Starlike® Crystal EVO*

TWO-COMPONENT ACID-RESISTANT TRANSLUCENT EPOXY GROUT FOR GROUTING CLEAR AND ARTISTIC VITREOUS MOSAICS WITH JOINTS UP TO 1/8" (3 mm) WIDE PATENT PENDING. FOR INTERIORS AND EXTERIORS. SUITABLE FOR UNDERFLOOR HEATING. ZHERORISK TECHNOLOGY INSURES HIGH PERFORMANCE, VERY LOW VOC EMISSIONS, SAFETY AND EASE OF APPLICATION.

RG EN 13888 · ÉMISSIONS DANS L'AIR INTÉRIEUR A+ · GEV-EMICODE EC1 PLUS very low emission · ZHERORISK EVOLUTION TECHNOLOGY · CERTIFIED · UV RESISTANT · WATERPROOF · 0-3 mm

DESCRIPTION

Two-component acid-resistant translucent epoxy grout. Part A consists in a mix of epoxy resin, fine glass sphere aggregates and organic rheological components. Component B consists in an innovative organic catalyst with lower exposure risks for users. Once combined, the two components form a creamy and fluid mix, which is also suitable for vertical application with non-sag. Once set, the product reaches very high performance levels in terms of mechanical strength and chemical resistance.

ADVANTAGES / FEATURES

- Translucent color that has a chameleon like ability to take on the color of adjacent through-colored glass tile
- Unlike other epoxy grouts on the market, the catalyst (Part B) is labeled only as an irritant
- It is neither corrosive nor hazardous for the environment
- User-friendly and very safe product to work with
- Extremely easy and fast installation procedure, even compared to regular cementitious grouts
- Bacteriostatic product does not support the spread of fungi and molds
- Non-absorbent and stain-resistant
- High mechanical strength
- Excellent chemical resistance
- Recycled material content ≥ 50%
- Easy to clean, water only (no need for additives)
- FR Rated: approved for use on ships as a product with low flame-spread
- Environmentally safe; NO transport restrictions via road, sea, air and rail
- Product exhibits very low volatile organic compound emissions (VOC). Complies with the most stringent Global Air Quality Regulations.
- Very fine aggregate made of glass micro spheres allows for extremely smooth and compact finishes

PACKAGING

5.5 lb (2.5 kg) buckets (A + B) - 964.7lb (437.5 kg) standard pallet (175 buckets)
11lb (5 kg) buckets (A + B) - 1,102.3lb (500 kg) standard pallet (100 buckets)

INTENDED USES

Suitable application
Interiors and exteriors
Floors and walls
Underfloor heating
Residential, public, commercial building
Indoor wet areas (bathrooms, shower enclosures)
Tanks, swimming pools, fountains
Spas and saunas

Suitable Materials
Transparent or artistic vitreous mosaics

FIELDS OF APPLICATION

Typical applications include:

The special translucent color of Starlike® Crystal EVO has a chameleon like ability to absorb the color of the transparent mosaics and therefore change according to their color.

Best results are obtained when the mosaic is applied to transparent substrates such as glass and plexiglass, which may eventually be backlit by a light source. In this case, the mosaic tiles must be bonded using an appropriate clear adhesive cartridge.

In the case of traditional substrates such as cement or gypsum-based plaster, paneling etc., the mosaic tiles must be bonded with white adhesives such as Litoplus K55 (cementitious adhesive in class C2TE) or Litoelastic EVO (two-component reactive adhesive in class R2T) depending on the type of substrate.

Starlike® Crystal EVO makes possible to create the most striking and beautiful mosaic surfaces with a strong visual impact, for example:

- Creation of backlit interior walls
- Backlit wall coverings for bar counters or public venues
- Floor and wall coverings in bathrooms, kitchens, shower enclosures, etc.
- Grouting of vitreous mosaics installed on structures and forms developed with extruded polystyrene used in Turkish baths and health spas
- Grouting of vitreous mosaics in swimming pools and Jacuzzis
- Development of decorative surfaces such as columns, tables, etc.

Starlike® Crystal EVO can also be used to grout artistic mosaic tiles, that is, compositions made using mosaic tiles, which when specifically shaped and combined, reproduce exclusive images rich in different nuances and shadings. If these images were to be grouted using traditional colored grouts, the appearance of the represented figure would be compromised insofar as colored grouting creates discontinuity between the mosaic tiles.

Vice versa, using Starlike® Crystal EVO, thanks to its semi-transparency, the original nuances of the composition remain unaltered, developing a “neutral”, colorless grouting that doesn’t interfere with the image.

Contact with foodstuffs:

Product 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.

EU Marine Equipment Directive (MED)

Maximum mass per area 4 ± 0.8 oz/ft^2 (1000 ± 200 g/m^2).

As a finishing material for all interior, hidden-from-view or inaccessible surfaces.

If intended for use on bulkheads and ceilings, the product must be applied on any metal substrate having a thickness ≥ 1/4" (0.6 mm).

