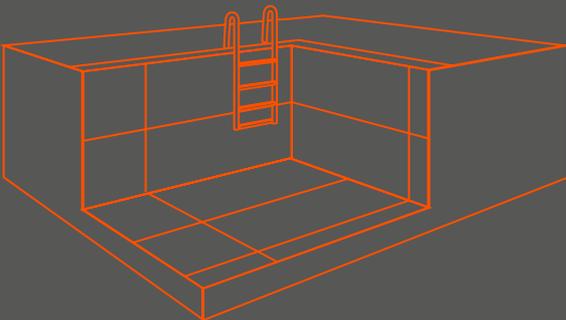


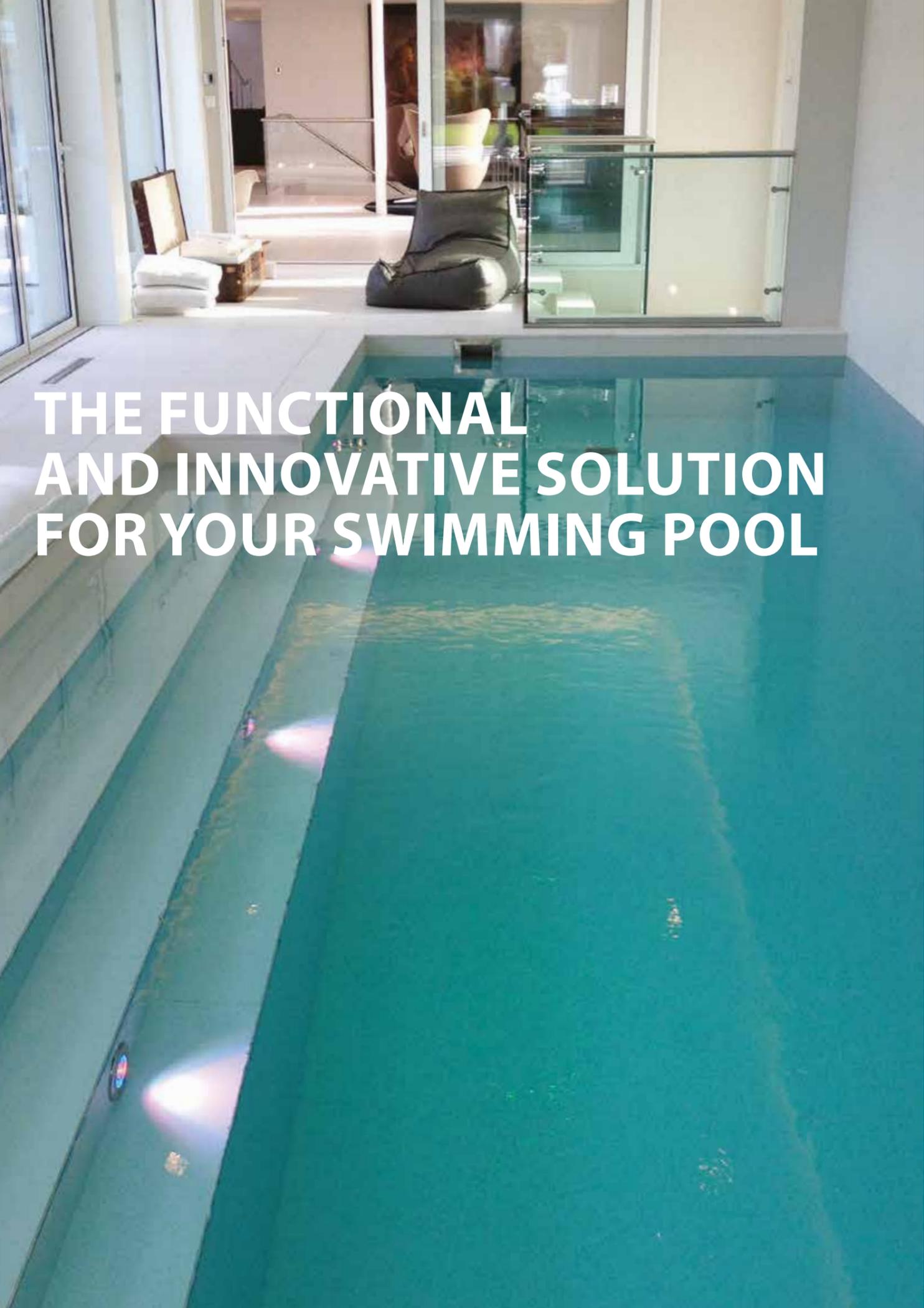


ZERO.3[®]
by CERAMICA
PANARIA



TILES INSTALLATION SWIMMING POOLS

TECHNICAL MANUAL



THE FUNCTIONAL AND INNOVATIVE SOLUTION FOR YOUR SWIMMING POOL

Why choose ZERO.3 for a swimming pool

Hygienic, resistant to chlorine and UV, quick to lay and extremely practical; ZERO.3 is the ideal covering for swimming pools which have specific hygienic and architectural requirements.

THE STRENGTHS OF ZERO.3 SWIMMING POOLS



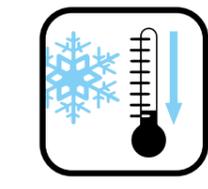
