

LEYCOSIT *Waterproofing by crystallisation*

The extraordinary deep penetrating and self-healing waterproofing system



The extraordinary properties

- permanent and self-healing
- heals hairline cracks up to 0.4 mm
- no dry surface is necessary
- prevents the intrusion of chemicals, salt water and other harmful materials
- good chemical resistance
- vapor permeable
- protects concrete and reinforcing steel from deterioration and oxidation
- non toxic
- resists up to 120 m head of water (1.2 MPa)

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www.leyde.com

LEYCOSIT solves your problem !

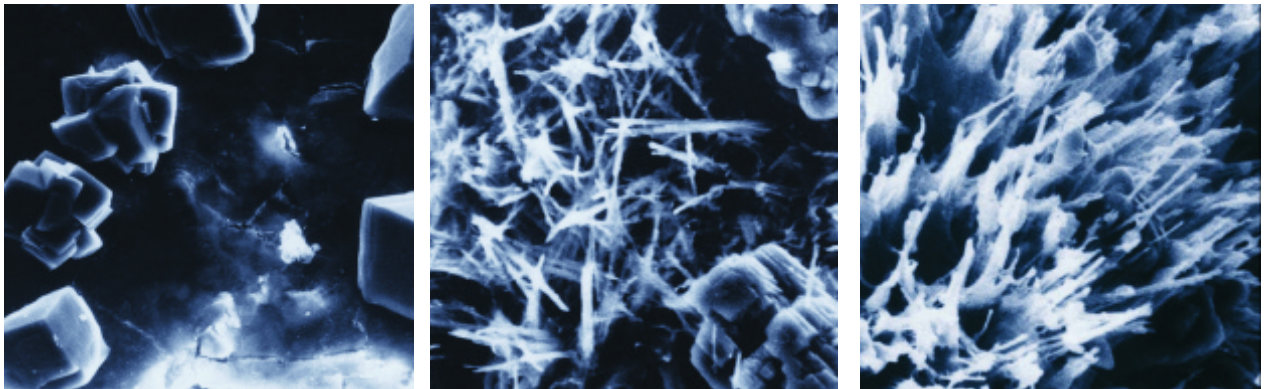


INTRODUCTION

The crystalline technology of LEYCOSIT products for waterproofing, protecting and enhancing concrete was conceived and developed for more than 35 years. Since then, the technology has been tested and proven worldwide in all climates and in widely varying construction situations. Today, through an international network of distributors and licensees the technology is specified and applied on thousands of major concrete structures around the world. The LEYCOSIT crystalline waterproofing system is uniquely effective and long-lasting because it becomes an integral part of the concrete itself.

Similarly, LEYCHEM LEYDE GMBH has become a successful reputation in the world of concrete and around the needs of our customers:

Our commitment to quality is on-going; our products and technical support are readily available worldwide; our product line meets the demands of value engineering; and our product R&D keeps pace with the advances in concrete technology.



WHAT IS LEYCOSIT – Waterproofing by Crystalline Technology?

LEYCOSIT is a non-toxic, chemical treatment for the waterproofing and protection of concrete and all cementitious construction materials.

LEYCOSIT generate a non-soluble crystalline formation deep within the pores and capillary tracts of the concrete. The crystalline structure seals the concrete permanently against the penetration of water and other liquids from any direction.

LEYCOSIT crystalline products are dry powder compounds composed of portland cement, silica sand and many active, proprietary chemicals.

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HOW DOES LEYCOSIT WORK?

To be highly effective and create its crystalline waterproofing effect, LEYCOSIT needs to become an integral part of the concrete mass. It does so by taking advantage of the natural and inherent characteristics of concrete. The reactive chemicals in LEYCOSIT use the porous (capillary tract system) and chemical nature of concrete to enter into it.



By using the process of diffusion, the chemicals get solved in water and use it as a migrating medium, travel through the capillary tracts into the concrete. This process precipitates a chemical reaction between LEYCOSIT, moisture and the typical by-products of the hydration process (calcium hydroxide, mineral salts, mineral oxides and unhydrated and partially hydrated cement particles).



