



Ceresit

Waterproofing system solutions under ceramic coverings

Henkel

Quality for Professionals

WATERPROOFING SYSTEM SOLUTIONS UNDER CERAMIC COVERINGS OF NEW & EXISTING STRUCTURES

Waterproofing protects against the impact of water and the penetration of humidity and is thus one of the basic criteria all buildings should meet. State-of-the-art waterproofing provides a well-balanced indoor climate, ensuring a healthy environment where people want to live.

Ceresit offers you the right system solutions for almost all applications – ranging from sealing areas in direct contact with the ground, interior finishing work, to special solutions, for instance in agricultural facilities.

Based on Ceresit's comprehensive range of products and system solutions, this brochure will give you an overview of the specific range dedicated to waterproofing under ceramic coverings.

The products and system solutions in this range are essential if you want to ensure the effective functioning, long service life and healthy indoor climate of a building.



1 Bathrooms and kitchens

These rooms are usually referred to as "wet rooms" as they include a water intake and a waste water system. Ceresit offers a complete system of sealants for such rooms, including liquid sealing coats and other protective materials that ensure reliable insulation of these essential places.

2 Balconies

Typically exposed to unfavourable weather, balconies need to be reliably protected with the help of a suitable waterproofing system. Failure to use the correct system may lead to serious damage and will require renovation and remedial measures, probably the first 12 months of use. Ceresit systems have been designed specifically for this task. They include products for substrate preparation, waterproofing and grouting work to guarantee the long service life and problem-free use of the balcony for many years to come.

3 Terraces

Terraces not only have a decorative and recreational function, but may also serve as a partition and barrier for rooms located underneath. As they are one of the most demanding and technically complex structures of the house, they need special protection. Again, a leakproof and long-lasting terrace can be built when using one of Ceresit's comprehensive waterproofing systems. The application of Ceresit products guarantees that each part of the substrate is appropriately protected from unfavourable weather conditions.

4 Swimming pools

Waterproofing a swimming pool and its surrounding area (showers, saunas, walkways etc) is also highly demanding given the different environmental, physical and chemical stresses every part of the pool is exposed to. In such a case, Ceresit recommends the use of different sys-

tems - depending upon location. The Ceresit system is guaranteed to meet all the requirements connected with waterproofing swimming pools and their surrounding areas.

5 Garages and storage/ household rooms

Usually located underground, these rooms are heavily exposed to water and seeping in from the surrounding ground. Ceresit systems ensure a fully waterproof solution that helps preserve both the functionality and aesthetic look of these utility rooms.

6 Plinths and walls

Plinths and walls are exposed to splash water caused by rain or garden watering equipment. Ceresit provides reliable protection designed specifically to waterproof these areas and prevent potential damage.



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7 The Ceresit PCC system

Concrete and reinforced concrete are generally accepted to be the most popular building materials and are typically used in the construction of balconies, terraces, swimming pools etc. A common feature of such constructions is an exterior cladding of tiles, either used on the floor or the walls. However, various environmental effects - combined with poor concrete quality or structural defects - can cause severe damage to the concrete structure over time. This is especially true of those areas not protected by a suitable waterproofing system. This damage, though, can be successfully repaired with the Ceresit PCC system.

Although the ceramic covering of walls and floors is indeed waterproof, it does not provide a 100 % tight barrier. First, water may seep through the grout and then through the tile adhesive. This, in turn, can lead to water damage, and only a professionally chosen and installed under-tile waterproofing system can protect against such damage. This damage is not only unsightly, but can lead to structural failure of the ceramic tiling on the floor or wall. If, moreover, water is entrapped under the surface of the tiles, microbacteria, fungi and mould can develop and destroy the healthy environment where people live, work and play.

Ceresit therefore recommends the installation of a 100 % waterproof system - to keep the water out, protect your ceramic coverings and ensure a healthy climate.



Bathroom, kitchen, laundry – under full water control

It is hard to imagine contemporary bathrooms, showers, laundry rooms or kitchens without ceramic tiles of stunning design and excellent surface technology. Ceramic tiles are frequently used in rooms or areas subject to high moisture.

It would be wrong to assume, however, that a completely tile-covered wall or floor area is waterproof.

The critical areas on walls and floors are the joints. They allow the penetration of moisture and water into the substrate, causing long-term damage. The most common types of damage are:

- walls or components saturated with moisture
- efflorescence on the surface
- cracked joints
- detachment of the ceramic coverings.

All of the above-mentioned problems have detrimental effects on our homes, causing the interior to lose its aesthetic appeal and become an unattractive, uncomfortable place which we can no longer enjoy.

Some surfaces are directly exposed to contact with water; these include the walls and floors of showers and their surroundings as well as the area of bathtubs and washbasins.

In general, the areas which need sealing are: the entire walls inside the shower cabin, walls within the shower range next to the bathtub and at least 50 cm around the shower cabin, the walls where bathtub and washbasin are located (above and on the sides). Also floors and the lower parts of the walls (up to at least 20 cm height) need sealing.

