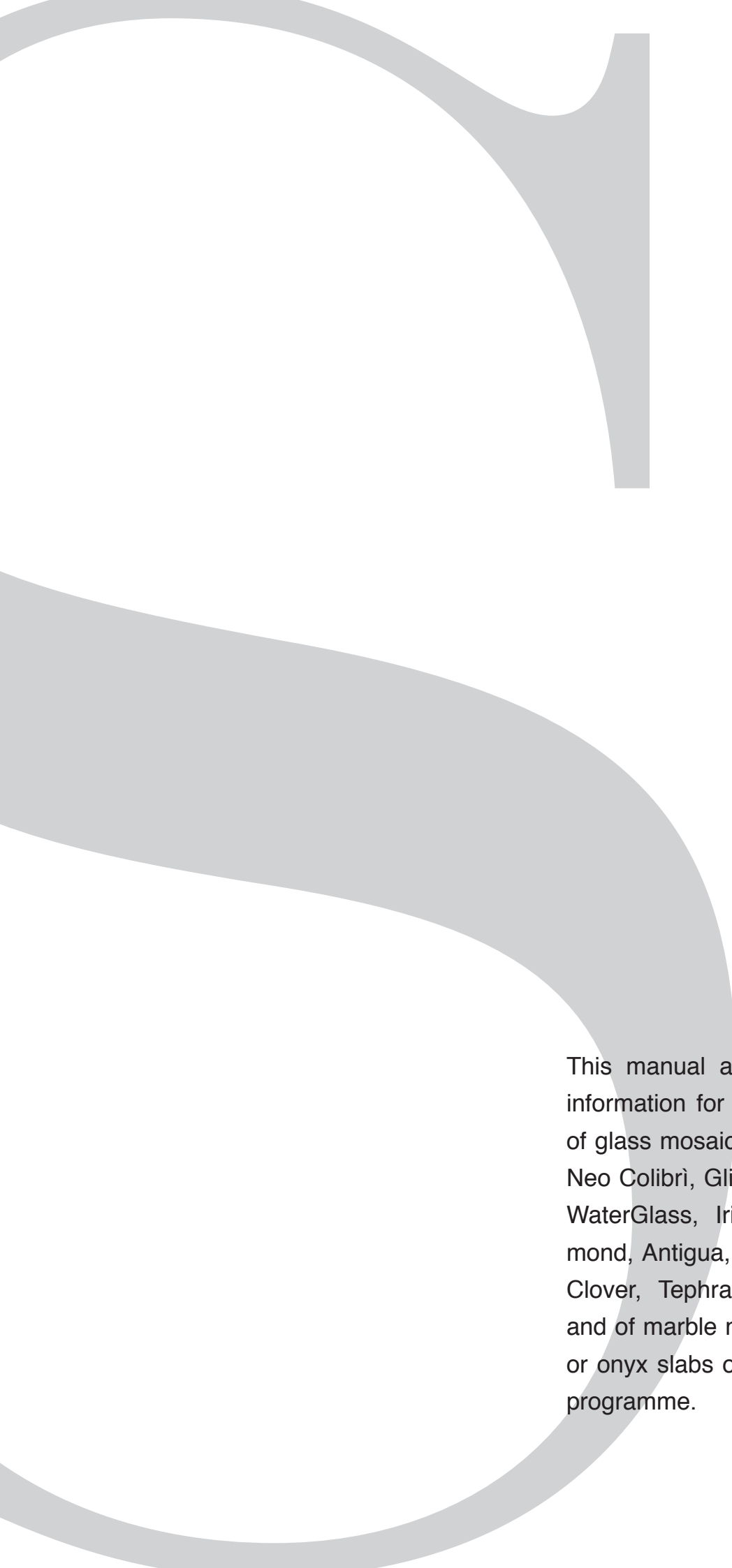




INSTALLATION MANUAL

SICIS
THE ART MOSAIC FACTORY



This manual aims to provide useful information for the correct installation of glass mosaics (Natural, Colibrì and Neo Colibrì, Glimmer, Murano, Firefly, WaterGlass, Iridium, Structura, Diamond, Antigua, Pluma, Fiber, Crystal, Clover, Tephra, Metallismo, Mirage) and of marble mosaics, marble, stone or onyx slabs of the SICIS SICISStone programme.

Preliminary check of the substrate

Prior to laying, perform the checks of the following features that the supports must have.

Flatness

A fundamental requirement of the supports is the flatness. In the case of marble slabs with a minimum thickness of 10 mm, the tolerance measured with straight edge of 2 meters in length is ± 3 mm, while for glass mosaics, characterised by a thickness of 4 mm, it must not exceed ± 1.5 mm. Small irregularities can be corrected using the adhesive itself for levelling, while more obvious irregularities (> 5 mm) must be restored through the use of suitable cement-based levelling compounds produced by LITOKOL SpA such as:

Litoliv Extra 15

Self-levelling cement with rapid drying and setting, free of shrinkage for thicknesses from 1 to 15 mm, with low emission of volatile organic compounds (EMICODE EC1PLUS), of class CT 30F7 according to UNI EN 13813.

Litoliv S40 Eco /Litoliv Express

Self-levelling cement-based rapid hardening and drying, free of shrinkage for thicknesses from 30 to 40 mm thick, fibre-reinforced, very low emission of volatile organic compounds (Emicode EC1 PLUS), of class CT C20F5 according to UNI EN 13813.

Litoplan Smart

Cement-based thixotropic levelling with ultra rapid drying and setting for vertical and horizontal applications both for indoor and outdoor use in thicknesses from 1 to 25 mm, with very low emission of volatile organic compounds (Emicode EC1PLUS), of class CT C16F5 according to UNI EN 13813.

Aging and maximum moisture allowed

Whatever the nature of the supports, their aging cycle must be complete so that they are dimensionally stable and not subject to shrinkage after the laying of tiles or slabs. In the case of traditional cement-based screeds, aging can vary according to the season, ranging from 7 to 10 days per centimetre of thickness. Shorter waiting times are attainable using in place of common Portland cement, special normal and rapid drying

hydraulic binding materials such as Litocem or Litocem Pronto (premixed cement-based mortar ready for use at normal setting, fast drying and controlled shrinkage for the realisation of screeds in interior and exterior use, with very low emission of volatile organic compounds (Emicode EC1PLUS), of class CT C30F6 class according to UNI EN 13813) that permits the laying of glass mosaics after 24 hours and natural stone slabs after 3 days. For these types of supports, the maximum moisture content allowed should not exceed 3%. Aging lasts at least 6 months in the case of concrete surfaces.

Gypsum-based substrates, such as anhydrite-based screeds or gypsum plasters, must reach a maximum residual moisture of 0.5%. For cement-based pre-mixed plasters, it is recommended to follow the supplier's recommendations concerning aging and mechanical strength.

