Starlike® Crystal
Technical Specifications

Science-based translucent epoxy gel (4Gen), enhanced with ultra-pure glass microbeads; waterproof, stain-resistant and UV-resistant, for the photochromic grouting of joints from 0 to 3 mm with high hygiene standards, for all types of mosaics, tiles, porcelain stoneware and large slabs.

Product description

Translucent epoxy gel (4th generation) for grouting joints from 0 to 3 mm in all types of mosaics, tiles, porcelain stoneware and large-format slabs.
Patented formula enhanced with exclusive Level 2 technology using ultra-pure glass microbeads that ensure light diffusion. The most effective photochromic colour-blending effect is achieved with glass materials that allow and amplify the passage of light, such as mosaics and transparent glass sheets or artistic mosaics
For waterproof, stain-resistant and UV-resistant grout with exceptional chemical and mechanical resistance and resistance to thermal shock.
Designed for exceptional ease of application and, thanks to state-of-the-art features, the mixture is extremely creamy, light, and super easy to spread and clean up.

Classified as RG – EN 13888 and R2 – EN 12004

Patented gel formula

Starlike® Crystal is a highly innovative Litokol invention protected by Patent No. 102018000005366

Part A
A blend of epoxy resins of varying molecular weights, manufactured under our own licence
Extremely high concentration of recycled glass microbeads ~500 million/kg
Ultra-fine particle size – range 60–180 µm

Rheological stabilisers and smart flow enhancers

Part B
Latest-generation non-corrosive polymeric linker

Starlike® Crystal embodies Litokol's ongoing scientific progress.
It is designed using innovative raw materials to improve the installation experience, enhance safety and reduce environmental impact.

Engineered with

Level 2 Recycled Crystal Microsphere® technology
Zherorisk® EpoxyGel technology
Defender Anti-Microbial Technology

Colour technology

500M

Contains 500 million glass microbeads per kg
Microsphere diameter from 60 to 180 µm
Recycled microspheres

Gel Performance

High-performance translucent epoxy gel
Ultra-smooth application thanks to exclusive, perfectly spherical glass microbeads with a maximum sphericity index (~1)
Quick and easy cleaning: Starlike® Crystal is made exclusively from a blend of ultra-pure glass microbeads and contains none of the chemical pigments found in standard epoxy grouts
An elegant and modern translucent effect thanks to the purity of the micro-beads
Light-diffusing and colour-enhancing effect on stucco finishes
Binds and enhances any type of mosaic
Smooth, silk-effect grout – ultra-fine-grained glass microbeads
Waterproof and shrinkage-free
Superior UV resistance
Superior stain resistance
Certified as antimicrobial and mould-resistant
It helps maintain a healthy indoor environment
Waterproof and shrinkage-free
Superior resistance to acids and alkalis
Suitable for direct contact with food and drinking water
Extended workability time > 90 mins

Chemistry + Smart

Formulated with AquaClean Technology, the product is fully emulsifiable in water and does not require aggressive solvents for cleaning tools. This innovative water-based technology improves application comfort, reduces VOC emissions and makes application safer, cleaner and more sustainable for the operator and indoor environments.
Free from oxirane. Does not contain C12-C14 (oxirane, mono-C12-14-alkyloxy methyl derivatives)
Not hazardous to the applicator

Not hazardous to the environment
Not hazardous for transport – ADR-compliant
Non-corrosive and non-toxic
Complies with Standard ISO22196 - Antimicrobial protection: prevents the growth of bacteria and moulds on the surface.
Complies with HACCP/reg. EC 852/2004 for the hygiene of foodstuffs
Contains recycled glass microspheres (>75%)

Certifications

EN 13888
EN 12004 – Adhesive
ISO 13007
ANSI 118.3
MED 2014/90/EU
EC1 Plus Gev Emicode
A+ Indoor air emissions
EPD Environmental Product Declaration
EN 1186-3:2003 – HACCP
ISO 22196

Starlike® Crystal and the environment

LCA results for Global Warming Potential – Greenhouse Gases (GWP-GHG)

Impact category	Unit	A1–A3	C1	C2	C3	C4	D
Climate change GWP-GHG	kg CO_2 eq	2,28	1,70 10^{-3}	1,84 10^{-2}	6,82 10^{-2}	8,23 10^{-2}	-2,13 10^{-2}

