



STARLIKE® DEFENDER

Epoxy mortar with two antacid components, antibacterial and anti-mould, tested and certified. Suitable as an adhesive or for grouting ceramic tiles and mosaics in areas with high hygiene requirements with joints from 1 to 15 mm wide. Particularly useful in combination with antibacterial ceramic tiles 99.9% elimination of bacterial load.

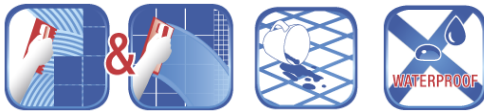


New patented formula.

UV and weather-resistant, designed and tested in collaboration with the University of Modena and Reggio Emilia

DESCRIPTION

Two-part anti-acid and antibacterial epoxy mortar. Part A consists of an epoxy resin mixture, inert ceramic quartz and mud additives. Part B consists of a mixture of organic catalysts with minimum environmental side effects and lower exposure risks for users.



ADVANTAGES

- Can suppress up to 99.9% of the main bacterial strains (Staphylococcus Aureaus and Escherichia Coli).
- Extremely easy application and cleaning, even compared to normal cementitious sealants. Prevents colour pigment leakage onto ceramic surfaces.
- Stable and uniform colouring for all types of tiles with exclusive colour effects.
- High mechanical strength.
- Waterproof
- Total absence of cracking or crazing during hardening.
- Excellent chemical resistance.
- Unlike other epoxy mortars on the market, the Starlike®'s catalyst (Part B) is labelled Xi – Irritant. It is not corrosive nor dangerous for the environment.
- Starlike® is not classified as dangerous goods and is exempt from transportation restrictions (ADR-AND-IMDG-IATA classes)
- Made with low volatile organic chemical emissions, conforms to Class A+ in the French Regulations.

EN 13888 CLASSIFICATION

STARLIKE® DEFENDER: Class RG Reactive grout

EN 12004 CLASSIFICATION

Starlike® Defender is a Class R2T enhanced reactive adhesive with zero vertical slip for indoor and outdoor ceramic tiling for walls and floors. The product conforms to EN 12004 regulations, indicated on the Performance Declaration CPT-IT308, as per the European Construction Products Regulation No. 305/1022/EU, and is tested by a European entity notified according to system 3 certification.

Packaging

2.5 kg plastic bucket= Standard pallet 437.5 kg

FIELDS OF APPLICATION



Suitable for antacid and antibacterial laying and grouting on floors or walls, indoors and outdoors, of ceramic tiles and mosaics with gaps from 1 to 15 mm in areas which require high performance in hygiene and cleanliness, such as for example:

- Sanitary structures
- Analytical and research laboratories
- Nurseries and schools
- Sports facilities, changing rooms, gym shower areas
- Public and private swimming pools
- Communal and private kitchens
- Canteens
- Agro-food industries and warehouses
- Heath centres, saunas, Turkish baths

Recommended for sealing ceramic tiles even in the private building sector in order to maintain antibacterial properties, increasing living comfort, such as in:

- Floor and wall tiles in general for residential, public and industrial areas
- Underfloor heating.
- Floor and wall tiles in bathrooms and showers.
- Kitchen countertops.
- Terraces and balconies.



Suitable for applications where the surfaces are exposed to aggressive chemical substances (see chemical resistance table) such as dairies, abattoirs, pubs, food factories in general.

It is also recommended for grouting swimming pools and tanks, containing thermal or brackish water, spas and hammam baths.

Suitable to the contact with food items, according to D.M of 21.03.1973 (Hygienic discipline of packaging, food containers and tools for the contact with food items and personal use products) and according to the following Decrees of the Health Ministry: 26.04.1993, n.220; 22.07.1998, n.338 ; 28.03.2003, n.123. A copy of the certificate may be asked to the Litokol Technical Bureau.

The product can therefore be used for grouting ceramic tiling in areas subject to direct contact with food, for example: workbenches for meat, dairy products or flour, tanks for

fish farming, tables in kitchens in restaurants, fast food restaurants, patisseries, etc. Suitable as an adhesive and grout for mosaics even in swimming pools or on waterproofing membranes such as Elastocem, Coverflex and Aquamaster.

