	0.84	1.01	1.34
0.75	0.75	0.250	0.34	0.67	1.01	1.34	1.68	2.01	2.68
0.75	0.75	0.500	0.68	1.34	2.02	2.68	3.36	4.02	5.37
1.00	1.00	0.125	0.13	0.25	0.38	0.50	0.63	0.75	1.01
1.00	1.00	0.250	0.25	0.50	0.75	1.01	1.26	1.51	2.01
1.00	1.00	0.500	0.50	1.01	1.51	2.01	2.51	3.02	4.02
1.00	2.00	0.125	0.09	0.19	0.28	0.38	0.47	0.57	0.75
1.00	2.00	0.250	0.19	0.38	0.57	0.75	0.94	1.13	1.51
1.00	2.00	0.500	0.38	0.75	1.13	1.51	1.89	2.26	3.02
1.25	1.25	0.125	0.10	0.20	0.30	0.40	0.50	0.60	0.80
1.25	1.25	0.250	0.20	0.40	0.60	0.80	1.01	1.21	1.61
1.25	1.25	0.500	0.40	0.80	1.21	1.61	2.01	2.41	3.22
1.50	1.25	0.125	0.09	0.18	0.28	0.37	0.46	0.55	0.74
1.50	1.25	0.250	0.18	0.37	0.55	0.74	0.92	1.11	1.48
1.50	1.25	0.500	0.37	0.74	1.11	1.48	1.84	2.21	2.95
1.50	1.50	0.125	0.08	0.17	0.25	0.34	0.42	0.50	0.67
1.50	1.50	0.250	0.17	0.34	0.50	0.67	0.84	1.01	1.34
1.50	1.50	0.500	0.34	0.67	1.01	1.34	1.68	2.01	2.68
2.00	2.00	0.125	0.06	0.13	0.19	0.25	0.31	0.38	0.50
2.00	2.00	0.250	0.13	0.25	0.38	0.50	0.63	0.75	1.01
2.00	2.00	0.500	0.25	0.50	0.75	1.01	1.26	1.51	2.01
2.00	4.00	0.125	0.05	0.09	0.14	0.19	0.24	0.28	0.38
2.00	4.00	0.250	0.09	0.19	0.28	0.38	0.47	0.57	0.75
2.00	4.00	0.500	0.19	0.38	0.57	0.75	0.94	1.13	1.51
2.00	6.00	0.250	0.08	0.17	0.25	0.34	0.42	0.50	0.67
2.00	6.00	0.500	0.17	0.34	0.50	0.67	0.84	1.01	1.34
3.00	6.00	0.250	0.06	0.13	0.19	0.25	0.31	0.38	0.50
3.00	6.00	0.500	0.13	0.25	0.38	0.50	0.63	0.75	1.01
4.00	8.00	0.250	0.05	0.09	0.14	0.19	0.24	0.28	0.38
4.00	12	0.500	0.08	0.17	0.25	0.34	0.42	0.50	0.67
8.00	8.00	0.250	0.03	0.06	0.09	0.13	0.16	0.19	0.25
8.00	12	0.500	0.05	0.10	0.16	0.21	0.26	0.31	0.42
12	12	0.250	0.02	0.04	0.06	0.08	0.10	0.13	0.17
12	24	0.500	0.03	0.06	0.09	0.13	0.16	0.19	0.25
24	24	0.250	0.01	0.02	0.03	0.04	0.05	0.06	0.08

CALCULATION OF CONSUMPTION

In regards to the calculation of consumption for the different tile sizes and joint widths, refer to the product calculator available at www.litokol.it

CONSUMPTION TABLES

CONSUMPTION AS ADHESIVE

Consumption

2 mm trowel: 1.1 kg/m^2
3.5 mm trowel: 1.6 kg/m^2
6 mm trowel: 2.5 kg/m^2
8 mm trowel: 3 kg/m^2
10 mm trowel: 3.5 kg/m^2