Cleaning

Substrates must always be clean, free of loose fragments, paint, wax, grease, oil or anything else that can affect the correct adhesion of the product. Concrete substrates must be cleared of release agent residues. A previous cleaning with hot water pressure washer or by sandblasting is always recommended. Existing ceramic surfaces must be thoroughly degreased with alkaline detergents or with a caustic soda water solution. Alternatively it is possible to sand the surface with 60-80 grain abrasive sandpaper and vacuum up the dust.

Mechanical strength

In flooring, the substrates must have adequate mechanical compressive strength in relation to the intended destination area. By way of example, a cement-based screed in an internal residential building must have a minimum compressive strength of at least 16 N/mm^2 or 20 N/mm^2 in the case of heating floors, while a cement-based or gypsum-based plaster applied on an indoor wall should have an adhesive strength of at least $0.5\text{-}0.7 \text{ N/mm}^2$.

In the case of laying on an outdoor façade plaster, ensure that the plaster is suitable for the tiles or natural stone slabs (characterised by a high weight) and therefore has an adhesion value to support at least 1 N/mm^2 . In order to ensure a good degree of adhesion, the substrates

Preliminary check of the substrate

must be strong enough and have a nonpowdery surface. To improve this feature, appropriate consolidating primers in aqueous solution such as Primer C can be used, which is compatible with any cement-based adhesive.

Preparation of the substrate for laying mosaics

In the case of laying of transparent glass mosaics, a prior levelling of the substrate will be required by using a white cement-based adhesive such as Litoplus K55 in order to homogenise the colour and to avoid altering the colour of the mosaic. In the case of substrates that are particularly smooth, poorly absorbent or subject to vibrations and dilations, we recommend mixing Litoplus K55 with Latexkol diluted 1:1 with water so as to further improve adhesion. Alternatively, it is possible to use the white, high-deformable cement-based adhesive, Hyperflex K100. The subsequent laying of mosaics can be performed after full hardening of the levelling layer in about 24 hours depending on the environmental temperature. Before proceeding with the laying, we recommend that you trace lines on the surface to be covered to help the correct alignment of the sheets. At this stage, squares and level detectors and laser instruments can be useful.

After distribution on the floor, measure the total of 3 sheets, set in such a way that the distance between the sheets is the same as that between tiles. Transfer this measurement to the surface to be covered, both horizontally and vertically, in order to trace a grid with the straight edge and a lattice level. The wall will be divided into several squares, each of which corresponds to nine sheets of mosaic. If the mosaic represents a drawing or has to follow a particular composition, follow the laying instructions provided. Even in the case of mosaics with tiles that do not have a square shape and therefore irregular edges on the sheet, it is important to make sure that the distance between one sheet and the other is equal to that between the individual tiles, so that all the joints are identical.

Preparation of the substrate for laying the marble slabs

In this paragraph, the solutions to adopt for the creation of cement substrates to cover with the laying of stone materials are indicated so as to

avoid the formation of stains and the appearance of efflorescence. Despite the possibility of stains on almost all stone materials, this possibility is greater in the case of white carrara-type marble, thassos, onyx, etc.

This problem is due to the presence of iron minerals in the stone material which, transferred toward the surface by water contained in the adhesive or in the substrate and subsequently reacting with oxygen and light, cause the appearance of stains that undermine the surface aesthetics.

Possible solutions to prevent these phenomena are:

In the case of laying on floors, provide for a vapour barrier before creating the screed in order to prevent the rise of water by capillarity.

Observe the aging time of the plaster or the screed or check that the maximum content of moisture (measured with carbide hygrometer) does not exceed 3% in the case of a screed or cement plaster and 0.5% for anhydrite screeds or plaster-based gypsum. Binding materials for the quick-drying of screeds can be used which allow laying already after 3 days of aging such as Litocem or Litocem Pronto of LITOKOL S.p.A.

In the case of regularisation of the support, use rapid levelling or self-levelling mortars such as Litoliv Extra 15, Litoliv S40 Eco, Litoliv Express or Litoplan Smart.

For the laying of marble slabs subject to possible stains, use rapid drying or white reactive cement-based adhesives such as LitostoneE K99 and Litoelastic EVO produced by LITOKOL S.p.A.

Choosing the adhesive

In the following synoptic charts, it is possible to identify suitable adhesives for the laying of various types of mosaics and marble slabs based on the support, the size of the slabs and the intended use. Generally, white adhesives, possibly with zero vertical slip, are preferred in the case of laying on walls. The white colour of the adhesive is absolutely necessary for transparent glass mosaics and white marble or onyx in order to avoid unwanted shades of colour on the finished surface. A special note must be given to the epoxy mortar Starlike® EVO, which can be

used both as an adhesive and as a sealant for grouting the joints of vitreous mosaics. There are many benefits associated with this product but especially in the case of very thin glass mosaics; the possibility of using the same product both as an adhesive and grout allows using any colour without the risk of interferences between the grouting colour and the adhesive used for the laying.

Choosing the adhesive for mosaics

SUPPORTS		SICIS COLLECTIONS				Structura Uneven	
		Glimmer, Waterglass, Neoglass, Firefly, Clover and Color List 1.	Colibri, ColibriTide, Neocolibri, Mirage, Structura Even, Fiber and Color List 2	Metallismo Artistici	Murano, Iridium, Natural, Basic, Pluma, Antigua, Tephra, Color List 3: Cristal, Petites Fleurs and Diamond		
INDOOR FLOORS	Separated cement-based or seasoned floating screeds	1 2 3 4	3 4	3	1 2 3 4	Laying not recommended	
	Dry anhydrite screeds, sanded and treated with Primer C	1 2 3 4	3 4	3	1 2 3 4		
	Cement-based screeds heated after the pre-heating cycle	1 2 3	3 4	3	1 2 3		
	Smoothed concrete slabs	1 2 3 4	3 4	3	1 2 3 4		
	Wooden or metal panels	3	3	3	3		
	Surfaces waterproofed with Hidroflex - Coverflex - Elastocem - Aquamaster	1 2 3 4	3 4	3	1 2 3 4		
	Old existing tiling in ceramics or stone	2 3 4	3 4	3	2 3 4		
INDOOR WALLS	Cement-based plasters	1 2 3 4	3 4	3	1 2 3 4	4	
	Concrete	1 2 3 4	3 4	3	1 2 3 4	4	
	Gypsum-based plaster treated with Primer C	1 2 3 4	3 4	3	1 2 3 4	4	
	Drywall	1 2 3 4	3 4	3	1 2 3 4	4	
	Wooden or metal panels	3	3	3	3	3	
	Plexiglass, polycarbonate, glass, crystal panel	5 Only with transparent mosaics on paper	Laying not recommended				
	Preformed panels in polystyrene**	2 3 4	3 4	3	2 3 4	4	
	Surfaces waterproofed with Hidroflex - Coverflex - Elastocem - Aquamaster	1 2 3 4	3 4	3	1 2 3 4	4	
	Old existing tiling in ceramics or stone	2 3 4	3 4	3	2 3 4	4	
OUTDOOR FLOORS	Separated cement-based or seasoned floating screeds	Consult SICIS technical service***			2 3	Laying not recommended	
	Seasoned concrete structures	Consult SICIS technical service***			2 3		
	Old existing tiles in ceramics or stone	Consult SICIS technical service***			3		
	Surfaces waterproofed with Coverflex - Elastocem - Aquamaster	Consult SICIS technical service***			2 3		
OUTDOOR WALLS	Cement-based plaster on seasoned walling	2 3	3	3	2 3	Laying not recommended	
	Poured concrete recommended or seasoned prefabricated	2 3	3	3	2 3		
	Existing old ceramic or stone tiling	Laying not recommended					
WET AREAS	Bathrooms, shower cubicles**	3	3 4	3	1 2 3 4	Laying not recommended	
	Reinforced concrete swimming pools waterproofed with Elastocem - Coverflex - Aquamaster*	3	3 4	3	1 2 3 4		
	Hamмам with substrates made of waterproof extruded polystyrene panels**	3	3 4	3	2 3 4		

