THE POOL
RECOMMENDATIONS AND SUGGESTIONS

Laying mosaic in the pool requires professional expertise on the part of the layer, who must be familiar with the most appropriate techniques for the products used and the specific conditions in effect at the site, of key importance for the success of the project.

This brochure is intended to provide a practical guide for designers, in which Bisazza offers suggestions based on many years of experience in the field of swimming pools and wellness areas.

In addition to the range of Bisazza technical products, we will mention other products available on the market tested by installers the company has been working with for many years.

For more information on the products mentioned, go to the Technical Area of our web site www.bisazza.com.

APPLICATIONS
Bisazza mosaic gives pools all the style and prestige of a handmade artefact. Mosaic may be applied to conventional concrete pools or prefabricated pools made of cementitious materials (perforated brick, blocks cast in formworks, panels installed side-by-side, cement panels), fibreglass or metal. To obtain optimal results and ensure optimal performance of the products used in the project, it is essential to follow the substrate preparation procedures appropriate for the specific material the swimming pool is made of.

CONCRETE POOL (CONVENTIONAL OR PREFABRICATED)

THE SUBSTRATE
The substrate forming the pool must be capable of withstanding a pressure of 250 kg/cm^2 and be:

- ◇ compact
- ◇ dried
- ◇ free of dust and grease (oil, etc.)

The substrate must be properly prepared and be:

- ◇ cured (28 days for ordinary cement)
- ◇ coated with primer and consistent
- ◇ free of crumbling parts
- ◇ flat and
- ◇ plumb

Furthermore:

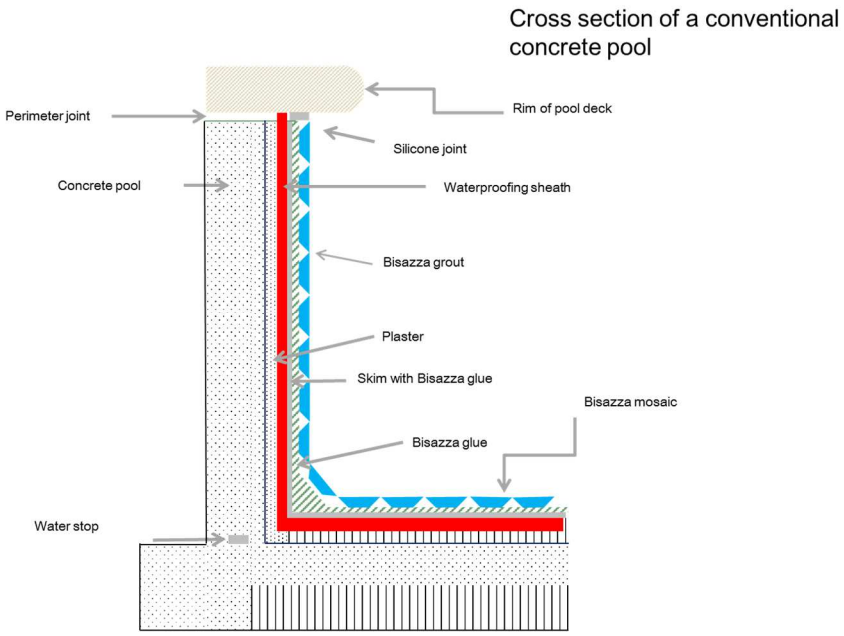
- ◇ rebars emerging from the pool bottom must be ground and coated with rust proofing products
- ◇ wood on the walls must be removed
- ◇ concrete burr or crests must be removed with the grinder
- ◇ residues of release agents or similar products present in the substrate must be eliminated with a grinder and/or degreasing products
- ◇ to make the concrete receptive, mechanically eliminate cement scale with widia cups

Substrate humidity must be no more than **4%** (after curing).

Factors affecting moisture content:

- ◇ excess water in mix
- ◇ use of porous inert materials
- ◇ use of cellular concrete
- ◇ excess moisture in structures
- ◇ water due to the weather
- ◇ thick substrates containing more water

The result of a greater moisture content would be formation of cracks in the cement; if this should occur, the cracks must be sealed with an epoxy resin product.