Materials

Ceramic and glass mosaics
Porcelain stoneware
Large formats
Laminated stoneware slabs
Ceramic tiles
Glass sheets

Substrates

Screeds
Self-levelling compounds
Plaster
Plasterboard
Plaster and anhydrite
Existing tiles
Radiant heating systems
Waterproofing products
Decoupling membranes
Metal
Wood
Aerated concrete
Fibre-cement sheets
Concrete

Uses

Floors – walls
Interior – exterior
Radiant heating systems
Swimming pools – fountains
SPA – Hammam
Indoor wet areas – bathrooms and showers
Exclusive locations
Residential, public, commercial and street furniture
Approved for marine use in accordance with the MED Directive 2014/90/EU

Product specifications

Appearance	Part A: Translucent gel
Appearance	Part B: Polymeric liquid
Colour	Translucent
Responsible Packaging	Second-life recycled plastic buckets (Monopack A + B) in 2.5 kg and 5 kg sizes
Shelf life	36 months in original packaging in a dry place. Do not expose to frost
Customs heading	35069190

Technical Specifications

Compliance	**ANSI A118.3**	
Washable with water	The material must be spreadable and washable with water at 80 min	5.1
Initial setting time	≥ 2 h	5.2
Working set time	≤ 7 days to achieve at least 90% of the performance specified by the manufacturer	5.2
Shrinkage	≤ 0.25 %	5.3
Settlement in vertical joints	No obvious changes	5.4
Initial tensile adhesion	≥ 1000 psi	5.5
Compressive strength at 7 days	≥ 3500 psi	5.6
Flexural strength at 7 days	≥ 1000 psi	5.7
Resistance to thermal shock	≥ 500 psi	5.8

Compliance	**EN 13888 – ISO 13007**	**RG**
Abrasion resistance	≤ 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
Chemical resistance	See table	EN 12808-1
Compliance	**EN 12004 – ISO 13007**	**R2**
Shear adhesion after immersion in water	≥ 2.0 N/mm^2	EN 12003
Shear adhesion after thermal shocks	≥ 2.0 N/mm^2	EN 12003
Open time	≥ 0.5 N/mm^2 after 20 min	EN 1346
Initial shear adhesion	≥ 2.0 N/mm^2	EN 12003
Chemical resistance	See table	EN 12808-1

Application Specifications

Mixing ratio	Part A: 94 parts by weight
Mixing ratio	Part B: 6 parts by weight
Consistency of the mix	Epoxy gel
Specific gravity of the mixture	1.65 kg/dm^3
Pot life	~ 90 min
Joint width	From 0 to 3 mm
Application	Starlike® Pro trowel
Permissible application temperatures	From +10°C to +30°C
Drying time for grouting	24 h
Ready for foot traffic	24 h
Commissioning	5 days - Swimming pools 7 days
Operating temperature	From -20°C to +100°C
Cleaning of equipment	With water when the product is fresh. Mechanically once the product has hardened.
Notes	Data recorded at a temperature of +23 °C, 50% RH and in the absence of ventilation. These may vary depending on specific site conditions.
Use as an adhesive	
Applicable thicknesses	1 to 6 mm
Open time	> 90 min
Recording time	> 90 min
Drying time for grouting	24 h
Application	Notched trowel suitable for the tile size and substrate
Coverage	2 mm trowel: 1.1 kg/m^2
Coverage	3.5 mm trowel: 1.6 kg/m^2
Coverage	6 mm trowel: 2.5 kg/m^2

Calculation of consumption

Formula for calculating consumption: (A+B)/(AxB) x C x D x 1.55 = kg/m^2

A = tile length (in mm)
B = tile width (in mm)
C = tile thickness (in mm)
D = joint width (in mm)

To calculate consumption based on different tile sizes and joint widths, please refer to the product calculator available on the website www.litokol.com

Preparation of substrates

Use as grout

Check that the adhesive has fully set and is dry.
The joints must be dry, clean, free from dust and empty for at least two-thirds of the tile thickness.
Any adhesive that may have spilled during installation must be removed whilst still fresh.