Choosing the adhesive for mosaics

* In the case of installing mosaics on mesh in swimming pools, the use of Litoelastic EVO or Starlike®EVO will be required.

** The main producers of lightweight, shaped panels in polystyrene (for shower trays, hammam benches etc.) recommend applying a primer, in wet areas, to create a vapour barrier. In this case, we recommend Primer SK produced by LITOKOL S.p.A., after which the surface should be levelled and the mosaic should be glued in place using the adhesive Litoelastic EVO.

This procedure must be carried out with particular care with regard to the collections Colibri, ColibriTide, Neocolibri, Mirage, Fiber and Color List 2.

*** Among the numerous SICIS collections, Neoglass is suitable for use on outdoor flooring due to its greater thickness (6mm) compared to the other collections (3-4 mm). The use of low-thickness collections for outdoor flooring must be assessed case-by-case depending on the type of load the flooring may have to stand up to. Please consult your own sales manager or SICIS technical office in advance.

COLOR LIST 1:

Azalea 2 (Iridium), Daffodil (Iridium), Anversa (Diamond), Tavernier (Diamond)

COLOR LIST 2:

Petites Fleurs: Anis, Mimosa, Saucó, Ortensia, Edelweiss, Tacca, Lys, Astromelia, Nenufar, Mandorla, Cannella, Girofle, Stapelia.
Firefly: Argentina, Eldorado, Patagonia, Tibet
Diamond: Agora, Allnatt, Barite, Basin, Baroda, Brillante, Buvango, Caesium, Cempaka, Citrine, Cullinam, Dresden, Edcora, Fuxian, Gerais, Golconda, Guaniamo, Gypsum, Hope, lolite, Jubilee, Kimberlite, Malenite, Mandalay, Martian, Mavinga, Mazaru, Murowa, Nanorod, Nassak, Nizam, Nunavut, Olivina, Orapa, Orlov, Palladium, Paragon, Princess, Regent, Rodolite, Scotia, Shandon, Solitario, Surat, Tormalina, Trisakti, Umbo
Crystal: Blenda, Corniola, Galena, Larimar, Potassio, Sfene, Sodio.

COLOR LIST 3:

Petites Fleurs: Forget me not, Juniper, Saffron, Anemone, Water lily, Galingale, Peony, Rosebay, Bluebell, Woodbine, Poppy, Pepper, Gentian, Primrose, Magnolia.
Diamond: Argyle, Excelsior, Excelsior Sat, Kohinoor, Mohs, Mohs Sat, Mouma, Natrolite, Sancy, Shah, Shah Sat, Zirconio, Zirconio Sat.
Crystal: Allume, Ametrino, Axin, Beryl, Cinabro, Clorum, Diaspro, Diopside, Dolomia, Kimolia, Rutilio, Selce, Septaria.

COLOR LIST 4:

Colibri Tide, Neocolibri, Colibri
Petite Fleures: Anis, Mimosa, Saucó, Ortensia, Edelweiss, Tacca, Lys, Astromelia, Nenufar, Mandorla, Cannella, Girofle, Stapelia.
Firefly: Argentina, Eldorado, Patagonia, Tibet
Diamond: Agora, Allnatt, Barite, Basin, Baroda, Brillante, Buvango, Caesium, Cempaka, Citrine, Cullinam, Dresden, Edcora, Fuxian, Gerais, Golconda, Guaniamo, Gypsum, Hope, lolite, Jubilee, Kimberlite, Malenite, Mandalay, Martian, Mavinga, Mazaru, Murowa, Nanorod, Nassak, Nizam, Nunavut, Olivina, Orapa, Orlov, Palladium, Paragon, Princess, Regent, Rodolite, Scotia, Shandon, Solitario, Surat, Tormalina, Trisakti, Umbo
Crystal: Blenda, Corniola, Galena, Larimar, Potassio, Sfene, Sodio.

KEY

1	Litoplus K55 + 32% Water	C2TE	cement-based super-white high-performance adhesive (C2) no vertical slip (T) and extended open time (E)
2	Hyperflex K100 + 30% Water	C2TE S2	super-white cement-based high-performance adhesive (C2) no vertical slip (T) and extended open time (E) highly deformable (S1)
3	Litoelastic EVO	R2T	reactive flexible super-white high-performance adhesive (R2) no vertical slip (T)
4	Starlike® EVO	R2T	high-performance adhesive (R2) with no vertical slip (T)
5	Ottocol M501		transparent single-component sealer based on hybrid polymers

Warnings for installation of the SICIS Colibrì, Colibrì Tide, Neo Colibrì, Colour List 2, Mirage and all the compositions that include even partially what belongs in this category of products.