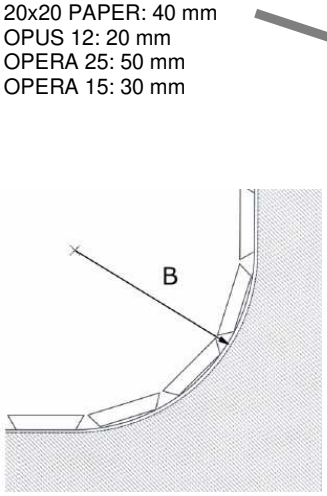


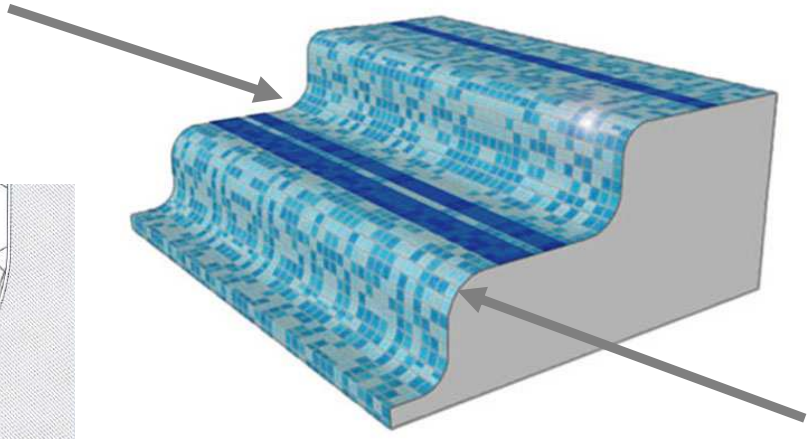
FORM PREPARATION

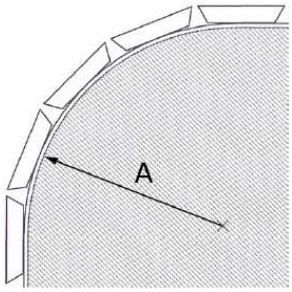
In the presence of structures of particular shapes, construction must take into account the size of the angles required for covering with mosaic.
This allows us to avoid unsightly cuts in the sheets and obtain a better finish.

Depending on the size and type of backing on the mosaic sheets used, the curve radius required to create rounding (folds) varies as shown below:

Concave angle
10x10: 20 mm
20x20 PAPER: 40 mm
OPUS 12: 20 mm
OPERA 25: 50 mm
OPERA 15: 30 mm







Convex angle
10x10: 20 mm
20x20 PAPER: 30 mm
OPUS 12x12: 30 mm
OPERA 25: 30 mm
OPERA 15: 20 mm

LOAD TEST

Before proceeding with plastering, we must perform a load test by filling the pool.

- ◇ Fill the pool and leave it full for a few days, checking that the water level does not drop.
- ◇ Then empty the pool and wait until the concrete dries completely before proceeding with plastering.

PLASTER
After preparing the surfaces as described, we may apply plaster, if necessary.
Every company that makes glue produces a range of plasters appropriate for different circumstances.
Recommended product: **PCI - NANOCRET R3*** (also perfect for making folds).

Shelter the work site from rain and sunshine.

WATERPROOFING
Waterproofing is performed using appropriate products.

The following operations must be performed before proceeding:

- ◇ Smoothing over the substrate with a diamond-tipped tool and washing it under pressure to remove dust and release agents.
- ◇ Opening gravel nests, removing the wood included in the cast and preparing all rims (rounding them off if necessary) with demolition.
- ◇ Opening the protruding rebars and cutting formworks spacers to a depth of at least 15 mm.
- ◇ Passivation of rebars and spacers.
- ◇ Sealing over all openings with restoration mortar with structural adhesion.
- ◇ Plastering and skimming of surfaces.
- ◇ When possible, round off all vertical and horizontal corners in order to:
  - ◇ prevent sharp corners (preventing breakage during maintenance and discouraging mosaic sheet detachment)
  - ◇ ensure safety, especially on high parts of the walls and where the runner and the riser of steps meet
  - ◇ facilitate cleaning in corners
  - ◇ facilitate sheath application, avoiding the difficulty of covering sharp corners
  - ◇ make it look good
- ◇ Shelter the work site from rain and sunshine