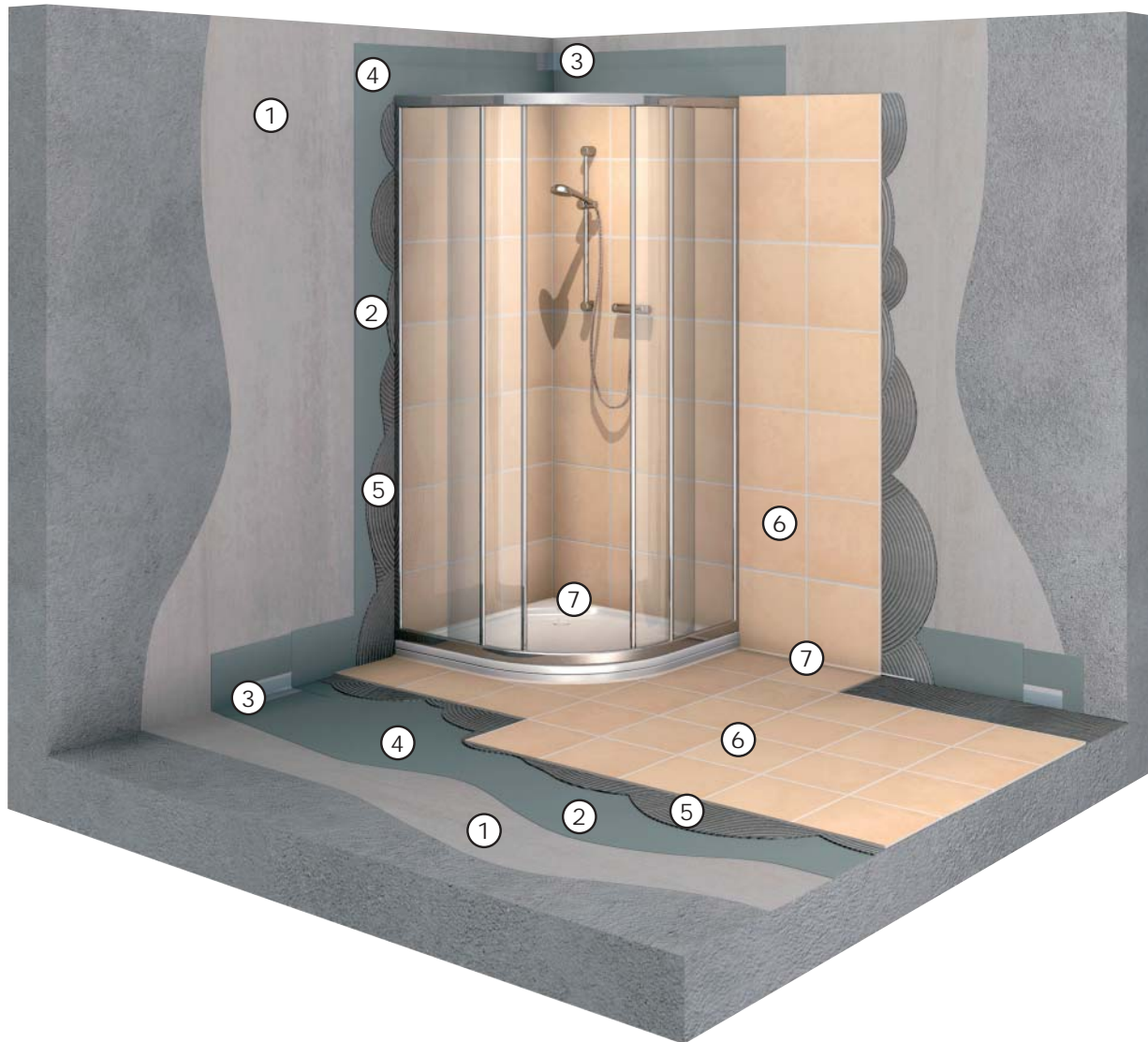
These areas must be protected by the application of special sealing layers under the tiles. First, seal the surface properly, and then fix the tiles – this is the fundamental principle that applies to surfaces exposed to moisture.

Ceresit offers you the right sealing system - with solutions that protect your bathroom and kitchen. So that you can enjoy the useful life and beauty of your ceramic tiles for a long time.



Ceresit system recommendation:

Areas temporarily or briefly exposed to moisture, i.e. subject to water splashes, are classified as moisture exposure class I. They need to be sealed and covered as follows.