- All the mosaics in this collection must be laid and grouted exclusively with two component reactive products regardless of the type of support and intended use.
- Before installation ensure that the moisture percentage of the support does not exceed 3 % (measured with carbide hygrometer). The drying times of rapid levelling (24 h) may not be sufficient in particular conditions of temperature and humidity.
- Before grouting, make sure that the joints are perfectly dry, the adhesive completely cured and, in any case, do not wait more than 5 days from the application of the adhesive.
- Strongly acidic and basic environments can compromise the aesthetics of the product.
- Saturated solutions of calcium hydroxide (strongly alkaline substance, pH > 12) whose formation depends on the accidental infiltrations of water that are absorbed by the cement-based supports, can alter the colour of the mosaic.
- When waterproofing is proposed, it is recommended to glue the mosaic directly on the waterproofing membrane, respecting the prescribed length of time for drying. We do not recommend laying on a subsequent layer of cement-based levelling plaster.
- If the drying times are not observed in the case of a cement-based membrane, this can lead to changes in colour due to the development of any volatile alkaline by-products.
- For this type of mosaic, we recommend applying waterproofing membranes such as Coverflex, Elastocem or Aquamaster, in the thicknesses prescribed in the respective technical specifications.
- Reaction with gypsum (calcium sulphate dihydrate, hemihydrate, anhydrite): In applications where the relative humidity can exceed 80%, or in the presence of water, gypsum becomes extremely corrosive. When laying on supports and materials containing calcium sulphate in its various forms, such as plasterboard, cement mortars used to level lightweight, pre-shaped panels in extruded polystyrene, for use in hammams, shower trays, etc.... it is absolutely crucial to waterproof these and create a vapour barrier using suitable materials, such as kits that meet the Etag 022 standard. Please consult your own sales manager or the SICIS technical office in advance.
- Reaction with formaldehyde: formaldehyde is a volatile substance that can interfere with silver by oxidising it, with a consequent alteration to the colour. This phenomenon is referred to in literature as Tollens' reaction. Many colours of the collections here involved are silver-based, and it is always important to make a careful evaluation of the most suitable type of wall covering to use with supports that can possibly develop formaldehyde. It is important to remember that the danger of formaldehyde for health has been well-known for years, and all the international standards limit its use and circulation.
- In view of the particular production technologies involved for this category of mosaic, the presence of the following may be noticed:
 - residues of the metallisation process on the surface of the mosaic tile, which can be removed by hand after the application of adhesive and before grouting.
 - elements of iron, air bubbles, by-products of the glass melting inside the glass tile.
- The colours in Colour list 4 are made up partially or fully of organic pigments that are resistant to UV rays in accordance with standard DIN 51094. Over the years, such finishes are subject to natural wear and tear and alternations of colour, which means that outdoor applications should be evaluated case-by-case. Please consult your own sales manager or the SICIS technical office in advance.

Choosing the adhesive for mosaics

- The colours in Colour list 4 that are laid without being subsequently grouted are more exposed to the potential of oxidation and alterations of colour.
- We recommend laying within 12 weeks of receipt of the material.
- For the installation in wet areas, please consult the SICIS Technical Office preventively.

Notes and instructions for the installation of the BLEND Collection (and mixtures in general)

In order to give more variety and richness to our blends or pixel decoration proposals, we have also combined, besides Gold and Platinum, colours from the various other collections, regardless the differences in thickness (3-4 mm) among the materials. For this reason these products are delivered mounted on paper to be removed after installation. The paper sheet supports allow to compensate the thickness difference by using a slightly higher amount of adhesive. In case the blend is composed by colours in "Tide" finish (like Golden Tide, Platinum Tide and the Colibri collection colours in the Tide version) the difference in thickness must be accepted since they are part of the characteristics of these products. It is anyway clear that floor installation of this type of material is not suggested since any small imperfection in planarity does not allow a perfect flat installation of the overall surface. This same rule applies to blends and pixelated customised decorations or designs proposed by client.

Instructions for laying the STRUCTURA collection

For laying it is recommended to use the Starlike® EVO epoxy mortar in harmony with the chosen mosaic so that any adhesive escaping from the gaps does not interfere with the colour of the mosaic.

Recommended spatula: 3.5 x 3.5 mm.

In certain special cases it is necessary to use the bi-component Litoelastic EVO adhesive (see adhesive choice chart). In view of the three-dimensional structure of the collection it is recommended to carry out a thorough analysis of the following points in the design stage.

Grouting: Structura Uneven not recommended.

Structura Even recommended with Starlike® EVO. **Laying:** it must be done in order to assure adhesion of all elements of the mosaic including those with lower thickness. SICIS and LITOKOL shall not be liable for any damage arising from incorrect laying.

Instructions for laying the FIBER collection

Pay the greatest care and attention when laying Thin compositions. These mosaics are made up of long, narrow and thin elements in marble and glass, which means their fragility is an inevitable consequence of their uniqueness and beauty.

Choosing the adhesive for marble mosaics

SUPPORTS		TYPES OF INSTALLATION	
		Fibreglass mat on the back and transparent film on the front	Fibreglass or paper mesh on the back
INDOOR FLOORS	Separated cement-based or seasoned floating screeds	4	1 2 3 4
	Dry anhydrite screeds, sanded and treated with Primer C	4	1 2 3 4
	Cement-based screeds heated after the pre-heating cycle	4	1 2 3 4
	Smoothed concrete slabs	4	1 2 3 4
	Wooden or metal panels	4	4
	Surfaces waterproofed with Hidroflex - Coverflex - Elastocem - Aquamaster	4	1 2 3 4
	Old existing tiling in ceramics or stone	4	1 2 3 4
WALL COVERING INDOOR	Cement-based plasters	4	1 2 3 4
	Concrete	4	1 2 3 4
	Gypsum-based plaster treated with Primer C	4	1 2 3 4
	Drywall	4	1 2 3 4
	Wooden or metal panels	4	4
	Preformed panels in polystyrene	4	1 2 3 4
	Sealed surfaces with hidrofex - coverflex - elastocemaquamaster	4	1 2 3 4
	Old existing tiling in ceramics or stone	4	1 2 3 4
INDOOR FLOORS	Separated cement-based or seasoned floating screeds	4	1 2 3 4
	Seasoned concrete structures	4	1 2 3 4
	Old existing tiles in ceramics or stone	4	1 2 3 4
	Surfaces waterproofed with Coverflex - Elastocem - Aquamaster	4	1 2 3 4
OUTDOOR WALLS	Cement-based plaster on seasoned walling	4	1 2 3 4
	Poured concrete recommended or seasoned prefabricated	4	2 3 4
	Existing old ceramic or stone tiling	Laying not recommended	
WET AREAS	Bathrooms, shower cubicles**	4	2 3 4
	Reinforced concrete swimming pools waterproofed with Elastocem - Coverflex - Aquamaster*	4	4
	Hamam with substrates made of waterproof extruded polystyrene panels**	4	4

See warnings

Choosing the adhesive for marble mosaics

* In the case of laying marble mosaic installed on mesh in swimming pools, the use of Litoelastic EVO is required. For white marble/onyx or other materials subject to staining, use Litostone K99 or Litoelastic EVO. When ordering, specify if the intended use of the marble mosaic is for moist environments (swimming pools, bathtubs, Turkish baths, etc).

** **The main producers of lightweight, shaped panels in polystyrene (for shower trays, hammam benches etc.) recommend applying a primer, in wet areas, to create a vapour barrier. In this case, we recommend Primer SK produced by LITOKOL S.p.A., after which the surface should be levelled and the mosaic should be glued in place using the adhesive Litoelastic EVO.