Use as an adhesive

In accordance with standard UNI 11493-1, substrates must be mechanically sound and free from crumbly parts, grease, oil, paint, wax and rising damp.
Cement-based plasters must be allowed to cure for at least one week per centimetre of thickness.
Level out uneven substrates using the new-generation crack-resistant

levelling compounds HydroLevel® 1-30 and X-Level® 0-10.

Preparation of the mix

To fully appreciate the superior flow and thixotropy of the innovative Epoxy Gel compound, mix the product using the specified mixing ratio.
Cut a corner of the sachet containing the polymer catalyst (Part B) and pour it into the container holding Part A.
It is recommended to pour out the entire contents of the catalyst, gradually rolling and squeezing the sachet from the sealed end towards the cut end.
Polymerisation begins when the epoxy component is mixed with the hardener: this reaction creates new chemical bonds that form the three-dimensional network, the technological core of the epoxy gel's solid yet flexible structure.
This step is crucial, as uneven mixing could compromise its final properties, such as hardness, thermal resistance and chemical resistance.
For this reason, it is recommended to mix using a low-speed electric mixer (≈ 300 rpm) until a creamy, homogeneous mixture free from lumps is obtained, and to avoid overheating the mixture, which would reduce its workability time.
Scrape the sides and bottom of the container with a trowel or spatula to recover any uncured product residue.
Stir briefly to achieve a gel-like consistency that is easy to apply to both floors and walls.
Mixing by hand is not recommended.

Application

Use as grout
Apply using a suitable Starlike® rubber spatula, taking care to fill the grout lines to their full depth by making diagonal movements across the direction of the grout lines and removing any excess product from the surface.
Ambient temperature affects the working time, curing time and time to service: low temperatures prolong these times, whilst high temperatures shorten them.
Do not apply if temperatures are forecast to fall below +10°C within the next 24 hours.
Use as an adhesive
To ensure the gel adheres perfectly to the substrate, apply a thin, even coat of the mixture using the smooth side of the trowel and, immediately afterwards, apply the desired thickness using the notched side.
The notching of the trowel must be chosen according to the size of the material to be laid and the substrate.
In accordance with the UNI 11493-1 standard, use the double-coating technique, applying the gel to the back of the tiles as well to ensure they are fully wetted, for outdoor installations or in areas subject to particularly high stress.
To ensure complete transfer of the gel to the back of the tiles, they must be laid onto the still-fresh adhesive whilst applying adequate pressure.
The open time under standard temperature and humidity conditions is approximately 90 minutes.
Very hot or windy conditions, or highly absorbent substrates, can drastically reduce this to just a few minutes; it is therefore advisable to check frequently that the adhesive has not formed a surface film.
In accordance with the UNI 11493-1 standard, tiles must be laid with joints of a width appropriate to their size.
Take account of any partition or structural joints and provide suitable

expansion, partition and perimeter joints.

Special Applications

Starlike® Finishes

Starlike® Crystal is designed to be enhanced with the Starlike® Finishes range to achieve stunning aesthetic effects: blends of coloured glitter, metallic effects based on pearlescent mica, and 'night vision' using photoluminescent technology will make grouted surfaces unique and exclusive.

Add the pre-measured sachet of Starlike® Finishes, depending on the size, after mixing the catalyst (Part B), and mix thoroughly at low speed until a homogeneous mixture is obtained.

For indoor use only.

Cleaning and finishing

Surface cleaning and the finishing of the grouting must be carried out whilst the product is still fresh, taking care not to empty the joints and without leaving any streaks.

Wet the grouted surface with clean water and work in the grout using Starlike® Pro felt, using circular movements to ensure the joints are completely filled and to remove any excess product from the surface.

Carry out a second pass with the damp Starlike® Pro Sponge to achieve a smooth, compact surface, completely removing the product from the tiles without emptying the grout lines, and wiping away any excess water.

To make cleaning easier, we recommend using two bowls of water at the same time: one for rinsing the felt and sponge, and the other for the final clean of the surface with clean water.

When the felt and sponge are saturated with resin and can no longer be cleaned, they must be replaced.

Any streaks or product residue can be easily removed from the tiled surface after 24 hours or, in any case, no later than 48 hours, using the specific cleaning products Starlike® Care (floors) and Starlike® Wall Care (walls).