Recommended waterproof coating: **PCI - SECCORAL 2K RAPID*.**
In swimming-pools with salty water or thermal water, use **PCI APOFLEX W* (wall)** and/or **F (floor).**

SKIMMING
Before skimming, make sure the temperature at the site is between:

- ◇ Minimum 5°C
- ◇ Maximum 30°C



Skimming is necessary to ensure that the substrate is regular and perfectly smooth.

- ◇ For best results, the substrate on which the glue for mosaic sheets is applied must be evenly white; this is necessary due to the nature of mosaic sheets, which are made of translucent glass so that the colour of the material behind the sheet is visible.
- ◇ To even over the substrate and make it white, use Bisazza AdHoc glue with Ultra latex (or e-Glue if the substrate used requires this product, as in the case of fibreglass or steel pools).
- ◇ Bisazza glues can even over cementitious substrates up to 2 mm thick. (if it is necessary to even over a thicker surface, use a suitable skimming plaster).

Important: the skim is not a waterproof product!

After skimming, the substrate must be covered and/or sheltered to keep it at a temperature between

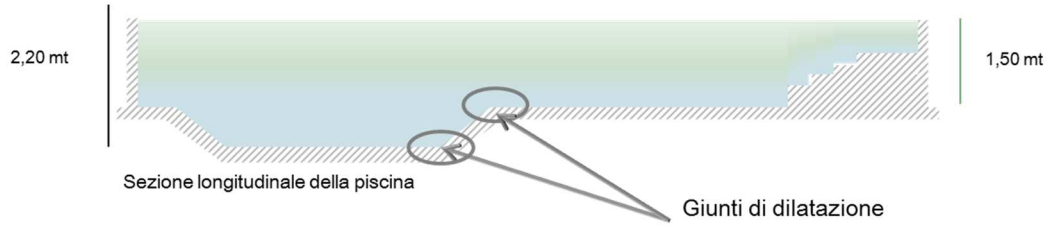
- ◇ + 5°C and + 30°C if skimming and laying are performed using Bisazza Ad Hoc glue + Ultra latex
- ◇ + 15°C and + 30°C if skimming and laying are performed using Bisazza eGlue

This temperature must be kept constant at all times until completion of the work.

* Refer to the manufacturer's technical data sheets.

IMPORTANT

- ◇ Skims are not waterproof
- ◇ If there are expansion joints on the floor, they must be left and sealed with an elastic product such as **PCI SILICOFUG E***



Joints are normally located where there is a change in level, and should be present around the perimeter of the pool bottom; they should be 3/4 of the thickness of the slab and 0.5 to 0.8 cm wide.

The pool deck and other wet areas

The pool deck and other special areas require use of non-slip coverings.
These areas include:

- ◇ pool deck
- ◇ service areas (shower and dressing room floors)
- ◇ inclined overflow rims
- ◇ underwater steps
- ◇ areas connecting different pools

International standards classify the degree of slipping in wet areas where people walk barefoot on the basis of the inclination of surfaces:

A	≥ 12°	
B	≥ 18°	
C	≥ 24°	

TABLE OF BISAZZA MATT MOSAICS FOR THE POOL DECK	
Vetricolor 20 and 10 MATT	All colours in the collection, on request.
Smalto 20 and 10 MATT	All colours in the collection, on request. Note that MATT mosaic tiles will not have the same sparkly appearance as standard tiles.
Le Gemme 20 and 10 MATT	All colours in the collection, on request. Note that MATT mosaic tiles will not have the same sparkly appearance as standard tiles.
Flow MATT	All colours in the collection, on request.
Opus Romano MATT	The 24 standard matt colours only.
Opera MATT 15 and 25	All colours in the Opera 15 and 25 collections, on request.