KEY

1	Litoplus K55	C2TE	high-performance (C2) cement-based adhesive with no vertical slip (T) and extended setting time (E)
2	Superflex K77 white	C2TE S1	completely white high-performance cement-based adhesive (C2) with no vertical slip (T) extended setting time (E) and deformable (S1)
3	Litostone K99	C2FE	completely white high-performance rapid (F) cement-based adhesive (C2) and extended setting time (E)
4	Litoelastic EVO	R2T	flexibilised completely white high-performance adhesive (R2) with no vertical slip (T)

Choosing the adhesive for marble slabs

SUPPORTS		COSMATI – SICISTONE – THE MARBLE			
		Non-staining marbles		White/onyx marbles or other Materials subject to staining	
		Longest side ≤ 60 Cm	Longest side > 60 Cm	Longest side ≤ 60 Cm	Longest side > 60 Cm
INDOOR FLOORS	Separated cement-based or seasoned floating screeds	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Dry anhydrite screeds, sanded and treated with Primer C	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Cement-based screeds heated after the pre-heating cycle	1 2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Smoothed concrete slabs	2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Wooden or metal panels	4 Double coating	4 Double coating	4 Double coating	4 Double coating
	Surfaces waterproofed with Hidroflex - Coverflex - Elastocem - Aquamaster	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Old existing tiling in ceramics or stone	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
WALL COVERING INDOOR	Cement-based plasters	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Concrete	2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Gypsum-based plaster treated with Primer C	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Drywall	1 2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Wooden or metal panels	4 Double coating	4 Double coating	4 Double coating	4 Double coating
	Preformed panels in polystyrene	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Sealed surfaces with hidroflex - coverflex - elastocemaquamaster	1 2 3 4	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Old existing tiling in ceramics or stone	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
INDOOR FLOORS	Separated cement-based or seasoned floating screeds	1 2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Seasoned concrete structures	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Old existing tiles in ceramics or stone	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Surfaces waterproofed with Coverflex - Elastocem - Aquamaster	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
OUTDOOR WALLS	Cement-based plaster on seasoned walling	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Poured concrete recommended or seasoned prefabricated	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Existing old ceramic or stone tiling	Laying not recommended			
WET AREAS	Bathrooms, shower cubicles**	2 3 4 Double coating	2 3 4 Double coating	3 4 Double coating	4 Double coating
	Reinforced concrete swimming pools waterproofed with Elastocem - Coverflex - Aquamaster*	4 Double coating	4 Double coating	4 Double coating	4 Double coating
	Hammam with substrates made of waterproof extruded polystyrene panels**	4 Double coating	4 Double coating	4 Double coating	4 Double coating

See warnings

Choosing the adhesive for marble slabs

KEY

1	Litoflex Pro K80 white	C2TE	high-performance (C2) cement-based adhesive with no vertical slip (T) and extended setting time (E)
2	Superflex K77 white	C2TE S1	completely white high-performance cement-based adhesive (C2) with no vertical slip (T) extended setting time (E) and deformable (S1)
3	Litostone K99	C2FE	completely white high-performance rapid (F) cement-based adhesive (C2) and extended setting time (E)
4	Litoelastic EVO	R2T	flexibilised completely white high-performance adhesive (R2) with no vertical slip (T)

Instructions for the laying of SICI-Stone and Cosmati

Articles that include, even only partially, elements deriving from the collections SICIS Colibri, Colibri Tide, Neo Colibri, Color List 2, Mirage, must be treated following the same specific instructions for these collections. Unless otherwise agreed at the time of order, the finish of the edges of the single elements in the compositions, including full tiles, will be in line with the SICIS production standards.

Warning for the laying of green marbles

In the case of the laying of marble slabs, in addition to the factors described above regarding staining, you must pay particular attention to their dimensional stability. Some types of marble such as green marble (Antique Green, Bamboo Green, Olive, Verde, Verde Giada, Verde Lapponia, Verde Luna, Verda Namibia), may suffer heavy warping due to the absorption of water contained in the adhesive mix. For these types of marble, the choice of the adhesive must necessarily fall on two-component reactive adhesives such as Litoelastic EVO which is free of water content, preventing the warping of the slab. Being such dimensional deformations also due to the geometry and the thickness of the slabs, it is difficult to consider all possible cases. In doubtful cases, therefore, it is recommended to consult our SICIS technical office beforehand for the definition of the most appropriate adhesives and laying techniques.

Warning for laying of marble slabs on facades

The laying of large and thick slabs on façades represents a high criticality type of laying. The different nature of the substrates (plaster or concrete), the expected thermal excursions that are more or less affective, the maximum height of the covering, the presence of seismic risk and the dimensional characteristics of the slabs make appropriate, in some cases, to carry out a mechanical fixing of the slabs coupled to a binding with adhesives. For these reasons, we recommend to consult our SICIS technical office beforehand if the projects involve the laying on facades.

Instructions for the laying of marble slabs and mosaics on outdoor floors

Even in this case, depending on the variety of marbles proposed by SICIS, combined with the dimensional variability, it is not possible to provide a precise indication for all cases. There are too many variables connected to outdoor flooring: the vastness of the surface to be covered, exposure to sunlight and weathering, thermal excursions expected depending on the geographic area, etc. For these reasons, the correct design of an outdoor natural stone flooring, including the disposal of any fractionation and expansion joints, must be performed with extreme caution with all elements previously described. It is therefore recommended to consult the SICIS technical office for further details.

Instructions for the laying of marble slabs and mosaics in swimming pools

For the installation of marble slabs and mosaics, you need to identify beforehand the specifications of each individual project. In particular, the type of pool structure (on-site concrete casting, prefabricated panels, steel pools, fibreglass pools, etc.), the location (underground, suspended pools, etc.), the type of disinfection system and the size are all necessary information to ensure a correct choice of the type of product and marble laying. The SICIS technical office is at your disposal to provide the best solutions.

Laying operations

Once you have chosen the most suitable adhesive and prepared the mix according to the directions on the packaging and on the technical sheets, it is advisable to apply the adhesive mortar on the smooth edge of the spatula in order to even out the colour of the same support and soon after applying a further quantity of the product using the 3.5 mm notched trowel in the case of vitreous mosaic or with bigger notches in the case of the marble slabs. In these cases, the teeth of the spatula are proportional to the size of the sheets and the must guarantee a covering of the adhesive of at least 80% in the case of indoor environments and 100% in outdoor environments on the back of the slab. In the case of large sizes, the double coating system is recommended. It is preferable not to cover areas that are too wide with the adhesive (about 1 m²) in order to prevent the formation of a film on the surface. In the case of transparent mosaics, traces of the adhesive must be eliminated (otherwise they will be visible due to the transparency of the mosaic) by using the smooth edge of the spatula being careful not to remove the adhesive. Even in the case of white marble slabs and onyx, it is important to ensure a “full bed” laying so as to avoid unpleasant imperfections due to the presence of gaps between the slab and the support. Apply the mosaic sheets by tapping the tiles with a rubber spatula to ensure a perfect adhesion, preventing air bubbles and preventing the adhesive from leaking into the joints between the tiles and leaving enough thickness for the subsequent grouting. If the adhesive is in excess and leaks out from the joints, it will be necessary to remove it before setting using a brush or brush with hard bristles. If a paper-mounted mosaic has been applied, the paper must be removed after approximately 24 hours or anyway after the adhesive is completely set. The paper, moistened with a sponge, can be easily removed after a few minutes by slowly pulling it diagonally and close to the wall. At this stage, we recommend cleaning the mosaic surface completely by washing away with clean water any residue of the paper adhesive that may interfere with the subsequent grouting. We recommend dampening small areas of mosaic according to the temperature and sun exposure on the building site. If the dampened paper dries before it is removed, once it has been dampened once again, it will be

more difficult to remove due to the fibres in the paper breaking. After it has been dampened several times, the single fragments will be removed and no longer a single sheet.