If intended for use on bridges or horizontal surfaces, the product must be applied on any metal, non-combustible substrate and any material having a low flame-spread.

Test performed in combination with Litoelastic EVO FR, maximum mass per area 13.8 ± 2.8 oz/ft^2 (3500 ± 500 g/m^2).

For further information, please consult the MED declaration of conformity.

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.

Suitable Materials

Check that all materials used for tiling (ceramic materials, leveling 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. Divider joints are normally needed for 22/27 yd^2 (20/25 m^2) indoor sections, and 10/16 yd^2 (9-15m^2) outdoor sections. 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 AND JOINT PREPARATION

The substrates must be clean, solid, compact, crack-free, properly cured and dry. 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.

MIX RATIO

Component A 94 percent by weight.
Component B: 6 percent by weight
Note: The two components are pre-batched in their respective packaging.

MIXING

Remove plastic separator in bucket, scrape any paste (component A) from separator and add to paste (component A) in bucket, cut off a corner of the bag containing the catalyst (component B) and pour it onto the paste (component A) in the bucket. 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 (≈ 150 RPM) 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 parts of the product are catalyzed. 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 74°F (+23°C).

APPLICATION

Grouting the tiled surface

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 64°F (+18°C) and 74°F (+23°C). At temperatures less than 50°F (+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 pot life. In hot weather, it is advisable to spread the product on the flooring as quickly as possible so as not to shorten the pot life even further due to the heat of reaction in the container. Do not use if the temperature is forecast to drop below +10°C (50°F) in the following 24 hours.

FOCUS

Recommended adhesives for installation of mosaics:
Cementitious and gypsum-based substrates (treated with Primer C), existing tiles (treated with Prepara Fondo EVO): Litoplus K55 class C2TE)
Wood, metal, fiberglass paneling: Litoelastic EVO (class R2T)
Plexiglas: Primer 1217 + OTTOCOL M501 transparent
Glass: OTTOCOL M501 transparent
Recommended trowel: steel notched, 1/16 in (2 mm) V-notch

CLEANING AND FINISHING

The grouting must be cleaned and finished while the product is still wet and in any case in the shortest possible time. Take care not to empty the joints or leave halos on the mosaic surface. Clean initially using the white felt scrub pad, using a generous amount of water, making circular movements in both a clockwise and anti-clockwise direction so as to perfectly seal the sides of the mosaic tiles and remove any excess grout from the surface. During this phase it is important to prevent the stagnation of water, promptly soaking it up with a tightly wrung rigid Sweepex sponge. This second clean is essential in order to obtain a smooth, sealed surface, completely removing the product from the mosaic surface without emptying the joints and drying any excess water. During this phase, make sure no water enters the empty joints, stopping a 1/2-inch to a few centimeters away from the unfilled joints. Any holes or imperfections discovered in the grouting should be promptly repaired only when the surface is dry and the product has set. Replace the felt pad and sponge when they become impregnated with resin and can no longer be cleaned. 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. Any resultant halos (haze) or clear product residue can be removed from the surface of the tiles after about 24 hours or after grouting 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.

LIMITATIONS

- Spread the product at temperatures between 40°F and 95°F (+10°C and +35°C)
- Do not use at low temperatures or in environments with high humidity so as to avoid surface condensation that could modify the consistency of the color
- Change the cleaning water frequently
- Change the white scrub and sponge when they are impregnated with product
- During cleaning, make sure no water enters the unfilled joints
- Do not alter the mix ratio
- Do not add lime, cement or other foreign materials to the product
- Do not use the product for widths greater than 1/8" (3 mm)
- The product can only be used to grout clear or artistic vitreous mosaics with joints no wider than 1/8" (3 mm)
- 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 condensation. Wait at least 48-72 hours, depending on the temperature, before protecting the surface with breathable materials
- If the joints need to be filled with additional paste, this must be done before they are cleaned with water. Any holes or imperfections noted after cleaning should be promptly repaired when the surface is dry and the product has set
- The product cannot be used to grout tanks containing aggressive substances for which only occasional contact is allowed (see chemical resistance table)
- Given the many types of 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 grouted surfaces, 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 colors
- Do not use aggressive detergents during the first 5 days of the grout curing time
- Avoid excessive adhesive in the joint to where it may the final color of the grout. Any excessive squeeze through adhesive may also affect final grout color
- Make sure that the equipment used and the mosaic to be sealed are clean. Given the translucent nature of the product, any color interferences will be accentuated
- Before application, make sure that the adhesive used to install the ceramics or mosaics has completely dried
- Promptly remove any excess product from the grout channel of the tiles as the product, once set, can only be mechanically removed. Excessive squeeze through of material may compromise final result
- Do not allow dust or any other contaminating materials from coming into contact the grouting before it is dry to the touch
- D not use the product on damp surfaces or surfaces subject to rising damp
- Do not use the product for applications not stated in this technical sheet
- If in doubt, contact the Litokol S.p.A Technical Help Service.