1. Prime absorbent surfaces with CT 17 Penetrating Primer.
2. Apply undiluted CL 51 1-C Liquid Foil with a lambskin roller, brush or plasterer's float as a waterproofing layer.
3. Seal off expansion and edge joints using CL 152 Sealing Tape. Embed the sealing tape into the first coat.
4. Apply the second coat of CL 51 1-C Liquid Foil (only 1.5 hrs after the first coat).
5. Lay the tiles using CM 12 "Elastic" Adhesive for fixing non-porous tiles (12 hrs after the second coat of CL 51) or CM 16 "Flex" Adhesive.
6. Grout the joints on walls and floors using CE 40 Aquastatic Grout which is resistant to the penetration of the moisture (48 hrs after tile laying).
7. Corners, expansion and edge joints as well as connections to sanitaryware and fittings must be sealed with CS 25 Sanitary Sealant.



Long-lasting and water-resistant balconies

Balconies embellish the external design of buildings and provide residents with direct access to fresh air and relaxation. A balcony is an exterior part of a building intended for temporary use, but it does not provide support for other construction elements. Most often it is a special construction, permanently attached to the outside wall of the building. The main characteristic of all balconies is their relatively small surface size. Being part of the building just as roofs and external walls, balconies are sometimes exposed to severe weather conditions and therefore prone to corrosion.

- On hot days, balconies and south-facing terraces can heat up to 70°C. In winter, temperatures may drop to as low as -30°C.
- Rainfall, accumulating and melting snow loads as well as enormous temperature fluctuations may sometimes considerably limit the utilization of balconies.

Balconies are quite frequently covered with ceramic or non-porous tiles as these can be easily maintained and create an attractive look. However, the ceramic tile covering itself does not provide sufficient protection from rain, snow and high temperature amplitudes.

The only effective protection from water penetration and concrete corrosion is guaranteed by installing an elastic sealing layer and by using matching building materials.



Tile damage is a sign of either wrong tile application or wrong substrate preparation. It is indicated by

- a flat sound produced when tapping the tile
- a squeaking sound when stepping on the tile
- scratches and cracks on the tile surface.

The most common cause for ceramic damage is water penetrating the floor and freezing, thus detaching the tiles from the substrate. In such situations, also the substrate itself is damaged due to corrosion caused by frozen water. The damaged tiles need to be replaced. Unfortunately, in most cases the complete balcony substrate needs to be renovated.

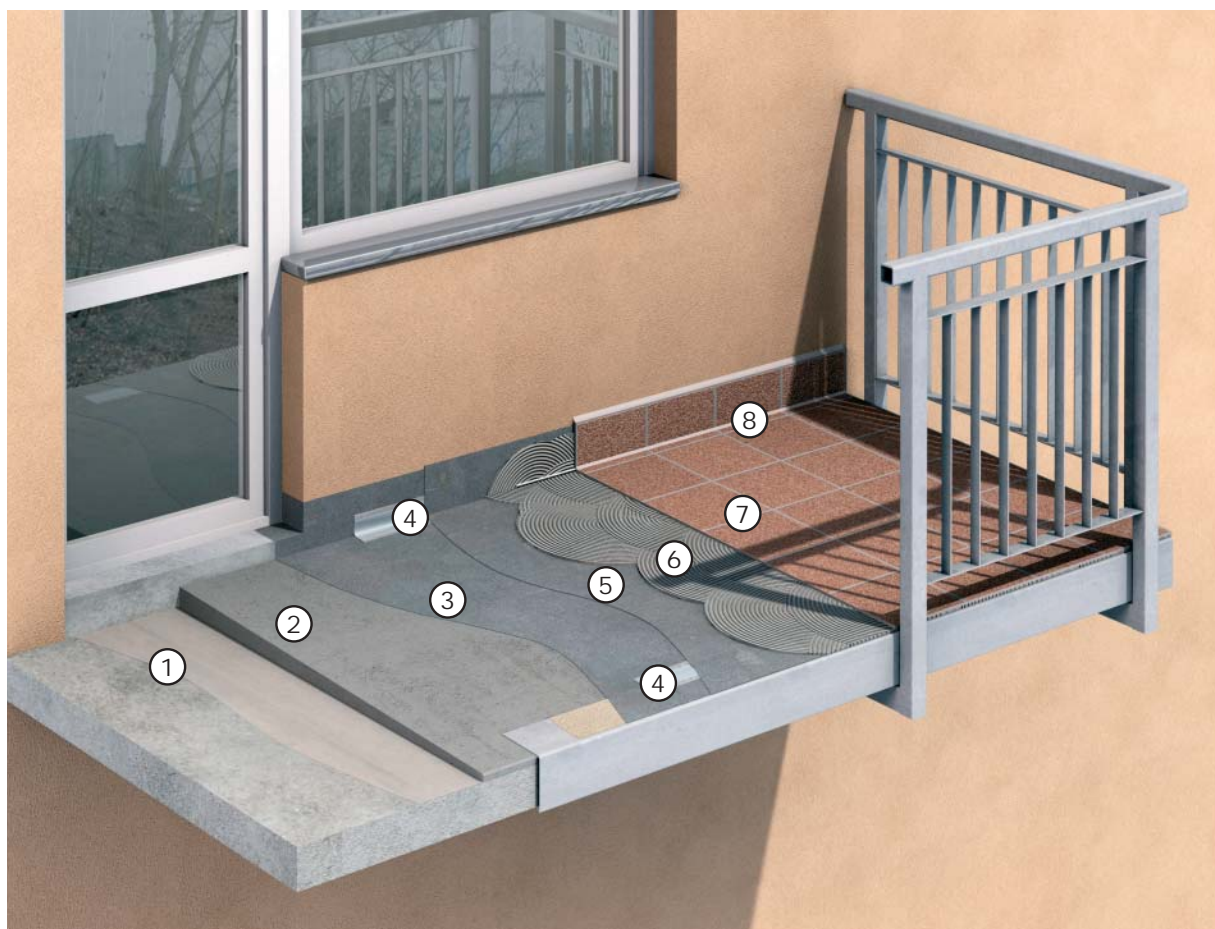
Ceresit offers a complete system especially designed for ceramic balcony floors that guarantees maximum protection from the adverse effects of humidity in each layer.