Warning

Before grouting with Starlike® EVO, make sure that the joints are perfectly dry.

Laying of glass mosaics on Plexiglas, polycarbonate, glass and crystal

This laying technique can be carried out only in the case of transparent mosaic mounted on paper sheets. Taking advantage of the transparency of the support, you can obtain decorative effects and exclusive back-lit walls. Remove any transparent protective film from the support. Before the application, all supports must be thoroughly cleaned and degreased with specific detergents using a cloth that does not release fibres on the surface. Consider that any remaining dirt or material on the support will be visible when the laying work is completed due to the transparency of the mosaic. Apply transparent monocomponent sealer extruding it from the cartridge with a specific gun directly on the support, achieving “dots” spaced apart from each other for approximately 8-10 cm in both the horizontal and vertical direction for a surface not exceeding 60x90 cm. Spread the product with a 2 mm toothed trowel with triangular tooth (VVVV) and proceed in laying as shown earlier. For this process, it is essential to eliminate all air bubbles by thoroughly pressing the mosaic sheets. The removal of the paper sheet can be carried out after approximately 24 hours from the application, after full hardening of the single-component adhesive.

Installation in wet areas

Bathrooms, shower cubicles, pools, hammam and hot water Spas

We suggest to take an in-depth look at these types of works due to their typical critical issues. Below will then be given the main warnings for a correct pose.

Transparent glass mosaics

In case of installation in wet rooms (bathrooms, shower cubicles, pools, hammam and hot water spas) containing transparent glass tiles in mosaics belonging to the Glimmer, Waterglass, Negoglass, Firefly, and Clover collections, only the colours Azalea 2 and Daffodil (Iridium), only the colours Anversa and Tavernier (Diamond), we recommend gluing with Litoelastic EVO (reactive flexibilised epoxy-polyurethane white adhesive) and grouting with Starlike® EVO epoxy mortar, after waterproofing.

General warnings

Since these mosaics are in transparent glass you will notice a different colour of the surface in the cases listed below:

- The tiles are not pressed properly on the adhesive and there are some empty spaces between the support and the tiles (lack of full bed) which are perceived on the surface;
- Imperfections of the grouting (lack of homogeneity or presence of even small holes) or formation of cracklings that are due to structural movements that cause infiltrations of water;
- Any other alterations to the background such as for example:
 - iron oxide stains (rust)
 - saline efflorescence
 - and yellowing of the adhesive used due to aging following exposure to UV rays and/or exposure to heat.
- Other alterations of the background for reasons not expressly listed here.
- Unsuitable transport/storage of the mosaic may lead to the yellowing of the adhesive used to attach the net to the mosaic. This phenomenon is due to the oxidative degradation following UV radiation and/or exposure to heat. The application and laying of transparent mosaics in such conditions will lead to anti-aesthetic results.

In all the above cases, the change of colour perceived by the observer is not due to the alteration of the colour of the glass, but it is a consequence of the variation of the colour of the underlying layers to the mosaic, which are perceived on the surface. The use of cement-based adhesives, while meeting the required technical requirements of adhesion, could in time lead to alterations in the colour of the surface dates from the natural greater absorption of water by the cement adhesive with respect to the reactive adhesive Litoelastic EVO.

Swimming pools

The application in swimming pools with reinforced concrete structures includes a number of preliminary checks and inspections of the same structure in order to ensure adequate durability.

- The underground concrete structures must be waterproofed on the outer walls before covering the excavation in order to prevent negative water pressure that could have an impact on the inner surface. The concrete structure requires an aging period of about 6 months to complete all hygrometric shrinkages and in order to be considered dimensionally stable.
- It is necessary to perform a static test on the raw structure by filling it with water in order to accelerate the processes of structural adjustment and check its water-resistance against any losses that then can be solved properly.
- The walls and floors inside the pool must be rectified with suitable polymer-modified cement mortars in order to regularise the laying surface avoiding the use of excessive amounts of adhesive that, in the case of thin glass mosaics, would make the application difficult if not impossible.
- In order to ensure a total sealing of the pool, it will be necessary to apply suitable two-component cementbased waterproofing mortars before installation such as Elastocem or Coverflex or in dispersion such as Aquamaster (see point 8 of the Instructions for laying the SICIS Colibri, Colibri Tide, Neo Colibri, Color List 2, and Mirage collections).

Installation in wet areas

- Use recommended adhesives listed in the charts for installation using the techniques described in the previous paragraphs.
- As for grouting, it is recommended the use of a two-component epoxy mortar such as Starlike® EVO which ensures, thanks to its lack of absorption properties, high mechanical and chemical resistance, not to mention the long lasting durability if compared to any cement or urethane grout. The use of Starlike® EVO epoxy mortar is mandatory in case of thermal spas or pools containing seawater.
- In the case of mosaics with a mesh backing in swimming pools, it is always necessary to use reactive adhesives and grouting, such as Litoelastic EVO and Starlike® EVO.
- In the case of swimming pools made with non-traditional structures, such as steel, fibre-glass etc., it is necessary to check that they are watertight and free of any cracks before the tiles are laid. Once the pool has been checked for watertightness, the tiles can be directly laid using Litoelastic EVO.
- In order to withstand any settling or structural movements that may occur around the pool, dilation joints must be provided for at all the corners or edges of the tiled pool. These joints must be sealed using the crosslinking silicone sealant OTTOSEAL 70 produced by Otto-chemie. The product is available in a variety of colours to match the colours of the epoxy mortar used as a grout, and is particularly resistant in conditions of continuous immersion or in contact with the sanitizing substances in the pool water.

Warnings

- In the case of artistic mosaics, any surplus amounts of transparent adhesive used to glue the tiles to the mesh/mat can build up in the joints between the tiles. If this thin transparent layer is not removed completely once the tiles have been laid and before grouting, it may become whitish/yellowish in appearance when the pool is filled and used. This variation in the appearance of the adhesive can interfere with

the colour of the mosaic tiles and the chosen grouting. In this case, it is sufficient to remove by hand any remaining surplus adhesive and restore the desired appearance using the grouting.