Resistant to chlorine and chemical agents



Resistant to thermal shock



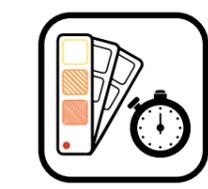
Minimum water absorption



High frost resistance



Light and easy to install



Colours are resistant to sunlight and aging



Resistant to atmospheric agents



Easy to clean

Private residence
Location: Belgium



Private residence
Location: USA



Private residence
Location: Genoa - Italy



Private residence
Location: France



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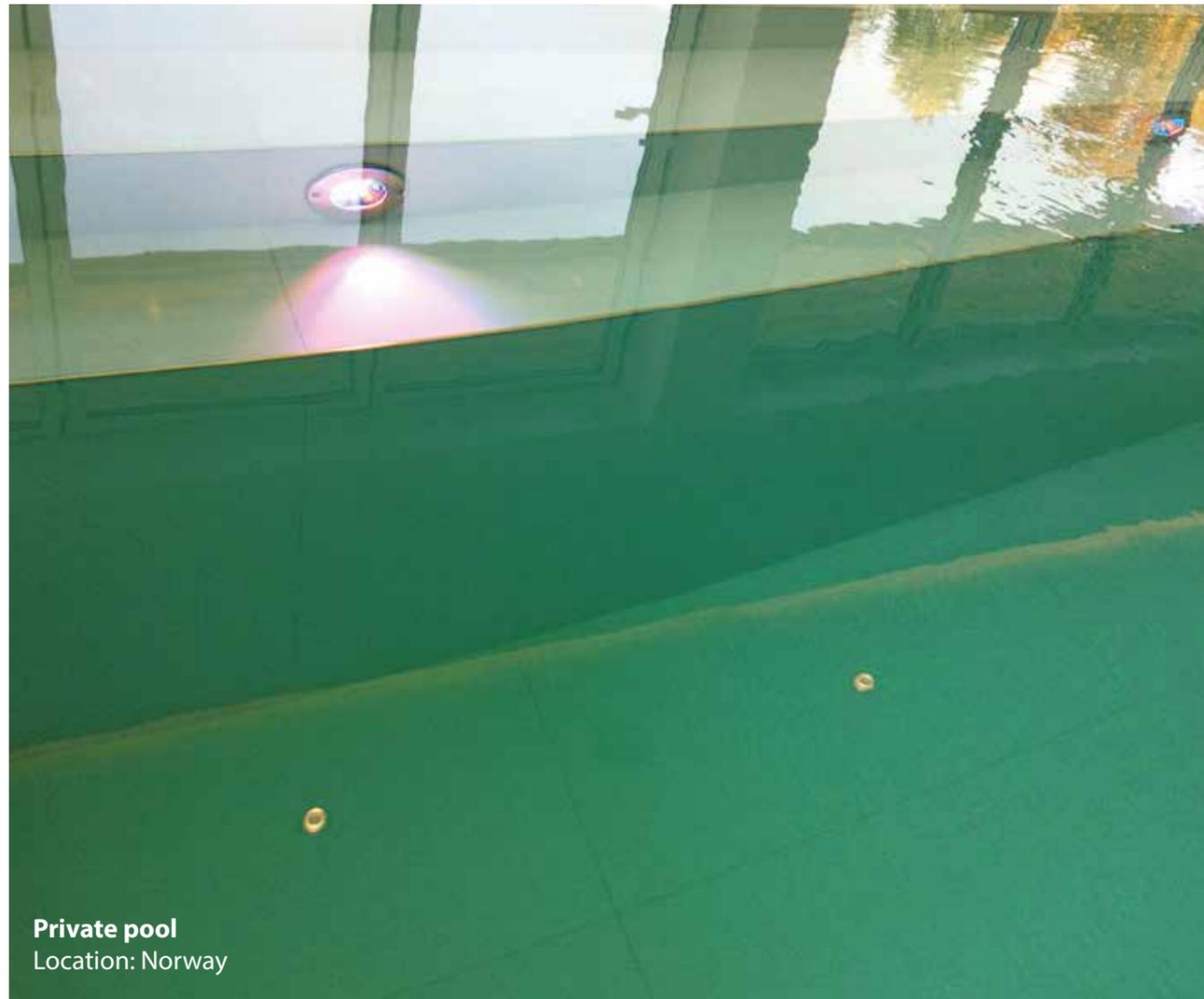
SWIMMING POOL TILE INSTALLATION ZERO.3