PERFORMANCE

Compliance		ANSI A118.3
Cleanability with water	The material must be spreadable and water cleanable at 80 min	5.1
Initial set time	≥ 2 hours	5.2
Final set time	≤ 7 days to reach at least 90% of the performance indicated by the manufacturer	5.2
Shrinkage	≤ 0.25 %	5.3
Slump in vertical joints	No obvious change	5.4
Initial tensile adhesion strength	≥ 1000 psi	5.5
Compressive strength after 7 days	≥ 3500 psi	5.6
Flexural strength after 7 days	≥ 1000 psi	5.7
Resistance after thermal shock	≥ 500 psi	5.8

PERFORMANCE

Compliance	EN 13888 – ISO 13007	RG
Resistance to abrasion	≤ 250 mm^3	EN 12808-2
Compressive strength after 28 days	≥ 45.0 N/mm^2	EN 12808-3
Flexural strength after 28 days	≥ 30 N/mm^2	EN 12808-3
Shrinkage	≤ 1.5 mm/m	EN 12808-4
Water absorption after 240 minutes	≤ 0.1 g	EN 12808-5

PERFORMANCE

Compliance	EN 12004 – ISO 13007	R2 T
Shear adhesion strength after water immersion	≥ 2.0 N/mm^2	EN 12003
Shear adhesion strength after thermal shock	≥ 2.0 N/mm^2	EN 12003
Open time	≥ 0.5 N/mm^2 after 20 minutes	EN 1346
Initial shear adhesion strength	≥ 2.0 N/mm^2	EN 12003
Slip	≤ 0.5 mm	EN 1308
Chemical resistance	See Table	EN 12808-1

CHEMICAL RESISTANCE TABLE

The table provides a summary of the chemical resistance tests performed according to Regulation UNI EN 12808-1
Chemical resistance of ceramic coverings grouted with Starlike® EVO - Intended use: industrial floors

Group	Name	Conc. %	CONTINUOUS USE				INTERMITTENT USE
			24 hours	7 days	14 days	28 days	
Acids	Acetic acid	2.5	●	●	●	●	●
		5	●	●	●	●	●
	Hydrochloric acid	37	●	●*	●*	●*	●
	Citric acid	10	●	●	●	●	●
	Lactic acid	2.5	●	●	●	●	●
		5	●	●	●	●	●
		10	●	●	●	●	●
	Nitric acid	25	●	●	●	●*	●
		50	●	●	●	●	●
	Pure Oleic acid	pure	●	●	●	●	●
	Sulphuric acid	1.5	●	●	●	●	●
		50	●	●	●	●	●
		96	●	●	●	●	●
	Tartaric acid	10	●	●	●	●	●
Alkalis	Ammonia in solution	25	●	●	●	●	●
	Caustic soda	50	●	●	●	●	●
	Sodium hypochlorite in solution	10	●	●	●	●	●
	Conc. Active Cl	10	●	●	●	●	●
	Potassium hydroxide	50	●	●	●	●	●
Saturated solutions at 20°C	Calcium Chloride	pure	●	●	●	●	●
	Sodium Chloride	pure	●	●	●	●	●
	Sugar	pure	●	●	●	●	●
Oils and fuels	Lead-free petrol	pure	●	●	●	●	●
	Diesel	pure	●	●	●	●*	●
	Extra Virgin Olive Oil	pure	●	●	●	●	●
	Lubricant oil	pure	●	●	●	●	●
Enzymatic detergents	Detergent 1 at 4%	pure	●	●	●	●*	●
	Detergent 2 at 5%	pure	●	●	●	●	●
Solvents	Acetone	pure	●	●	●	●	●
	Ethylene glycol	pure	●	●	●	●	●
	Ethyl alcohol	pure	●*	●*	●*	●*	●*
	Hydrogen peroxide	10 vol	●	●	●	●	●
		25 vol	●	●	●	●	●

KEY

●	RESISTANT
●*	RESISTANT WITH POSSIBLE COLOUR VARIATIONS
●	NON-RESISTANT

COLOUR CHART



NOTES

Data detection at temperature +23 °C, R.H. 50% and with no wind. May vary depending on the specific conditions of the installation site. The colours and images of the products are intended purely as a guideline and do not necessarily constitute a faithful representation of the originals.

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