- In addition to the above point, after some time it may be possible to notice some efflorescence around the joints. This effect is due to the acrylic polymers contained in the adhesive used to glue the mesh/mat which, once they have emulsified, leak out of any pores left during the grouting phase. Also in this case, it is sufficient to manually remove the efflorescence to restore the appearance of the mosaic.

Hamam

The Hamam or Turkish bath is a wellness path saturated with humidity and temperatures ranging from low to high from +30° C to +60° C (caldarium). Usually, the structures within these rooms consist of prefabricated panels and shaped elements (sunbeds, benches, recesses, etc.) in extruded polystyrene coupled with a waterproofed surface where we place coating materials, after treating it with Primer SK that acts as a vapour barrier. In this case grout is exclusively with Starlike® EVO epoxy mortar for excellent durability and but the best qualities of hygiene and maintainability.

Grouting

Before starting to grout the joints, it is necessary to ensure that the adhesive previously used is completely dry and hardened and that even the joints are perfectly dry. Carry out these checks and manually remove from the joints:

- any tile adhesive that has resurfaced in the joints
- any excessive adhesive used to glue the tiles to the mat or mesh that may have leaked into the joints. In the case of artistic mosaics, some surplus adhesive may be requested by the mosaic technician to keep together the smaller fragments of mosaic.
- residues from intermediate processes: fragments from the metallisation of the Colibri series, protective transparent film, etc...

SICIS recommends using Starlike® EVO epoxy mortar produced by LITOKOL S.p.A. for the grouting of its mosaics and marble slabs to guarantee the following advantages:

- Homogeneous and brilliant colour
- Wide colour range (132 finishings)
- Water absorption practically does not exist
- Ease of application and cleaning
- High final resistance of the grouting and therefore greater durability

Carefully observe the directions provided in the product packaging and described below. Make sure the conditions of the work site are suitable for the application. If the grouting is applied on marble slab floors or tiles, even in large sizes, without pre-treatment, it is necessary to apply Starlike® EVO epoxy mortar over the entire surface of the slabs in order to spread the resin, and avoid chromatic variations. Vice versa, in the case of slabs where surface treatment has been already done, Starlike® EVO epoxy mortar can be applied only along the joints. In the case of application of mosaics with Gray Bardiglio marble elements, grouting with an epoxy mortar causes a change on the surface (wet effect). To reduce this effect, it is possible to pre-treat the marble before grouting, using anti-stain, impregnated products specifically for marble and natu-

ral stone, such as Litostone Protector produced by LITOKOL S.p.A. Furthermore, Starlike® EVO is particularly versatile and can be used in all applications such as:

- Indoor and outdoor floors and walls
- Bathrooms and showers cubicles
- Swimming pools, thermal baths, hammam and steam baths
- Kitchens
- Furnishing elements like doors, bar counters, etc. also in naval industry

Instructions for the Tephra Collection

The characteristic irregular surface of this collection requires particular attention during the grouting phase. We recommend choosing the grout colour with this in mind. We always recommend grouting with Starlike® EVO, after firstly cleaning the tiles with the 291 Epoxy sponge by Raimondi, to remove any excess grouting. Subsequently, use a Sweepex sponge to completely remove any residue and clean properly. Video tutorials are available in the Internet (SICIS Tephra Collection: Grouting).

Starlike® Crystal EVO

Starlike® Crystal EVO is designed for the grout of transparent and artistic vitreous mosaics. Its special formula based on aggregate made of glass beads allows the product applied in the joints to “absorb” the colour of the transparent glass tiles and then change accordingly to their colour. The best results are obtained laying on transparent supports such as Plexiglas, polycarbonate, glass and crystal, possibly back lit by a light source. Another potential use of Starlike® Crystal EVO concerns the grouting of artistic mosaics or compositions made of mosaic tiles that, properly mixed and shaped, reproduce unique images rich in nuances and shades. If the grouting of these compositions is done with traditional coloured sealants, the appearance of the image represented is compromised, since the coloured grout creates a discontinuity between the tiles and the mosaic. Using Starlike® Crystal EVO, due to its semi-transparency, the original shades of the composition are maintained, creating “neutral” colourless grout lines without

Grouting

interfering with the whole image. For all applications of thin mosaics with Starlike® Crystal EVO we suggest the use of a 2 mm triangular toothed notched trowel (VVVV) to spread the white adhesive; this process will avoid any higher points of adhesive showing through the grout.

Starlike® ColorCrystal EVO

Two-component acid resistant translucent epoxy mortar for the grouting of all types of glass mosaics with joints of up to 2 mm of width.

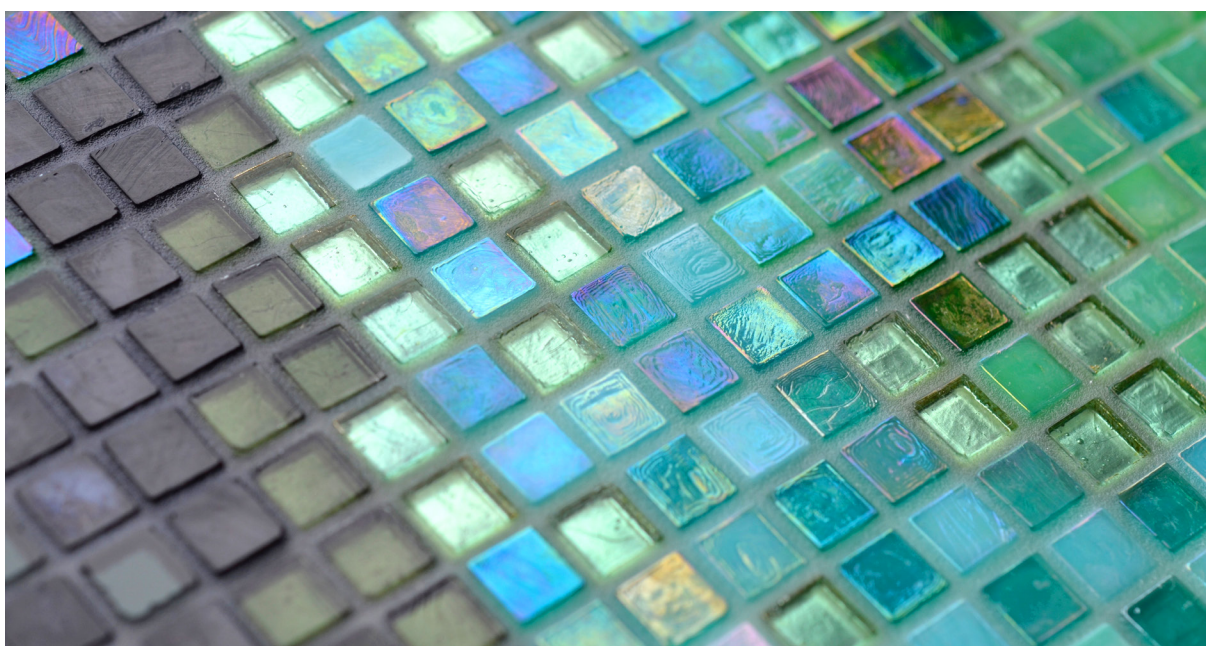
With Starlike® ColorCrystal EVO it is possible, after identifying the most suitable colour combination, to achieve “tone on tone” grouting even in the case of non-transparent mosaics, further enhancing the mosaic itself. For all applications of thin mosaics with Starlike® ColorCrystal EVO we suggest the use of a 2 mm triangular toothed notched trowel “V” to spread the white adhesive; this process will avoid any higher points of adhesive showing through the grout.