This waterproofing system is supplemented by products with high flexibility and low water absorptivity. The Ceresit system is suitable for use not only on new balconies, but also on those requiring renovation.

Ceresit system recommendation:

Reliable sealing and tiling of the balcony.

Before you start sealing and tiling work on your balcony, please refer first to pages 12 and 13 where you will find information on the PCC repair system.



1. Produce a contact layer between the concrete and the sloping screed using CC 81 Enhancer Additive mixed with CN 83 Repair Mortar or CN 87 Fast Drying Screed.
2. Produce a sloping screed (slope min. 2-2.5 %) with CN 83 Repair Mortar or CN 87 Fast Drying Screed Mortar. In the case of long balconies (over 4 m), it is necessary to cut expansion joints (every 4 m) of 1.5 cm width and fill them with CS 29 PU Sealant. After hardening of the sloping screed, all the metal accessories should be installed (tin work).
3. Apply the waterproofing coating 5 days after producing the sloping screed. Use CR 90 Crystaliser Waterproof Coat and apply a 1st coat.
4. Seal off the expansion and edge joints using CL 152 Sealing Tape. Embed the sealing tape into the first coat.
5. Apply the 2nd coat of CR 90 Crystaliser Waterproof Coat only 3 hours after the 1st coat. The total thickness of both waterproofing layers should be 2.5 mm.
6. Lay the tiles with CM 16 "Flex" Adhesive for fixing non-porous tiles (72 hours after applying the 2nd coat of CR 90 Crystaliser Waterproof Coat).
7. Grout the joints on walls and floors with the flexible joint filler CE 43 Aquastatic Grout 48 hours after fixing the tiles. The hydrophobic effect of CE 43 Aquastatic Grout prevents the penetration of moisture into the grout.
8. Corners, expansion and edge joints as well as the connections between tiles and balustrade must be sealed with CS 29 PU Sealant.



Reliable waterproofing of terraces

A terrace not only offers a lot of possibilities for relaxing outside but is also an important decoration and design element that defines the character of your home. Terraces are roof-type structures made of floor slabs laid above utility rooms or directly on the ground. They form a diagonal partition above rooms. On both sides of this partition, temperature and humidity are different. Apart from their obvious water resistance, terraces should be thermally insulated and have a vapour barrier. The shapes and sizes of terraces can vary.

The durability of a terrace mainly depends on waterproofing which is a crucial point when producing terrace layers. Why? Because the insulation effect of the system may wear off over time caused by mechanical damage to the terrace or faulty construction. If you want to increase the effectiveness and durability of the difficult terrace system, double the waterproofing.

Climatic changes are a great challenge for terraces, especially for those covered with ceramic tiles and located above heated rooms.

- The greatest threat of destruction is posed by high temperature fluctuations, amounting to as much as 100°C over the year, accompanied by linear deformations of all materials in the layers of a terrace. For instance, the expansion of a 6 m concrete slab caused by such temperature differences can range from 6 to 12 mm.
- In addition, the durability of waterproofing layers may be threatened by a high number of temperature changes below 0°C in winter and by water freezing and melting in the pores of the mineral materials used for producing the terrace layers.

When designing and building a terrace, it is therefore most crucial to execute it such that it will successfully adapt to deformations caused by temperature changes and at the same time remain leakproof. The effectiveness of these steps depends on proper waterproofing and water drainage, but also on the correct execution of expansion joints.

The professional Ceresit system ensures that your terrace is leakproof and durable.



Ceresit system recommendation:

Reliable sealing and tiling of the terrace system.

Before you start sealing and tiling work on your terrace, please refer first to pages 12 and 13 where you will find information on the PCC repair system.