As a result crystallization take place and, ultimately, a non-soluble crystalline structure grows inside the pores and capillary tracts of the concrete.

The pores become discontinuous and the concrete is thereby rendered impenetrable by water and other liquids from any direction. The LEYCOSIT crystalline process will reactivate whenever water is present.



Advantages of LEYCOSIT

- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Can seal hairline cracks up to 0.4mm
- Allows concrete to breathe
- Highly resistant to aggressive chemicals
- Non-toxic
- Does not require a dry surface
- Cannot puncture, tear or come apart at the seams
- No costly surface priming or levelling prior to application
- Does not require sealing, lapping and finishing of seams at corners, edges or between membranes.
- Can be applied to the positive or the negative side of the concrete surface
- Does not require protection during backfilling or during placement of steel, wire mesh or other materials
- Less costly to apply than most other methods
- Not subject to deterioration
- Permanent



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Typical fields of application

- Reservoirs
- Sewage and Water Treatment Plants
- Underground Vaults
- Secondary Containment Structures
- Foundations
- Tunnels and Subway Systems
- Swimming Pools
- Parking Structures
- Roof Decks

LEYCOSIT Products

LEYCOSIT-DS CONC

LEYCOSIT-MODI

LEYCOSIT-SP PLUG

LEYCOBOND AC

LEYCOSIT-SF

LEYCOSIT-ADMIX

LEYCOSIT-DS

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Typical structural damages in concrete

The following examples will show you the principals of the effectiveness of LEYCOSIT. With LEYCOSIT you're doing waterproofing in general. You localise the source of the problem and solve it at the root. The working process is totally different from normal waterproofing work. It isn't just a Make Up, it's aetiological and thereby highly effective and durable.

Most of water leakages in concrete structures rely on structural damages. This damages cause from a bad pouring process. Under normal circumstances you can seal leakages with coatings and injections.

Especially at sites with high water pressure and in aggressive environments like tanks for bearing chemicals and in marine environments this way of waterproofing is not permanent. The materials get damaged and loose their power to stop the water coming in. In this field of application you will see the enormous potential of LEYCOSIT products. LEYCOSIT is able to withstand in these aggressive eironnvments and secure the impermeability durable.

Typical source for leakages are enclosed contaminants, like distant pipes or wood, not enough coverage of reinforcement and rock pockets. All these problematics spots need to be repaired accurately to secure a durable waterproofing.



Pipe for keeping the moulding in distance to give the wall their defined Thickness.

Found in the cold joint between ground and wall.

Fallen in-between the formwork during the concreting process.

It has to be removed completely.



Enclosed contaminants has to be removed completely. The minimum depth for removing of pieces going deep into the wall is 75 to 100 mm.

All joints and cracks wider then 0.4 mm have to be opened. A "U" shaped slot has to be routed out 25 mm wide and at least 37 mm deep.



Chipped out reinforcement under a thin layer of concrete and old waterproofing mortar. You can see very well that another company tried to seal the leakages before, but wasn't successful durably. The steel can't increase the strength of the concrete structure. The thin coverage layer of concrete will not be able to protect the steel against corrosion so he will expand by rust and will cause spalling and new leakage. To avoid new damages he has to be removed completely. This can be done without any static problems because he isn't connected to the other reinforcement.

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Chipping of the cold joint between ground and wall.

The binding wire has to be removed before closing the joint with a LEYCO-PACK made from LEYCOSIT-DS CONCENTRATE.