APPLICATION PHASES

Preliminary checks and joint preparation

Verificare che l'adesivo o la malta utilizzata per l'incollaggio delle piastrelle sia completamente indurita ed asciutta. Le fughe si devono presentare pulite, prive di polvere e vuote per almeno 2/3 dello spessore delle piastrelle.

Eventuali tracce di adesivo o malta refluite tra le fughe devono essere asportate.

Mixing ratios

The joints must be clean, free of powder and empty down to at least 2/3 of the tile thickness.

Any adhesive or mortar that has squeezed up inside the joints must be removed.

Mix preparation

Cut off a corner from the bag, containing the catalyst (part B), situated in the small bucket, and pour it onto part A (paste). It is recommended to empty completely the bag with the catalyst, rolling it up towards the cut side.

Mix using an electric drill equipped with mixing paddle until a uniform, lump-free mix is obtained.

Scrape the sides and the bottom of the container, using a steel spatula, to make sure that all the paste is catalyzed.

Hand mixing is not recommended.

The two parts are pre-batched in their packaging, avoiding, this way, all risk of mixing errors.

The paste is workable for approximately 1 hour at a temperature about +23°C.

Grouting

Introduce the paste into the joints using a special green rubber float (art. 946GR).

For large surfaces, an electric single-brush floor maintenance machine equipped with an abrasion-resistant rubber scraper can be used.

Remove excess product using the rubber float.

The product's pot life and hardening time is strongly dependent on the ambient temperature.

The ideal temperature for application is between +18 and +23°C.

In these conditions the product is an easily workable smooth mortar, with a pot life of about 1 hour.

It is ready for foot traffic after 24 hours.

At a temperature of +15°C it takes three days before the surface is ready for foot traffic. The floor is ready to use and resistant to chemicals after 5 days at a temperature of +23°C and after 10 days at a temperature of +15°C.

At temperatures between +8 and +12°C, the product is very dense and difficult to apply.

The hardening time is also lengthened considerably.

Do not add water or solvents to improve workability. In hot weather it is advisable to apply the product to the floor as quickly as possible so as not to shorten further the pot life due to the reaction heat in the container.

CLEANING AND FINISHING

The grout work must be cleaned and finished while the product is

still wet and in any case in the shortest possible time. Take care not to remove product from the joints or leave stains on the tile surface.

Cleaning and finishing can be performed either manually or using an electric single-brush machine equipped with a felt disc.

Manual method

First sprinkle clean water over the grouted surface.

If necessary, perform initial cleaning using a float equipped with a moistened white felt (art. 109/G). Make circular movements in both clockwise and anticlockwise directions in order to seal perfectly the sides of the tiles and to remove excess grout from the surface of the tiles.

Now perform a second pass with a sweepex sponge (art. 128/G) in order to obtain a smooth, closed surface and to remove completely the product from the surface of the tiles, without removing it from the joints, as well as to dry off the excess of water.

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

Stains or residues of transparent product can be removed after 24 hours or at any rate after grout hardening (the time of hardening depends greatly on the environmental temperature), using the specific cleaners LITONET (for floors) and LITONET GEL (for walls).

For a correct use see the technical data sheet.

Method with single-brush machine

After removing excess grout from the surface, sprinkle plenty of clean water over the grouted surface. Then, begin cleaning with the single brush fitted with felt.

Replace the felt disc when it is fully impregnated with product.

If necessary, the cleaner LITONET can be used to remove the residues of epoxy film after 24 hours or at any rate after grout hardening (the time of hardening depends greatly on the environmental temperature).

Use of Litonet and Litonet gel for removing smears

Spread LITONET or LITONET GEL on the whole surface to be treated with white felt (art. 109/G).

Let it act for about 15-30 minutes.

Then scrub with white felt (art. 109/G) or with single-brush machine in case of big surfaces. Rinse with water and dry immediately with a clean and dry cloth.

Do not wait the evaporation of the rinse water to avoid the formation of stains on the ceramic surface.

USE AS ADHESIVE

Apply the mixture to the support with a spatula with suitable teeth and pose the tiles exerting suitable pressure.



WARNINGS

- If possible, apply the product at temperatures between +18°C and +23°C.