1. Produce a contact layer between the concrete substrate and slope screed using CC 81 Enhancer Additive mixed with screed CN 83 Repair Mortar or CN 87 Fast Drying Screed.
2. Produce a sloping screed (slope 2-2.5 %) with CN 83 Repair Mortar or CN 87 Fast Drying Screed. After hardening of the sloping screed, all the tin work should be installed.
3. Prime the surface with BT 26 "All-Weather" Primer.
4. Produce a waterproofing layer. For this purpose, cut the BT 22 Self-Adhesive Membrane to size and fix it with an overlapping seam of 8 cm. Carefully press down with a rubber roller. BT 22 Self-Adhesive Membrane also acts as a vapour barrier.
5. Install horizontal drainage and thermoinsulation layer.
6. Produce a cement screed of 45 mm thickness using CN 83 Repair Mortar.
7. With areas of 20-25 m², cut the screed up and produce expansion joints. Fill the expansion joints with CS 40 Expansion Joint String and close the joints with CS 29 PU Sealant.
8. Seal the surface with CR 166 2-C Flexible Coating. This product should be applied 5 days after producing the cement screed.
9. Seal off expansion and edge joints using CL 152 Sealing Tape. Embed the sealing tape into the first coat.
10. Apply the second coat of CR 166 2-C Flexible Coating. The waterproofing layer produced with CR 166 2-C Flexible Coating should have a total thickness of 3.0 mm.
11. Lay the tiles using CM 17 "Super Flexible" Adhesive.
12. Grout the joints on walls and floors with CE 43 Aquastatic Grout.
13. Corners, expansion and edge joints as well as connections between the tiles and the balustrade must be sealed with CS 29 PU Sealant.



A perfectly “leakproof” swimming pool

Swimming pools are becoming more and more popular these days. Until recently they were mainly built in recreation centres, schools or hotels. Today, many private investors want to have their homes equipped with swimming pools so they can keep themselves fit, healthy and relaxed. For these private recreation facilities to function properly and fulfill their owners’ expectations, proper use of the pool is not enough. If the pools are to maintain their useful life over many years, certain points need to be considered as early as in the design and building stage.

Professional execution of under-tile waterproofing must be a standard, because only this can ensure the proper functioning of the pool system and of all the building materials used. The inside of the pool should be protected with a carefully selected sealing layer, installed directly on the surface of the whole construction.

Only after protecting the concrete surface can the next finishing layers be applied. Inside the pool, only materials based on minerals or resins can be used for sealing. The installation of a waterproof layer inside the pool is only one of the steps required for maintaining its long service life and fault-free operation. Proper sealing of all facilities adjoining the pool – such as showers, bathrooms and changing rooms – is also of great importance. As the pool is operated at different water loads (full and half-full as well as all stages in-between) and temperature conditions and as the surrounding pool area is subject to different thermal conditions (with/without underfloor heating), it is recommended to use only the following materials for sealing:

- flexible cementitious coatings for large pools and for the surrounding area with underfloor heating
- cementitious coatings combined with sealing tapes for small pools up to 20 m² and for the surrounding area but without underfloor heating.

These waterproofing layers must be resistant to chlorinated water and/or chlorine-ozone combinations and other chemical substances used for cleaning and disinfecting swimming pools. Tile adhesives used in the pool and neighbouring rooms must be flexible, and the grouts should be water-resistant and protected against attack by microorganisms.