Warnings for the use of Starlike® Crystal EVO and Starlike® ColorCrystal EVO

If, during the catalysis phase (period of time between mixing the 2 components A and B and the complete hardening of the product), the grout comes into contact with contaminants, there may be a visible alteration to the colour.

Some examples may be:

- Presence of water in the empty joints: the grouting becomes whitish and no longer translucent. This may be due to joints that are not perfectly dry or which become accidentally wet before grouting
- Contamination from brass: the grouting becomes bluish. This may be due to residues from the use of:
 - metallic inserts such as brass profiles
 - mosaic from metallismo collection: gilt finish
 - mosaic from diamond collection: buvango finish
 - cosmati/SICISStone collection: kori finish with thickness of 1 cm



Starlike® EVO application procedures



-
- 1

Pour the catalyst contained in the small bucket onto part A (paste). Be sure to pour the entire content of the catalyst.
 - 2

Mix using an electric drill equipped with mixing paddle until a uniform, lump-free mix is obtained.
 - 3

(optional) Delicately pour the special finishes to get unique and exclusive effects. These additives are available in pre-batched packages for the 5 kg and 2.5 kg bucket.
 - 4

Pour the additive onto the mortar and mix slowly till a uniform mix is obtained.
 - 5

Apply Starlike® EVO as an adhesive directly on the support with a 3.5 mm notched spatula.
 - 6

Apply Starlike® EVO mortar as sealant into the joints using a rubber spatula.
 - 7

Make a first cleaning of the surface when the grout is still wet with water by using white felt.
 - 8

Finish immediately after grouting with a sweepex sponge and water.
 - 9

Stains or residues of transparent product can be removed from the grouted surface after 24 hours using the specific cleaners Litonet EVO. Spread Litonet EVO on the surface using white felt, eliminating any transparent marks.
 - 10

To clean the walls, use Litonet Gel EVO.
 - 11

Rinse with clean water to remove any remaining detergent.
 - 12

Dry with a clean and dry cloth and do not wait for the evaporation of the rinse water.

Table of consumptions

The following tables provide the consumption indications of the products for SICIS mosaics installations.

Adhesive consumption for mosaics

ADHESIVES	SPATULA 2 mm	SPATULA 3,5 mm	LEVELLING
LITOPPLUS K55	1,2 kg/m ²	1,8 kg/m ²	2 kg/m ² /1 mm
LITOELASTIC EVO	1,1 kg/m ²	1,8 kg/m ²	
STARLIKE® EVO		1,6 kg/m ²	
OTTOCOL M501	0.75 m ² per 310 ml cartridge		

Adhesive consumption for marble slabs

ADHESIVES	SPATULA 8 mm	SPATULA 10 mm	DOUBLE COATING
LITOFLEX PRO K80	3,5 kg/m ²	4 kg/m ²	5-6 kg/m ²
SUPERFLEX K77	3 kg/m ²	3,5 kg/m ²	5-5,5 kg/m ²
LITOSTONE K99	3,5 kg/m ²	4 kg/m ²	5-6 kg/m ²
LITOELASTIC EVO	3 kg/m ²	3,5 kg/m ²	5-5,5 kg/m ²

Grout consumption for mosaics

MOSAIC SIZES	THICKNESS	STARLIKE® EVO
10x10 mm	4 mm	1,4 kg/m ²
15x15 mm	4 mm	1,2 kg/m ²
	6 mm	1,8 kg/m ²
	8 mm	2,4 kg/m ²
	10 mm	2,7 kg/m ²
CUBES 25x23 mm	4 mm	0,85 kg/m ²
	6 mm	1,3 kg/m ²
	8 mm	1,7 kg/m ²
ROUND BARRELS	4 mm	1,15 kg/m ²
	6 mm	1,7 kg/m ²
	8 mm	2,3 kg/m ²
OVAL DOMES	4 mm	0,95 kg/m ²
	6 mm	1,4 kg/m ²
	8 mm	1,9 kg/m ²
ARTISTIC MOSAICS	4 mm	0,9 kg/m ²
	6 mm	1,35 kg/m ²
	8 mm	1,8 kg/m ²
	10 mm	2,25 kg/m ²
DIAMOND	4 mm	1,5 kg/m ²
SNAKE	4 mm	0,4 kg/m ²
CLOVER	6 mm	1,6 kg/m ²
CRYSTAL	4 mm	0,8 kg/m ²
TEPHRA	6 mm	1,7 kg/m ²

Adhesive consumption for marble slabs

Due to the wide range of sizes proposed by SICIS, the consumption of Starlike® epoxy mortar used for grouting can be calculated using the following formula:

$$\frac{(A+B)}{(A \times B)} \times C \times D \times 1,55 = \text{kg/m}^2$$

A = slab length (in mm)

B = slab width (in mm)

C = slab thickness (in mm)

D = joint width (in mm)

1,55 = specific weight of Starlike® EVO

Once you have determined the consumption of products, it is recommended to increase the quantity of about 200 gr/m² considering eventual waste during the application process.

All instructions contained in this document are given in good faith and on the basis of extensive research conducted by SISIC and LITOKOL in their respective laboratories. However, because conditions and methods of use are beyond our control, this guideline must not be intended as a substitution of necessary preliminary tests, it is crucial to ensure that all the materials are suitable and specifically required for the final singular application.

The partial or total use of different and/or alternative products, considered to be equivalent to those above suggested, as well as different application and/or installation process than those above described relieves Sisis and Litokol from all responsibility in case the final result does not achieve the minimum aesthetic requirement.

SICIS and LITOKOL do not accept responsibility for the results obtained using methods beyond our control. It is the responsibility of the final user to determine the proper suitability of materials for the desired application and to adopt all precautions for the safety of property and persons against any hazards that may be associated with the use of the product. We strongly recommend that each user carries out his own application test before final use. These guidelines shall not be taken as an incitement to infringe any rights under patent protection. All information contained in this document is subject to change without prior notice. Tests were conducted on materials produced and preserved in good condition and free from defects of any kind caused by an unsuitable transport and storage.

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