For applications, refer to the PRODUCT APPLICATION TABLE.

Canvas Matt is not suitable for humid areas, pools, or areas subject to high thermal shock.

*Refer to the manufacturer's technical data sheets

BISAZZA LAYING PRODUCTS

For laying mosaic on a cement substrate:

- ◇ **Ad Hoc** A high performing white cement tile adhesive
- ◇ **Ultra** Latex to be mixed with Ad Hoc adhesive

To lay mosaic over any other kind of substrate:

- ◇ **eGlue** Bi-component epoxy adhesive (in case of waterproof coating **PCI APOFLEX*** W e/o F, only this glue must be used).

The use of eGlue is highly recommended for:

- ◇ Installation of glass mosaic in swimming-pools with salty or thermal water;
- ◇ installation of transparent or semi-transparent glass mosaic in swimming-pools or humid areas (showers, Turkish bath, bio-sauna, etc.), with special reference to all colours belonging to ranges CANVAS and OPERA, and to some colours belonging to ranges VETRICOLOR and FLOW.
- ◇ installation of all of the Opus Romano and 10x10 mm decorations, Shading blends 10x10 mm and all of the artistic technique decorations in swimming-pools or humid areas (showers, Turkish bath, bio-sauna, etc…)

  For any further information on specific colours reference, please contact our sales office.

Laying mosaic

- ◇ Inspect the mosaic received at the site before laying. The boxes and sheets of mosaic must be in perfect condition, and the quantity and colour must correspond to the customer's order.
- ◇ Every box is marked with the production batch number, colour, order number and other details to be referenced should more of the same material be needed.
- ◇ When using a shading blend, check that all the blends required to make up the shading blend are present (the packing list is attached to the order) and consult the laying plan.
- ◇ When using a decoration, check the laying plan enclosed with the order; if it is a modular decoration, lay a module dry, to check the direction of the sheets and the combination of modules in it; if it is a decoration in a single solution, lay the entire decoration dry, to make sure that all the sheets are there.
- ◇ The epoxy adhesive is strongly suggested in case of very light and transparent mosaics in solid colour version.

For submerged environments (pools, fountains) we strongly suggest to use of paper-faced mosaic or hot-melt system, where provided. The paper backing covers the front of the sheets and is removed when laying the sheets;

Grouting

Grouting with cement grout after laying may create an uneven, patchy effect; use of the epoxy grout Bisazza Pool eGrout is recommended.

When applied properly, Pool eGrout provides grouting with the following characteristics:

- ◇ smooth, compact final surface
- ◇ uniform colour, resistant to the weather
- ◇ waterproofness
- ◇ hardness
- ◇ excellent bonding to sheets
- ◇ resistant to chemicals agents
- ◇ free from any cracks and leaks
- ◇ excellent durability over time

Where Pool eGrout is not available, Bisazza Fillgel Plus epoxy grout can also be used in the pool.

All the Fillgel Plus UVR colours have the same chemical characteristics; the lighter colours (1101 bianco alabastro, 1102 bianco panna, 1103 bianco neve), need special attention during application and more maintenance than the others.
Fillgel 1104 neutro base cannot be used outdoors and in outdoor swimming-pools.

* Refer to the manufacturer's technical data sheets.

Recommendations and warnings for use of Pool eGrout

- ◇ Respect the split and/or expansion joints by sealing them with a specific product.
- ◇ Pool eGrout is not a waterproof product.
- ◇ Any addition of water or solvent will compromise the performance of the product.
- ◇ Mix well the two components (A+B) to avoid altering the performance of the product
- ◇ Do not use portions of the product
- ◇ Slight shade variations between different batches may occur.
- ◇ Working time varies according to environmental conditions and substrate.
- ◇ Do not use the product when the substrate temperature is below +12°C or higher than +30°C.
- ◇ Carefully respect the mixing ratio 90:10 in weight.
- ◇ Wait at least 7 days (at 22°C) after the installation to put the surface in contact with water.
- ◇ Do not cover the grouted surfaces unless at least 2 days from grout application have passed.
- ◇ In case of use in highly aggressive environments, consult our technical service beforehand.