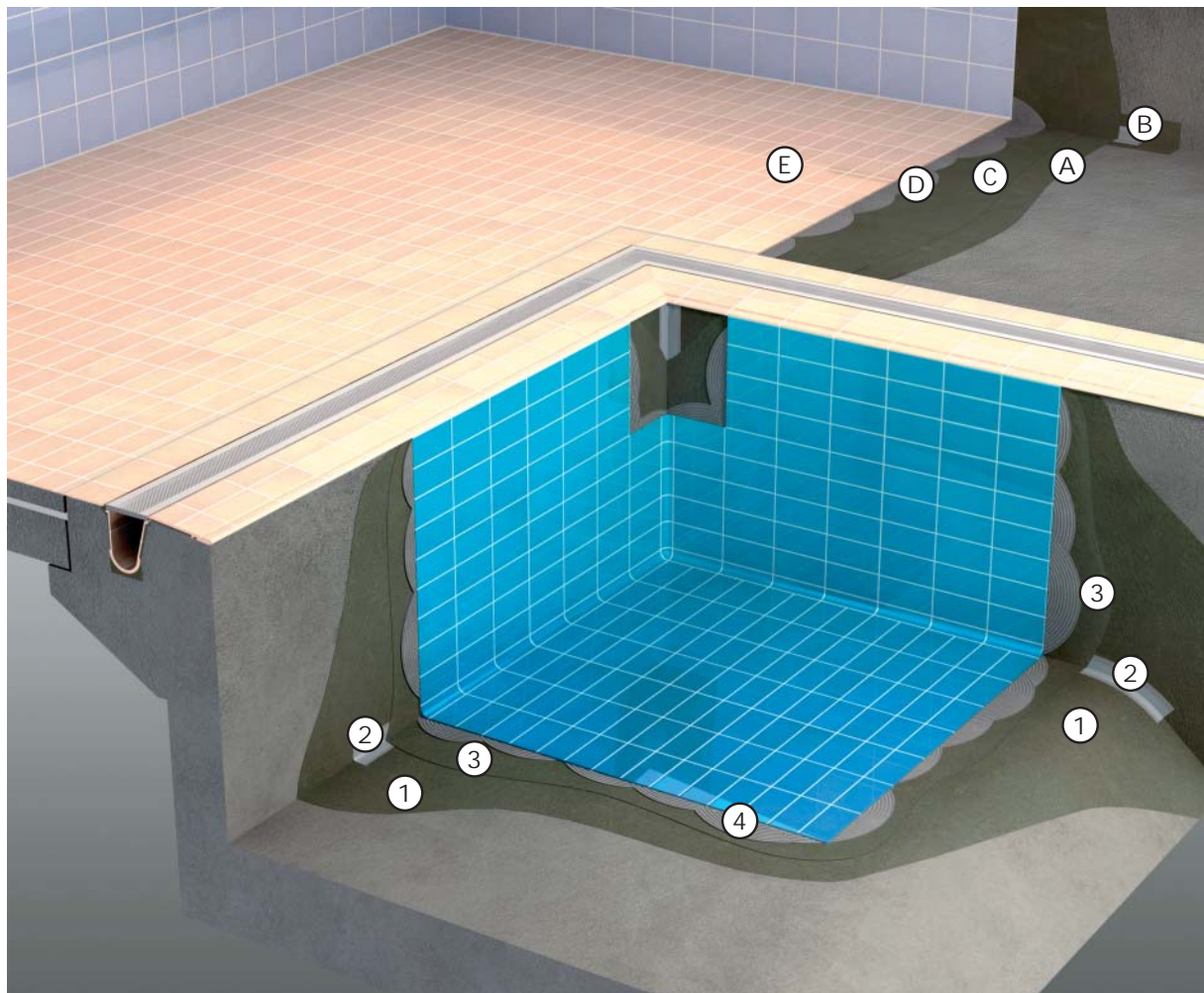
Facilities adjoining the swimming pool

In the case of walls and floors surrounding the pools and other facilities like saunas or showers, use CR 166 2-C Flexible Coating (for heated floors under tiles) or CR 90 Crystaliser Waterproof Coat (for not heated floors):

- a. Apply the 1st layer of CR 166 2-C Flexible Coating or CR 90 Crystaliser Waterproof Coat for under-tile waterproofing.
- b. Embed the CL 152 Sealing Tape into the 1st layer when it is still wet. The tape should be covered with a coat.
- c. Apply a 2nd layer of CR 166 2-C Flexible Coating or CR 90 Crystaliser Waterproof Coat covering the whole surface area.
- d. Place and fix the tiles using CM 17 “Super Flexible” Adhesive.
- e. Grout the tiles using CE 43 Aquastatic Grout.

Ceresit system recommendation:

All work required for protecting the pool should begin by with levelling the walls (if necessary) using the Ceresit PCC system. Depending on the thickness of the levelling layer, either a fine-grained concrete repair mortar (Ceresit CD 25 Mortar for Thin Layers) or a coarse-grained mortar (Ceresit CD 26 Mortar for Thick Layers) is used. It is applied on a contact layer produced from a coat of Ceresit CD 30 Anti-Corrosion Protection and Contact Mortar "2 in 1". For detailed information please refer to pages 12 and 13.



1. Apply the 1st coat of CR 166 2-C Flexible Coating (for small swimming pools of up to 20 m² alternatively apply CR 90 Crystaliser Waterproof Coat).
2. Embed the CL 152 Sealing Tape into the 1st coat.
3. Apply a 2nd coat of CR 166 2-C Flexible Coating (for small swimming pools of up to 20 m² alternatively apply CR 90 Crystaliser Waterproof Coat).
4. Place and fix the tiles using CM 17 "Super Flexible" Adhesive.

5. Grout the tiles using CE 43 Aquastatic Grout.

Many swimming pools differ with respect to the number of layers and the quality of insulation in places such as corners or other sites of installation. We therefore recommend using the detailed drawings available as part of Ceresit's technical materials.



The Ceresit PCC System Protects and repairs concrete and reinforced concrete structures

Concrete and reinforced concrete are considered to be the most popular and reliable building materials of our time, used also under tiles on balconies, terraces, swimming pools and many other structures. However, various environmental effects (e.g. rain, frost or airborne chemical substances), combined with poor concrete quality and structural defects, over time can cause severe damage to concrete structures, especially those not protected by waterproofing systems. This damage, though, can be successfully repaired.