More stubborn marks can be removed with Starlike® Care Pro epoxy resin cleaning gel even several days later, whilst older product residues must be removed with Starlike® Remover epoxy residue cleaning gel.

Sealing and maintenance

For the elastic sealing of expansion joints, partition joints and perimeter joints, use sealants from the Pixel 3D range.

For the correct maintenance and protection of surfaces, use the specific Litokol cleaning products from the X-Cleaner range.

Warnings

Given the variations in quality across global ceramic production (e.g. polished porcelain stoneware) and the different mixtures used in the manufacture of mosaics available on international markets, it is recommended that a preliminary grouting test be carried out to identify any incompatibilities, cleaning difficulties or undesirable aesthetic effects.
Do not add water, solvents or other foreign materials to the product
Do not walk on the freshly grouted surface to prevent resin residues from damaging the flooring
Remove any residues from the application process from the grouted surface promptly, as once the product has set, it can only be removed mechanically
Whilst the grout has not yet set, avoid carrying out any concurrent work that may produce dust capable of compromising the final aesthetic quality
Protect from direct sunlight or strong draughts for the first 12 hours after application
Do not cover the freshly grouted surface directly with sheets or other materials to prevent the formation of condensation, which could impair the product's full curing. Wait at least 48–72 hours, depending on the temperature, before protecting the surface with breathable materials
Do not use for applications not listed on this Technical Data Sheet
For further information, please contact Litokol's Technical Customer Service on +39-0522-622811 or via customercare@litokol.com

Chemical Resistance Table

The table below summarises the chemical resistance tests carried out in accordance with standard UNI EN 12808-1
Chemical resistance of ceramic tiles grouted with Starlike® Crystal Intended use: wet areas and swimming pools

Group	Name	Conc. %	Service Continuous			Intermittent Service
			24 hours	7 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 solution	>10	●	●	●	●
	Active Cl concentration	>10	●	●	●	●
	Caustic potash	50	●	●	●	●
Saturated solutions at 20°C	Calcium chloride	pure	●	●	●	●
	Sodium chloride	pure	●	●	●	●
	Sugar	pure	●	●	●	●
Oils and fuels	Unleaded petrol	pure	●	●	●	●
	Diesel	pure	●	●	●*	●
	Extra virgin olive oil	pure	●	●	●	●
	Lubricant oil	pure	●	●	●	●
Enzymatic cleaners	Cleaning agent 1–4%	pure	●	●	●*	●
	Cleaning agent 2–5%	pure	●	●	●	●
Solvents	Acetone	pure	●	●	●	●
	Ethylene glycol	pure	●	●	●	●
	Ethyl alcohol	pure	●*	●*	●*	●*
	Hydrogen peroxide	10 vol	●	●	●	●
		25 vol	●	●	●	●

●	Durable
●*	Durable with possible colour variations
●	Not durable

Safety Information

For the safe use of our products, please refer to the latest version of the Safety Data Sheet, available at www.litokol.com
PRODUCT FOR PROFESSIONAL USE

Legal notices

The information and specifications set out in this technical data sheet are based on our best experience.
However, as we are unable to directly influence site conditions or the execution of the works, these are general guidelines which do not in any way bind our Company.
We therefore recommend carrying out a preliminary test to verify the product's suitability for the intended use; in any case, anyone intending to use it is required to determine whether or not it is suitable for the intended use and, in any event, assumes all liability that may arise from its use.
Always refer to the latest updated version of the Technical Data Sheet, available on the website www.litokol.com

Specification item

The installation and grouting (0–3 mm) for indoor and outdoor applications, in accordance with UNI standards 11493-1 and 11714-1, of floor and wall tiles, porcelain stoneware, large slabs and all types of mosaic will be carried out using a fourth-generation translucent epoxy gel, with a patented formula enhanced by exclusive Level 2 technology featuring ultra-pure glass microbeads, which guarantees strength, uniformity and total colour stability for waterproof, stain-resistant and UV-resistant joints with extreme chemical and mechanical resistance and resistance to thermal shock, classified as RG in accordance with standard EN 13888 and R2 in accordance with standard EN 12004, type Starlike® Crystal by Litokol Lab SpA.

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