Do not use at low temperatures or in environment with high humidity, in order to avoid the superficial carbonation that may modify the uniformity of the colour.

- Remove excess product from the tile surface rapidly because once hardened it will have to be removed mechanically, seriously jeopardising the finished result.
- Mix the two components (A+B) correctly.
- While cleaning change frequently the water.
- Change the felt and the sponge when they are impregnated with resin.
- Don't walk on the just grouted surface so as not to stain the floor with epoxy resin.
- Do not cover the grouted surface with length of cloth or other materials to avoid the condensation that may cause the superficial carbonation of the product with the resulting non-homogeneity of the colour.

Wait at least 24-48 hours, depending on temperature, before protecting the surface.

- The product cannot therefore be used for grouting Tuscan terracotta or other porous materials and objects, as for example cement kerbs.
- In case of grouting natural stones, it is necessary to execute a preliminary test, in order to verify the absorption of resin by the stone slabs.

In case of the resin absorption, the dark stains may form on the sides and on the surface of the slabs and they can't be removed.

This problem is usual for marbles of light colours.

- The product must not be used for grouting tanks containing aggressive substances with which only occasional contact is permitted (see chemical resistance table).
- Do not mix the product with water or solvents.
- Thin ceramic stoneware obtained through compaction and with structured faux wood surfaces can present problems for the removal of halos. In these cases, it is recommended to perform a preventive sample application or consult the Litokol technical office.
- Do not use for applications not stated on this technical sheet.

IDENTIFICATION DATA

Appearance	Component A: dense coloured paste Component B: dense liquid
	CLASSIC COLLECTION
	Bianco Assoluto C.470
	Titanio C.310
	Grigio Fango C. 280
Colours	Silver C. 220
	Antracite C.240
	Sabbia C.250
	Travertino C.290
Customs code	3506 91 00
Shelf life	24 months in original packaging when stored in a dry place



APPLICATION DATA

Waiting time for grouting	Floor tile installation
	<ul style="list-style-type: none"> ● with normal-setting adhesive: 24 hours ● with fast-setting adhesive: 4 hours ● with mortar: 7-10 days
	Wall tile installation
	<ul style="list-style-type: none"> ● with normal-setting adhesive: 6-8 hours ● with fast-setting adhesive: 4 hours ● with mortar: 2-3 days
Mixing ratios	Component A: 100 parts by weight Component B: 8 parts by weight The two components are pre-measured in their relevant packaging
Mix consistency	Creamy
Specific gravity of mix	1.55 kg/l
Pot life	About 1 hour at T=+23°C
Application temperatures allowed:	From +12°C to +30°C
Application temperatures recommended:	From +18°C to +23°C
Walk on time	24 hours at T=+23°C
Ready for use	5 days at T=+23°C
Joint width	From 1 to 15 mm

PERFORMANCE

Shear adhesion strength (EN 12003)	Initial	$\geq 2 \text{ N/mm}^2$
	After immersion in water	$\geq 2 \text{ N/mm}^2$
	After thermal shock	$\geq 2 \text{ N/mm}^2$
Abrasion resistance (EN 12808-2)	$\leq 250 \text{ mm}^3$	
Mechanical flexural strength after 28 days in standard conditions (EN 12808-3)	$\geq 30 \text{ N/mm}^2$	
Mechanical compression strength after 28 days in standard conditions (EN 12808-3)	$\geq 45 \text{ N/mm}^2$	
Shrinkage (EN 12808-4)	$\leq 1.5 \text{ mm/m}$	
Water absorption after 4 hours (EN 12808-5)	$\leq 0.1 \text{ g}$	
Temperature of use	From -20°C to $+100^\circ\text{C}$	