Ceresit now offers its PCC (Polymer Cement Concrete) system with the double purpose of protecting and repairing concrete and reinforced concrete structures. The products of this specially designed system offer the following main advantages:

- compatibility with concrete of lower compressive strength – above C 12/15 (B 15)
- very good workability
- time-saving application – fresh-in-fresh or short waiting times between the application of different products.

Thanks to these properties, Ceresit's PCC system guarantees fast and reliable work results – even if the structure is severely damaged. The system also contributes to extending the structure's service life. Concrete corrosion problems can be reliably and durably solved with the Ceresit PCC system - and it also helps to prevent their further aggravation. The Ceresit PCC system has been designed for filling cracks/voids and re-profiling balconies. It is also very well suited for complex repair work in various types of concrete and reinforced

concrete structures as well as for revamping or shaping the structure of swimming pools.

The Ceresit PCC system is suitable for repairing the following structures: balconies, overpasses, cranes, pillars/columns, reinforced concrete ditches, ceilings, etc.

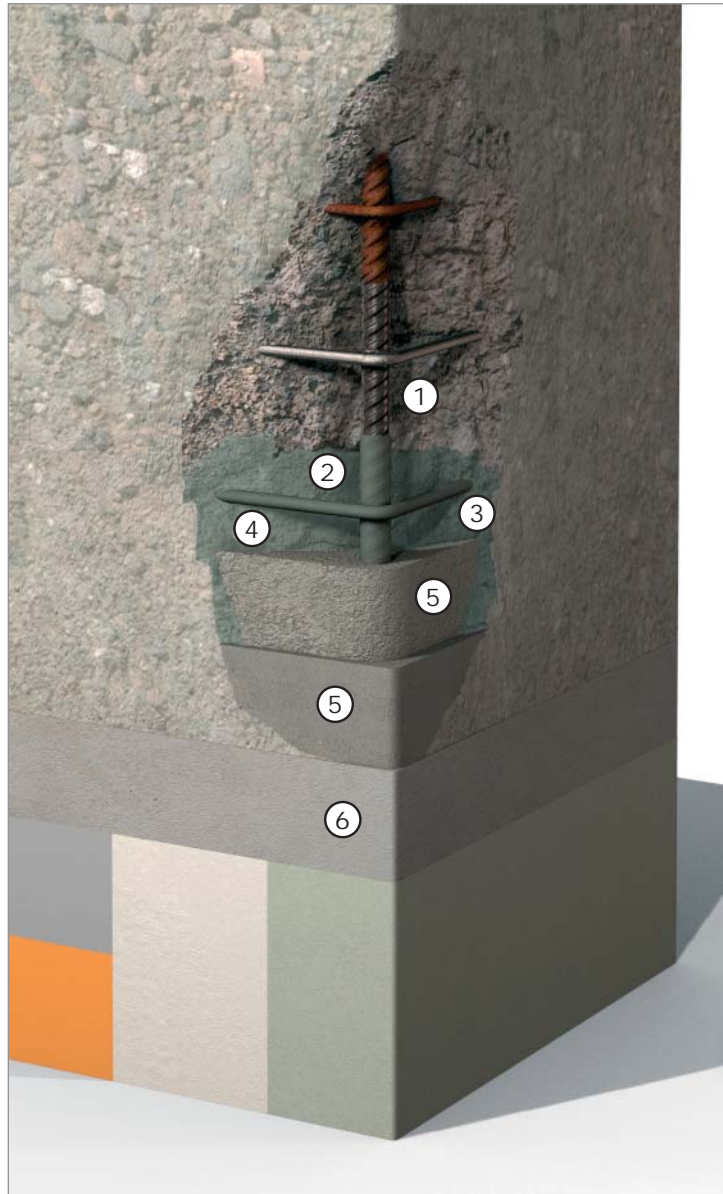
It may also be used for revamping structures such as concrete/reinforced concrete tanks (including waste water treatment plants), flyovers, frame structures, buildings made of precast concrete slabs, monolithic systems (including swimming pools), reinforced concrete, chimneys, cold stores, etc.

The products in the Ceresit PCC system are resistant to unfavourable weather conditions and to the direct impact of road de-icing chemicals (including salts). Besides offering good water resistance and diffusibility, they also act as a carbonization barrier and thus help extend the structure's service life. In addition, the filling products – CD 25 mortar for thin layers, CD 26 mortar for thick layers – can be spray-applied using the dry method (shotcrete).