Before beginning grouting, clean the sheets thoroughly to eliminate all glue residues left behind by the paper (in the case of mosaic with paper backing), using a sponge dipped in water and squeezed. When installation is made in submerged areas, in order to avoid any possible bacterial proliferation, we suggest to sanitize joints using a solution of water and chlorine (2%) which should then be rinsed and removed with a vacuum. Before the application of Pool eGrout, check that the joints are perfectly dry.

- ◇ Only after the surfaces are dry should you apply the layer of grout with a rubber spatula, working diagonally.
- ◇ Let the grout dry for about 10-20 minutes in the gaps (time may vary depending on environmental conditions).
- ◇ After grouting, use a felt cloth and water to remove excess grout from the mosaic emerging from the gaps (within 50 minutes of beginning grouting at a temperature of 20°C).
- ◇ Use a sponge dipped in clean water and then squeezed to remove excess grout, again working diagonally, without pressing too hard.
- ◇ When the grout begins to solidify, after about 8 hours at 20°C, wipe the surface off again with felt and water and then with water and a sponge.

After grouting, remove grout residues from all surfaces, following the instructions provided in the "New Installation Kit" or "Epoxy Installation Kit" folder.

The pool may be filled with water about 7 days after grouting. Remember that grout takes longer to dry at low temperatures.

GENERAL WARNINGS AND RECOMMENDATIONS

- ◇ Given the nature of mosaic, be careful to avoid damaging the tiles surface with aggressive products or abrasive tools that could cause their breakage.
- ◇ While applying the waterproofing sheath, and until you have grouted the tiles, the work site must be sheltered from the elements (sun, rain, etc.).
- ◇ If work in areas around the mosaic has not yet been completed, protect the mosaic with appropriate materials.
- ◇ Protect the site throughout the work.
- ◇ Once the construction site is finished, do not leave the pool empty for too long; should be filled with water as soon as possible, not before 7 days after grouting.
- ◇ The pool water must have a pH value between 6.5 and 7.6 as well as a calcium value of 60 - 120 mg/l and an acid capacity of 1.6 – 2.4 mmol/l.

CLEANING THE TILED SURFACE WHILE THE POOL IS IN USE

- ◇ Grouted mosaic should be cleaned with a slightly acidic cleaning product containing a small amount of phosphoric acid to detach lime scale. This type of cleaning product should be used for general cleaning, may be used every day, and may be used on mould. The final rinse may be done with ammonia diluted from 1:10 to 1:50 (depending on the initial concentration).
- ◇ Do not use organic acids (such as sulphamic acid) or hydrochloric acid in any form, even diluted.
- ◇ In the presence of persistent organic stains, use a chlorine-based whitener (sodium hypochlorite) or an oxygen-based whitener (hydrogen peroxide, contained in some whitening products). If using a chlorine-based whitener, it is particularly important to ensure that the chlorine is diluted to a very low concentration.
- ◇ In no case may these compounds be used on hot surfaces; they must not be allowed to act for more than 10 minutes (also because they are quickly deactivated).
- ◇ Rinse surfaces well after using these products.

IMPORTANT

- ◇ SCRUPULOUSLY FOLLOW THE SAFETY INSTRUCTIONS PROVIDED BY MANUFACTURERS OF CLEANING PRODUCTS AND CHEMICAL COMPOUNDS. USERS ARE IN ALL CASES RESPONSIBLE FOR THEIR USE, AND MUST BE EXPERTS WITH PROFESSIONAL EXPERIENCE.
- ◇ THE PRODUCTS MENTIONED ARE SUBJECT TO DIFFERENT STANDARDS, ARE SOLD AT DIFFERENT CONCENTRATIONS AND MUST BE DISPOSED OF IN DIFFERENT WAYS IN DIFFERENT MARKETS.

MAINTENANCE

Refer to the pool manufacturer's instructions and experience.