ZERO.3 3PLUS and ZERO.3 5PLUS (reinforced with fibreglass mesh) can be laid as a covering for newly built concrete swimming pools. For the correct installation of the tiles, the concrete pool must be built following the instructions given below, and must be guaranteed and controlled by the designer and the builder of the swimming pool.



The instructions contained herein are in accordance with the relative laws and regulations and are updated to the date of publication of this document. Any regional regulations are not considered.

The instructions given for the proposed products and their application methods were supplied directly by the producers. For more information, contact the technical department of the manufacturers. These are found in the "useful contacts" section at the end.



Private pool
Location: Norway

BUILDING THE POOL

The pool must be built in accordance with UNI 11104 (EN 206) standard, by taking into consideration the concrete exposure classes, the ratio of water and cement, minimum resistance classes and minimum cement content.

It is certainly good practice, considering the thickness, for the concrete to be well vibrated and to add appropriate additives, in order to prevent any gravel pockets or empty spaces.

The correct execution of a structure in reinforced concrete depends not only on the quality of the materials used and the casting method, but also the correct curing of the mixture. Concretes develop their strength gradually, over time, and this varies according to the surrounding environment and the features of the concrete itself.

Indicatively, a period of at least 3 months is deemed necessary to assure correct seasoning.

The definition of the sizes, timing and methods of maturing must be quantified and guaranteed by the designer and the Site Manager.

In order to seal a swimming pool, a proper cement base is essential.

Waterproofing treatment acts only as an additional guarantee.

One method of ensuring that a swimming pool is well sealed is to place hydro expansion joints in the angles between the walls and the bottom of the pool before pouring in the cement.

Having built the concrete basin, and after appropriate curing time, a "water-tightness" test must be carried out. This test must be carried out for a period of 2 weeks, filling the swimming pool fully and checking to see if the water level drops.

Check that the concrete shrinkage cracks are no wider than 0.1 mm.

Otherwise, repair them with:

- MAPEI materials: EPORIP (injection resin)
- KERAKOLL materials: KERABUILD ECO EPOBOND (thixotropic resin suited for vertical and horizontal use)



Private pool
Location: Italy

Before laying the ZERO.3 3PLUS and ZERO.3 5PLUS, the surfaces must be levelled.

3.1 - Levelling the perimeter walls

First of all remove all residues of cement, releasing oils, dust and grease. Roughen the surfaces by bush hammering, sanding or diamond disk grinding.