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 1/32 in and 9/16 in (1 mm and 15 mm) wide must be carried out with a two-component colored epoxy grout that meets performance requirements of ANSI A118.3, ISO 13007-3 RG and ISO 13007 R2T, such as Starlike® EVO by Litokol S.p.A.

IDENTIFICATION DATA

Appearance	Component A: translucent paste
Appearance	Component B: thick liquid
Color	Translucent
Customs code	35069190
Shelf life	24 months in original packaging in a dry place. Protect against frost.

APPLICATION DATA

Mix ratio	Component A: 94 % by weight
Mix ratio	Component B: 6 % by weight
Consistency of mix	Thixotropic paste
Density of mix	0.056 lb/in^3 (1.55 kg/dm^3)
Pot life	Approx. 60 minutes
Joint width	From 1/32 to 1/8 inch (1 to 3 mm)
Application	Grout rubber float
Acceptable application temperatures	From +50°F to +86°F (+10°C to +30°C)
Recommended application temperatures	From +64.4°F to +73.4°F (+18°C to +23°C)
Waiting time for grouting	24 hours
Set to light foot traffic	24 hours
Ready for use	5 days - (Pools: 7 days)
Serviceability Temperatures	From -4°F to +212°F (-20°C to +100°C)
How to clean equipment	With water when product is fresh. Mechanically when product has set.

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.tiledoctor.com

CONSUMPTION TABLES

GROUT CONSUMPTION (LB/SQFT)

TILE SIZE (INCH)			JOINT WIDTH (INCH)				
LENGTH	WIDTH	THICK	1/64	1/32	1/16	3/32	1/8
1/2	1/2	1/8	0.07	0.13	0.26	0.38	0.51
3/4	3/4	1/8	0.04	0.08	0.17	0.25	0.34
1	1	1/8	0.03	0.06	0.13	0.19	0.25
1 1/2	1 1/2	1/8	0.02	0.04	0.08	0.13	0.17
1 1/2	1 1/2	1/4	0.04	0.08	0.17	0.03	0.34
2	2	1/8	0.02	0.03	0.06	0.10	0.13
2	2	1/4	0.03	0.06	0.13	0.19	0.25
6	6	1/4	0.01	0.02	0.04	0.06	0.08
12	12	1/4	0.005	0.01	0.02	0.03	0.04

PERFORMANCE

Compliance	ISO 13007 - EN 13888	RG
Resistance to abrasion	≤ 9.84in^3 (≤ 250 mm^3)	EN 12808-2
Compressive strength after 28 days	≥ 6,520 psi (45.0 N/mm^2)	EN 12808-3
Flexural strength after 28 days	≥ 4,350 psi (30 N/mm^2)	EN 12808-3
Shrinkage	≤ 1.5 mm/m (≤ 0.059in/yd)	EN 12808-4
Water absorption after 240 minutes	≤ 0.1 g (0.0035oz)	EN 12808-5
IMO Certification Res. MSC.307(88)-(2010 FTP Code)	Certificate n° MED/0497/1392	Issued by CSI S.p.A.

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® Crystal 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		●	●	●	●	●
	Sulfuric acid	1.5	●	●	●	●	●
		50	●	●	●	●	●
		96	●	●	●	●	●
	Tartaric acid	10	●	●	●	●	●
Alkalis	Ammonia in solution	25	●	●	●	●	●
	Caustic soda	50	●	●	●	●	●
	Sodium hypochlorite in solution	10	●	●	●	●*	●
	Conc. Active IC	10	●	●	●	●	●
	Potassium hydroxide	50	●	●	●	●	●
Saturated solutions at 20°C (+68°F)	Calcium Chloride		●	●	●	●	●
	Sodium Chloride		●	●	●	●	●
	Sugar		●	●	●	●	●
Oils and fuels	Lead-free petrol		●	●	●	●	●
	Diesel		●	●	●	●*	●
	Extra Virgin Olive Oil		●	●	●	●	●
	Lubricant oil		●	●	●	●	●
Enzymatic cleaners	Detergent 1 at 4%		●	●	●	●*	●
	Detergent 2 at 5%		●	●	●	●	●
Solvents	Acetone		●	●	●	●	●
	Ethylene glycol		●	●	●	●	●
	Ethyl alcohol		●*	●*	●*	●*	●*
	Hydrogen peroxide	10 vol	●	●	●	●	●
		25 vol	●	●	●	●	●

KEY

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

NOTES

Test performed at temperature +73.4°F (+23 °C), R.H. 50% and with no wind. May vary depending on the specific conditions of the installation site.
The colors and images of the products are intended purely as a guideline and do not necessarily constitute a faithful representation of the originals.

Form **n. 317**
Revision **n. 12**
Date: **10 23**

The information and provisions contained in this technical data sheet reflect our best experience. Given the impossibility of directly intervening on the conditions of the work site and execution of the works, they represent indications of a general nature, which are in no way binding on our Company. It is therefore advisable to perform a spot test to check the suitability of the product for the intended use. In any case, users must determine whether or not it is suitable for the intended use and shall assume all associated responsibility.

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