CONSUMPTION AS GROUT kg/mq

Tiles (mm)	Joint (mm)						
	1.5	2	3	4	5	7	10
10x10x4	1.86	2.48					
10x10x10	4.65	6.20					
15x15x4	1.24	1.65					
15x15x10	3.10	4.13					
15x30x8	1.86	2.50					
20x20x3	0.70	0.93	1.40	1.86	2.33	3.26	4.65
23x23x8	1.62	2.16	3.2	4.3	5.39	7.55	10.78
25x25x10	1.86	2.48	3.7	5	6.20	8.68	12.40
50x50x4	0.37	0.50	0.7	1	1.24	1.74	2.48
50x50x10	0.93	1.24	1.9	2.5	3.10	4.35	6.20
100x100x8	0.37	0.50	0.74	0.99	1.24	1.74	2.48
125x240x12	0.34	0.45	0.68	0.91	1.13	1.58	2.26
150x150x6	0.18	0.24	0.36	0.48	0.61	0.85	1.21
150x150x8	0.25	0.33	0.50	0.66	0.83	1.16	1.65
200x200x8	0.19	0.25	0.37	0.50	0.62	0.87	1.24
250x330x8	0.13	0.17	0.26	0.35	0.44	0.61	0.87
300x300x8	0.12	0.17	0.25	0.33	0.41	0.58	0.82
300x600x10	0.12	0.16	0.23	0.31	0.39	0.54	0.78
400x400x10	0.12	0.16	0.23	0.31	0.39	0.54	0.78
450x450x10	0.10	0.14	0.21	0.27	0.34	0.48	0.68
600x600x10	0.08	0.10	0.15	0.20	0.26	0.36	0.51

COMSUPTION AS ADHESIVE

Trowel notch size: : 3.5 x 3.5 mm

Consumption: 1.6 Kg/m²

SAFETY INFORMATION

Consult the Material Safety Data Sheet, available on request.

PRODUCT FOR PROFESSIONAL USE.

ITEM SPECIFICATIONS

The acid-resistant and antibacterial installation and grouting of ceramic floors and walls in residential, public and industrial areas including swimming pools, balconies, terraces, work surfaces in general must be made using an RG class epoxy mortar according to EN 13888 and R2T class according to EN 12004, such as STARLIKE® by Litokol S.p.A.

CHEMICAL RESISTANCE TABLE

(the table is a summary of the chemical resistance proof made according to regulation UNI EN 12808-1)

RESISTANCE TO CHEMICALS OF CERAMIC TILES TREATED WITH STARLIKE® DEFENDER FIELD OF APPLICATION 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	●	●	●	●	●
	Oleic Acid	-	●	●	●	●	●
	Sulphuric Acid	1.5	●	●	●	●	●
		50	●	●	●	●	●
		96	●	●	●	●	●
	Tannic Acid	10	●	●	●	●	●
Tartaric Acid	10	●	●	●	●	●	
Oxalic Acid	10	●	●	●	●	●	
Alkalis	Ammonia in solution	25	●	●	●	●	●
	Caustic Soda	50	●	●	●	●	●
	Sodium Hypochlorite Conc. Active Cl	10	●	●	●	●	●
	Potassium hydroxide	50	●	●	●	●	●
	Sodium Bisulphite	10	●	●	●	●	●
Saturated solutions at 20°C	Sodium Iposulphite	-	●	●	●	●	●
	Calcium Chloride	-	●	●	●	●	●
	Sodium Chloride	-	●	●	●	●	●
	Ferric Chloride	-	●	●	●	●	●
	Sugar	-	●	●	●	●	●
Oils and fuels	Petrol, Fuels	-	●	●	●	●	●
	Turpentine	-	●	●	●	●	●
	Diesel	-	●	●	●	●	●
	Extra Virgin Olive Oil	-	●	●	●	●	●
	Lube Oil	-	●	●	●	●	●
Solvents	Acetone	-	●	●	●	●	●
	Ethylene Glycol	-	●	●	●	●	●
	Glycerine	-	●	●	●	●	●
	Ethyl Alcohol	-	●	●	●	●	●
	Solvent Petrol	-	●	●	●	●	●
	Peroxide Water	10	●	●	●	●	●
25		●	●	●	●	●	

KEY
 ● EXCELLENT RESISTANCE
 ● GOOD RESISTANCE
 ● POOR RESISTANCE





Although the information provided on this technical sheet is accurate to the best of our knowledge and experience, it is intended purely as a guideline.

The user must carry out preliminary practical tests for each specific job and is solely responsible for the final result.

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CERTIFICATO DA DNV GL
= ISO 9001 =**