To smooth the surfaces, apply:

- ARDEX materials: highly adhesive and resistant mortar ARDEX A 46 (stable levelling compound for horizontal and vertical surfaces from 2 to 30 mm);
- MAPEI materials: quick-setting fibre-reinforced cement mortar PLANITOP FAST 330 (for horizontal and vertical surfaces from 3 to 30 mm), or alternatively NIVOPLAN + PLANICRETE, cement mortar for levelling internal and external walls, with added rubber latex to improve performance;
- KERAKOLL materials: Geolite product range to repair and give a protective finish to cement structures, for localised or low thickness repairs.

3.2 - Stabilisation of the substrate

Also in this case, remove any cement residues, releasing oils, dust or grease from the surface.

To create slopes and/or level the surface:

- ARDEX materials: use ARDEX A 46 (highly adhesive mortar);
- MAPEI materials: build a screed using TOPCEM or TOPCEM PRONTO, the screed must be applied fresh-on-fresh on a slurry made of PLANICRETE, water and TOPCEM.
- KERAKOLL materials: Geolite product range to restore and give a protective finish for guaranteed durability of the cement structures. Alternatively KERACEM ECO PRONTO normal setting and rapid-drying mineral screed. If differences in level are present position an electro-welded mesh anchored mechanically to the bottom.



Private pool
Location: Norway

If the concrete is made following the instructions given in standard UNI 11104 (EN 206), and if laid correctly and sufficiently cured, a waterproof pool will be obtained which is water tight, without having to resort to additional waterproofing treatments.

In this case you only need to waterproof the gaps, pipes, flanges, spot-lights etc.,

proceed as follows:

- ARDEX materials: create a groove around the elements (width = 1 cm; depth = 1 cm) which must be filled with waterproofing material or epoxy adhesive ARDEX S 2K. When dry, spread a second layer of ARDEX S 2K waterproofing compound and then apply 0.4mm of quartz sand on the fresh compound;
- MAPEI materials: seal all critical points between the concrete and the installed elements (spot-lights, various inlets, pipes, etc.), removing the concrete next to these elements (when they are already in place) to a depth of 5-6 cm and width 3-4 cm. Having removed the excess dust, create a barrier of approx. 10 mm in diameter around the element to be sealed using MAPEPROOF SWELL, single component hydro-expansive paste in cartridge. The removed concrete part must be repaired with MAPEGROUT 430, thixotropic compensated-shrinkage mortar for repairing concrete.
- KERAKOLL materials: KERABUILD ECO EPOBOND organic mineral adhesive for structural adhesion (thixotropic resin suited for vertical and horizontal use).

The designer and the building manager can decide, as an extra precaution, to waterproof the entire surface of the pool.

Even in this case it is important to waterproof all non continuous elements such as pipes, flanges, lighting elements, etc. following the instructions above.

For waterproofing you will need to:

- ARDEX materials: apply a layer of two-component solvent-free epoxy primer ARDEX P 2K over all surfaces. Then apply a waterproofing tape ARDEX SW along the corners between the walls and floor. When the primer is dry, spread two layers of ARDEX S 2K waterproofing compound and add sand quartz 0.4 mm on the fresh compound.
- MAPEI materials: use two-component flexible waterproof cement mortar MAPELASTIC. Between the bottom and the vertical walls, in the corners, edges and the waterproof expansion joints, use an alkali-resistant rubber tape with fabric edges, MAPEBAND, any joints between the tape must be made using ADESILEX T SUPER. The tiles can be laid at least 5 days after the application of MAPELASTIC.
- KERAKOLL materials: Aquastop Nanoflex membrane is a flexible waterproof coating for foundations (applied in two layers with an interposed Aquastop AR1 mesh. This material does not require tape but ideally one should cover the wall/floor and wall/wall angles with H40 No Limits).



Having executed the waterproofing, carry out a watertightness test.

This test must be carried out for a period of 2 weeks, filling the swimming pool fully and checking to see if the level drops.

Check that the concrete shrinkage cracks are no wider than 0.1 mm. If this is not the case inject with resin.

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APPLYING ADHESIVE AND LAYING ZERO.3

To lay ZERO.3 3PLUS and ZERO.3 5PLUS in swimming pools, use an appropriate C2T adhesive according to EN 12004 and with a deformability grade according to the stress that the tiles will be subjected to during use.