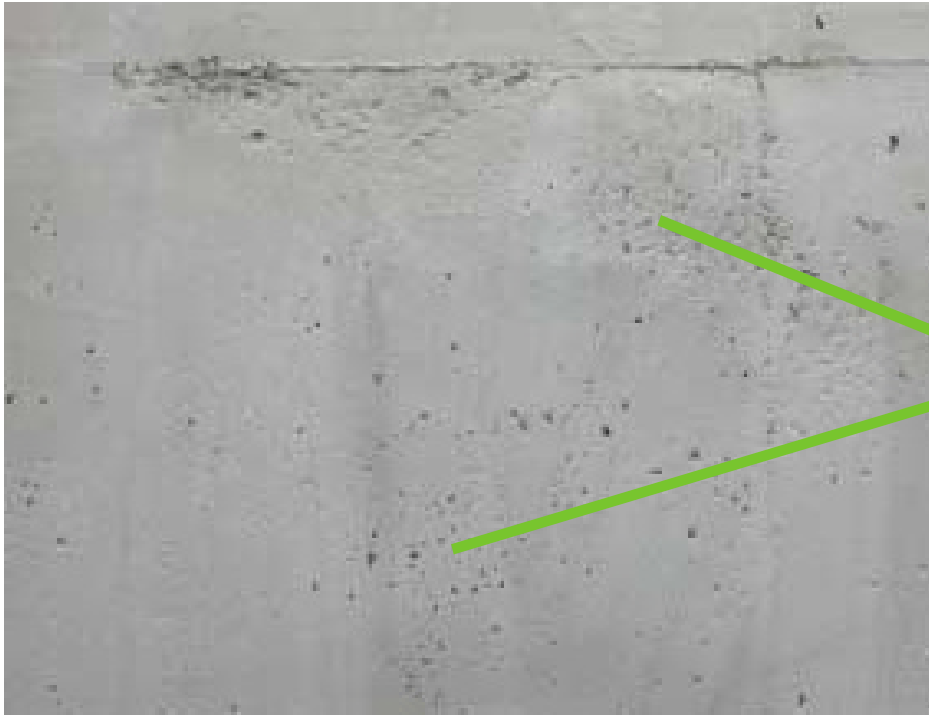
You can see voids around the steel, black and soft concrete and also a wire. The voids offer the water a good way for penetration. They have to be chipped out until good and strong concrete appears.



The picture shows a big rock-pocket with large voids between the stones. It has to be chipped out as well until good concrete appears. Afterwards it has to be filled layer by layer with a mixing of SP PLUG and DS CONCENTRATE.



The voids you can see on this picture around the metal plate can't be filled during the brush application of the first coating with LEYCOSIT-DS CONCENTRATE. They have to be chipped down to the healthy concrete.



A good applied coating at the end of all of the repair work is necessary for the success of the waterproofing procedure. The first layer of the final coating with DS CONCENTRATE will fill the honeycombs. The don't need to be chipped. As well the self-healing process will secure that also small spots, which are not covered with LEYCOSIT thoroughly, are waterproofed.

Every type of cold joints has to be routed out in a "U" shaped slot. 25 mm wide and at least 37 mm deep. As well all around the pipes as on this picture. You can find larger spots of very worse concrete all around the square of the pipes. These are the reasons why sooner or later leakages appear again, if they are detected and sealed.



You can also find a leaking whole of a distance pipe in the left corner below.

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The corners of the squares are the most difficult spots in the waterproofing process. They have to be filled with LEYCO-PAC and compacted very well. Otherwise wet spots or small leakages will occur again. Small voids which are still present will offer the water an easy way for penetration. If they are very small and the water pressure isn't that high the self-healing process can solve the problem for you. In all other cases the job has to be redone. After leaking for a while the growing of crystals, initiated by the LEYCOSIT-products will seal the leakage.



For the success of the self-healing process it's important that a very good coating at the end of repair work is applied.

24 h later the wet spots are sealed more and more by the growth of the crystals in the wall.

They push the water back into the wall step



With LEYCOSIT you are doing all the time the same very easy working steps:

Chipping
Cleaning
Priming
LEYCO-PAK
Coating
Curing

Important for a good result is the accuracy you have to act with. Do the LEYCO-PACK precisely and all problems are solved. Otherwise wet spots will appear again. A not well compacted LEYCO-PACK as well as a rough surface acts like a sponge and absorbs water.

But also in these cases LEYCOSIT is sometimes able to repair a bad job and solve the problem with the embedded self-healing process. The automatically growing of the crystals and stopping slow penetration of the water.



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Projects



Moat of the Orang-Utan-House
Hagenbeck Zoo, 2003/04
Hamburg, Germany



LEYCOSIT-DS CONCENTRATE
LEYCOSIT-ADMIX

Projects



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