- ◇ The pool may be cleaned with a diluted acidic cleaning product, rinsing it repeatedly right away with plenty of water.
- ◇ DO NOT EMPTY the pool in winter (during cold weather).
- ◇ Work the water pumps in the event of particularly cold weather.
- ◇ It is even more important to work the pumps when the season is changing; this prevents large differences in temperature in overflow pools, which could result in detachment of the mosaic. This is also advisable in the case of pools in tropical climates (such as the Caribbean or Australia) where temperatures climb steeply when the season changes.
- ◇ Cover the pool with tarpaulins in winter, placing foam floats around its edges.
- ◇ Do not use concentrated products (which increase the temperature of surfaces).
- ◇ Do not leave the pool empty in the hot sun.
- ◇ Perform pool maintenance regularly. Always use diluted products, so that they will not be too aggressive, and rinse them off right away. You may use an ordinary lime scale remover (acidic product), which is less aggressive; alkaline products are effective against greasy dirt. Rinse thoroughly with water.
- ◇ In the presence of a non-epoxy (cementitious) grout, use of bleach or similar products would lighten the joints; this will not occur if you use Bisazza epoxy grouts (Fillgel Plus and Pool eGrout), which is resistant to chemical attack.

FIBREGLASS POOL (PREFABRICATED)

If the pool surface is smooth and finished, the surface will not require preparation or waterproofing. You may therefore proceed with skimming with eGlue epoxy adhesive right away, and then lay the mosaic.
If the surface is irregular and requires adjustment, use resins specifically intended for preparation.

PRODUCT APPLICATION TABLE		
PRODUCT	**SWIMMING POOL**	**TURKISH BATH**
Vetricolor 20 and 10	ok	ok
Smalto 20 and 10	ok	ok
Le Gemme 20 and 10	ok	ok
Gloss Glow	GLOSS has a good resistance to hydrolytic and alkali attacks; therefore, it is suitable for swimming pool tiling. It is nevertheless recommended to evaluate - case by case - the type of swimming pool, its environmental location, the water temperature, etc. Not suitable for tiling spa pools with thermal water, especially those with sulphury waters.	
Canvas	ok	ok
Flow	ok	ok
5X5	**NO**	**NO**
Opera 25	ok	ok
Opera 15	ok Opera 15 Gloss is not suitable for tiling spa pools with thermal water, especially those with sulphury waters.	ok
Oro Bis	Yellow gold tiles suitable for use in indoor and outdoor swimming pools. In the case of using white Oro Bis, replace White Oro Bis (Oro Bis bianco) with Platino mosaic. For use in fibreglass or steel swimming pools, please consult the Bisazza technical department: installation.department@bisazza.com	
Opus Romano*	ok	ok
Vintage	ok	ok
N.B. Kneipp cure and hot tubs: same application warnings as for swimming pools		

* For the pool deck and other special areas where use of non-slip coverings is required, the MATT version is recommended.

MATT MOSAIC NON-SLIP TEST CERTIFICATION TABLE						
	Vetricolor MATT	Flow MATT	Le Gemme MATT	Smalto MATT	Opus Romano MATT	Opera MATT
Slip resistance DIN 51097 Limit values set A (12°-18°) - B (18° - 24°) - C (+24°)	A+B+C (31°)	A+B+C	A+B+C	A+B	A+B+C	A+B+C
Slip resistance DIN 51130 Limit permitted R9 – R13	R11	R11	R11	R10	R10	R11
Slip resistance BS 7676 Limit permitted >36 (low)	Wet 41-40	-	Wet 25-23	Wet 50-53	Wet 46-47	Wet 47-45*
B.C.R Rep. CEC. 6/81 Limit permitted 0.40≤ μ <0.74	0.59	-	-	-	0.86	-
Slip resistance ENV 12633:2006 Limit values set: Class 0- 3 (Rd ≥45)	Class 3 (46)	Class 3 (52)	Classe 1 (33)	Classe 2 (41)	Classe 2 (43)	-

*Opera 25