The adhesives must therefore be

- ARDEX materials: ARDEX X 77 + ARDEX E 90 class C2TS2 according to EN 12004. Using these adhesives in the quick-setting formula, the swimming pool can be filled after 7 days;
- MAPEI materials: KERABOND + ISOLASTIC in class C2T according to EN 12004 or KERAPOXY ADHESIVE class R2T (non-slip two-component epoxy adhesive). Using these adhesives in the quick-setting formula, the swimming pool can be filled after 7 days;
- KERAKOLL materials: H40 No Limits, a stable eco-friendly mineral adhesive with alkaline hydrolysis, class C2 TE according to EN 12004.

The slabs must be laid using the double buttering technique: apply the adhesive to the surface to be covered, using a slanted notched-trowel (spacing 6 mm, e.g. RAIMONDI art. 138HFV6). Then apply the adhesive also to the rear of the slab using a 3 mm square notched trowel.



Remember to cover the corners of the slab with the adhesive.

After laying the slab, make sure the glue sticks all over, avoiding the formation of voids and air bubbles. For this purpose you should use rubber trowels for wall and floor laying or electric tile beaters with a plastic plate (e.g. RAIMONDI "Cucciolo") for floor laying.

In salt water or thermal swimming pools use special adhesives and grouts.



Private pool
Location: Norway

06

JOINT

When laying these joints are necessary. These are to be made depending on the size of the tiles being laid and the severity of the temperature changes in the area. The joint size should be around 5-6mm, but the final decision should be taken by the designer and the site manager.

Fill the joints with grout:

- ARDEX materials: ARDEX WA (solvent free) or ARDEX G8 (solvent-free epoxy cement grouting glue);
- MAPEI materials: KERAPOXY (anti-acid two-component epoxy mortar) or KERAPOXY DESIGN (anti-acid two-component epoxy mortar);
- KERAKOLL materials: FUGALITE Zero anti-bacterial and anti-fungal, water and stain proof vitrified grout. Or alternatively FUGABELLA ECO (depending on the size of the joints) natural anti-bacterial and anti-fungal mineral grout. for gaps with high colour solidity.

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EXPANSION JOINTS

Respect the structural joints of the swimming pool (if any) and place the expansion joints where foreseen by the designer.

- ARDEX materials: the joints must be sealed by laying waterproofing tape type ARDEX SW adhesive with solvent-free two-component epoxy waterproofing compound type ARDEX S 2K, before the first coat of waterproofing agent is applied. It is important that none of the compound is allowed to drip into the joint. The joint must also be made on the tiles and must be filled with silicone mono-component sealant with an acetic base ARDEX SE;
- MAPEI materials: the flexible sealing of the joints, on all corners, edges, changes in level, changes in materials, along the underlying expansion joints in the screed, and in any case every 9-12 m² approx, must be done using acetic silicone sealant type MAPESIL AC. To improve adhesion to the edges of the joints, use an adhesive promoter for silicone sealants such as PRIMER FD;
- KERAKOLL materials: FUGABELLA ECO SILICONE organic eco-compatible silicone sealant for expansion joints.

"POST-INSTALLATION" CLEANING

"Post installation" cleaning helps remove residues of grout-joints, cement and lime.

It is compulsory after laying.

Poor or no cleaning after laying often causes films and grout haze.

To prevent the cleaning procedure from ruining the grout, use a proprietary acid.

When possible, use a mono-brush machine with soft disks.

This type of product must be removed immediately and accurately since these grouts harden very rapidly, even in just a few minutes. Strictly follow the cleaning methods recommended by the grout manufacturer and check if it is effective by performing a cleaning test before grouting the entire surface.

**RECOMMENDATIONS FOR OUTDOOR POOLS**

Swimming pools must never be emptied during the winter as the water acts as a thermal cushion, dampening the expansion and contraction caused by changes in temperature.

The water level must remain at the height of the grid.

To avoid the pressure of ice against the walls, place elastic elements (tyres, sponges, etc.) that float on the pool near the side walls.

It is very important to protect the whole pool with a thermal cover during the winter.

USEFUL CONTACTS**Manufacturer****ARDEX S.r.l**

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