Ceresit system recommendation:

1. Surface preparation. Corroded and carbonated concrete and any loose elements or previous plaster and insulation layers should be carefully removed up to the point of reaching a crack-free, load-bearing, clean concrete surface free of any substances which may impair adhesion. After cleaning the concrete surface, the cracks and voids should be assessed.
2. Apply the CD 30 "2 in 1" Anti-Corrosion Protection and Contact Mortar Ceresit CD 30 (in a paint-like consistency), but not later than 3 hours after the cleaning process or after drying the anti-corrosion paint layer with sand.
3. If the corrosion of the reinforcing steel is so advanced that some bars need to be replaced, these bars can be fixed with Ceresit CX 5 Rapid Fix Assembly Cement.
After this operation, the bars should also be covered with a coat of CD 30.
4. Producing a contact layer.
CD 30 Anti-Corrosion Protection and Contact Mortar should be brushed onto the cleaned, damp concrete substrate and previously protected reinforcing steel. The next mortar layer should be applied after the contact layer is initially dry, i.e. when the mortar is still slightly damp (30-60 min after application).
5. Filling voids and cracks. Depending on the depth of the cracks/voids in the concrete, one of the two filling mortars can be used: CD 26 Mortar for Thick Layers for a layer thickness between 30-100 mm in one application or CD 25 Mortar for Thin Layers for a layer thickness between 5-30 mm in one application. Both CD 26 Mortar for Thick Layers and CD 25 Mortar for Thin Layers can be used as a final layer.
6. Smoothing the surface. Apply CD 24 Fine Filler for repairing concrete with a layer thickness of up to 5 mm and for producing a smooth concrete surface.
7. Protection depends on the conditions:



- Protection against weather and aggressive airborne substances. When the surface is only exposed to atmospheric influences, mainly corrosion and carbonisation, it is sufficient to use CT 44 Protective and Decorative Acrylic Paint.
- Protection against aggressive liquids. When the surface is exposed to liquids of pH value 4.5 to 13.5 (sewage, manure) or in the case of water reservoirs up to 20 m depth, swimming pools and terraces, it is necessary to coat the structure with CR 166 Flexible Waterproof Coating.
- Protection when the original concrete structure needs to be preserved:
Apply CT 13 Invisible Impregnation Agent on all absorbent and highly alkaline surfaces.



Garages and storage/ household rooms

Usually located underground these rooms are heavily exposed to water and seeping in from the surrounding ground. Ceresit systems ensure a fully waterproof solution that helps preserve both the functionality and aesthetic look of these utility rooms.

Ceresit system recommendation

1. Apply the 1st coat of CR 90 Crystaliser Waterproof Coat on the wall. In the case of floors, use CR 166 2-C Flexible Coating.
2. Apply a 2nd coat of CR 90 Crystaliser Waterproof Coat on the wall and resp. CR 166 2-C Flexible Coating on the floor as soon as the 1st coat has hardened but is still damp.
3. Place and fix the tiles with CM 16 "Flex", but not earlier than 3 days after applying the 2nd coat of CR 90 resp. CR 166.
4. Grout the joints on walls with the flexible joint filler CE 40 Aquastatic Grout. Use CE 43 Aquastatic Grout for the wide joints on floors.



Plinth and wall areas

Plinths and walls are exposed to splash water caused by rain or garden watering equipment. Ceresit provides reliable protection designed specifically to waterproof these areas and prevent potential damage.

Ceresit system recommendation

1. Apply the 1st coat of CR 65 Sealing Slurry on the damp substrate to produce a waterproof layer.
2. Apply a 2nd coat of CR 65 Sealing Slurry.
3. After 7 days, clinker tiles can be fixed using CM 16 "Flex" Adhesive or plaster can be applied, e.g. Ceresit CT 77.

System recommendation table

		Bathrooms / kitchens	Balconies	Terraces	Swimming pools up to 20 m ² length	Swimming pools	Pedestals	Garages / utility rooms
Waterproofing:								
CL 51	1-C Liquid Foil	+						
CL 152	Sealing Tape	+	+	+	+	+		
CR 65	Sealing Slurry						+	
CR 90 Crystalliser	Crystallizing Waterproof Coat		+		+			+
CR 166	2-C Flexible Coating			+		+		+
BT 22	Self-Adhesive Membrane			+				
BT 26	"All-Weather" Primer			+				
Tiling:								
CM 11	Universal Adhesive							+
CM 12	Elastic Adhesive	+						
CM 16	Flexible Adhesive		+				+	
CM 17	Multipurpose Flexible Adhesive			+	+	+		
CE 40	Flexible Water Resistant Grout	+						+
CE 43	Flexible Water Resistant Grout		+	+	+	+		+
Repairing and priming:								
CN 83	Repair Mortar		+	+				
CC 81	Enhancer Additive		+	+				
CT 17	Penetrating Primer SF	+					+	
Sealing compounds:								
CS 29	PU Sealant		+	+				
CS 25	Sanitary Sealant	+						
PCC system for repair and renovation work:								
CD 24	Filler to repair concrete up to 5mm		+	+	+	+		
CD 25	Fine concrete repair mortar from 5 to 30 mm		+	+	+	+		
CD 26	Concrete repair mortar from 30 to 100 mm		+	+	+	+		
CD 30	Anticorrosion protection and contact mortar "2 in 1"		+	+	+	+		



Your Ceresit Partner:

Local address: