

# High quality waterproofing systems and technologies





# proof-tec plant in Friedeburg, Germany





# Lab



# proof-tec GmbH Germany

- family owned (2 owners)
- not a part of a group of companies
- specialized in waterproofing of buildings
- own R & D (research & development)
- own quality control with two labs
- manufacturing in Germany
- worldwide sales

# Product range

- **Injection resins / Injection gels**
- **injection hoses**
- **Swelling Joint Tapes / Swelling rubber**
- **Joint tapes / Joint sealants**
- **Sealing slurries / Reactive slurries**
- **Sealing mortars**
- **Concrete repair mortars**
- **Injektion creams / Injection liquids**
- **Mortar admixtures / Concrete admixtures**
- **Primers / Spezial adhesives**
- **Bitumen coatings**
- **Restoration plasters**
- **Liquid membranes**
- **Fully bonded membranes / Sealing membranes**
- **Facade hydrophobic coatings / -coatings**
- **Tools / Equipment / Machinery / Cleaner**

# Application areas

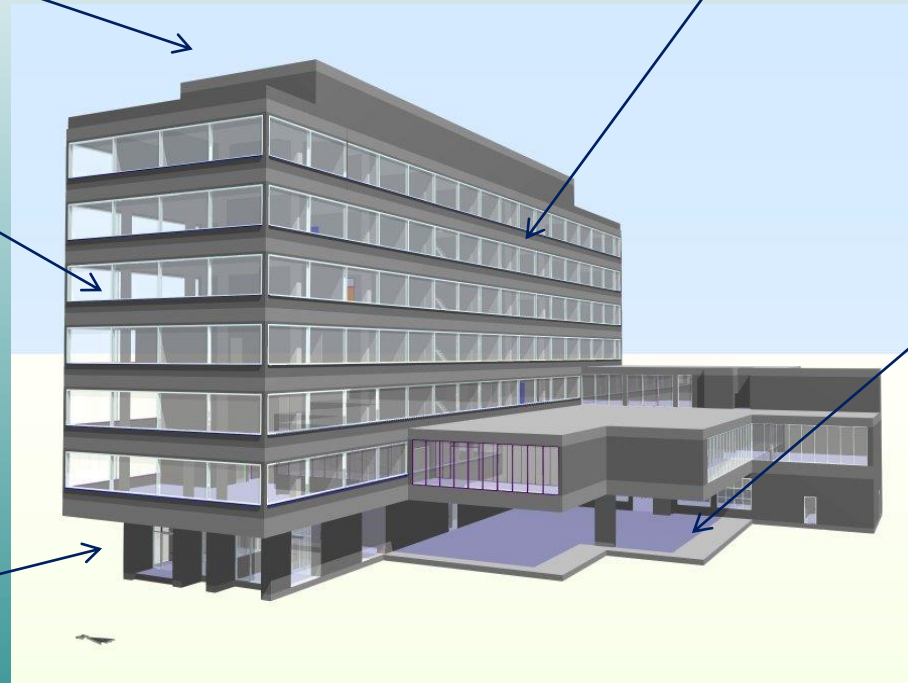
roof

facade

wetroom

basement  
(negative side  
waterproofing)

basement  
(positive side  
waterproofing)



# Basement waterproofing





# Quality control in our laboraty



# Why crystalline waterproofing systems???

The basic idea behind crystalline waterproofing is:

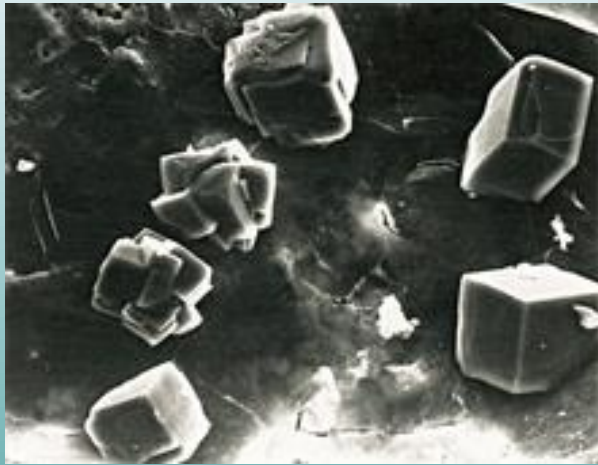
- to prevent the movement of water into the concrete
- to prevent the movement of water through the concrete
- plugging or blocking the natural pores, capillaries and microcracks in concrete
- Reacts with moisture and natural chemical by-products of cement hydration (calcium hydroxide, mineral salts, mineral oxides and unhydrated and partially hydrated cement particles)

**proof-tec** crystalline waterproofing is:

- A unique chemical treatment for the waterproofing, protection and repair of concrete
- It works permanently
- Seals concrete defects from the penetration of water and other liquids from any direction even when high water pressure is expected
- Provides resistance to attack from aggressive chemicals
- Enhances the durability of concrete



# What do we mean „crystals“???



Situation with fresh concrete, open pores and moisture can pass easily.



Situation after 7 days. Growing of crystals starts.



Situation after 29 days. Pores are blocked because of the crystals.

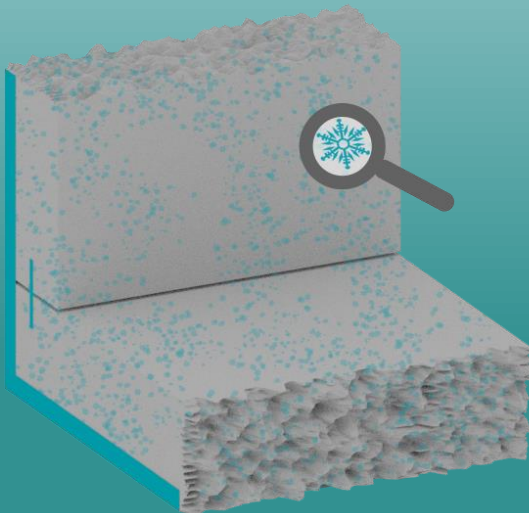
# proof-tec crystalline product range

- PT Crystalline Powder Admixture
- PT Reactive Slurry crystalline
- PT Reactive Slurry sulphate
- PT Water Stop Mortar crystalline
- PT Surface Sealing Mortar Crystal



# PT Crystalline Powder Admixture

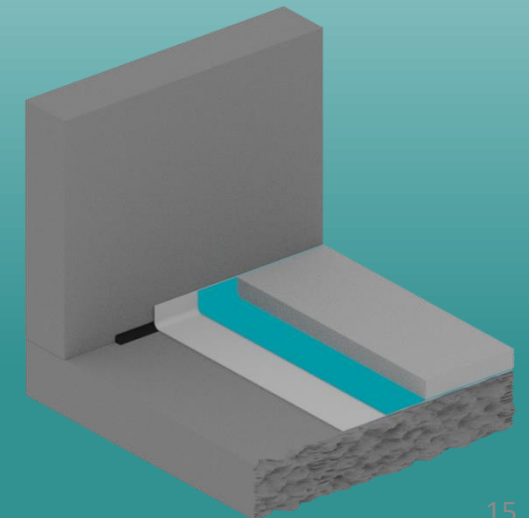
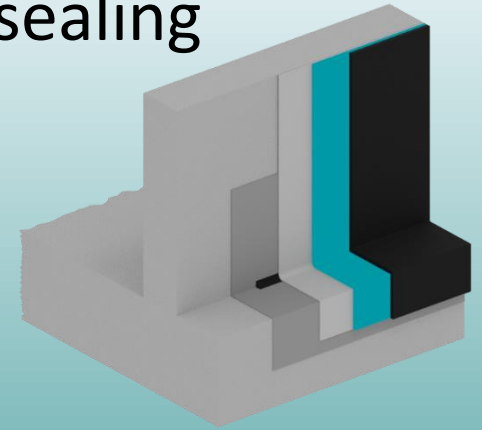
- High quality, integral and high concentrated waterproofing admixture for concrete and mortars
- Used as an admixture in fresh concrete
- Mainly used in new construction
- Crystallization inside of concrete structure





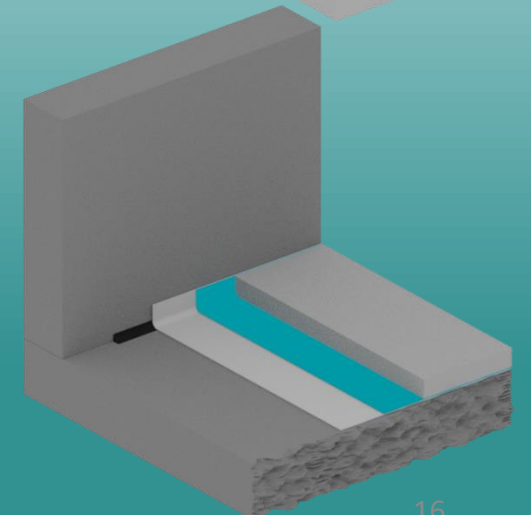
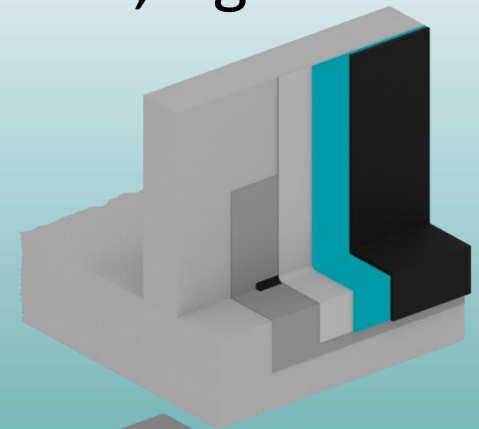
# PT Reactive Slurry crystalline

- Reactive, powdered, active crystalline, rigid cement based sealing slurry with special deep crystallization properties
- Positive side waterproofing
- Negative side waterproofing
- Used in new and refurbishment constructions
- Penetration and crystal growing into the substrate
- Used on walls and floors



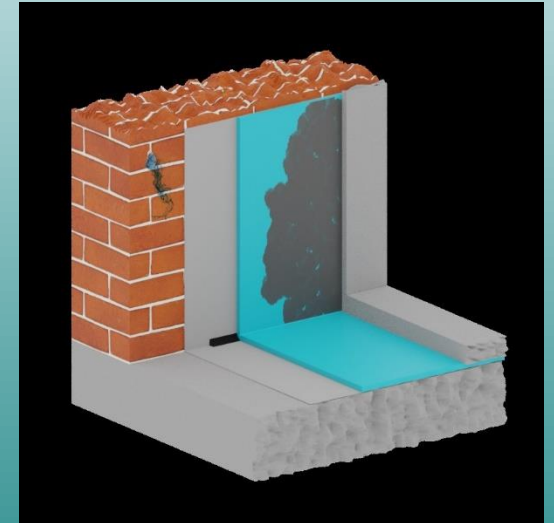
# PT Reactive Slurry sulphate

- Cement reactive (special cement), powdered, sulphate resistant, rigid and mineral sealing slurry with deep penetration additives
- Special developed as a sulphate resistant coating
- Positive side waterproofing
- Negative side waterproofing
- Used in new and old construction
- Penetration and crystal growing into the substrate
- Used on walls and floors



# PT Water Stop Mortar crystalline

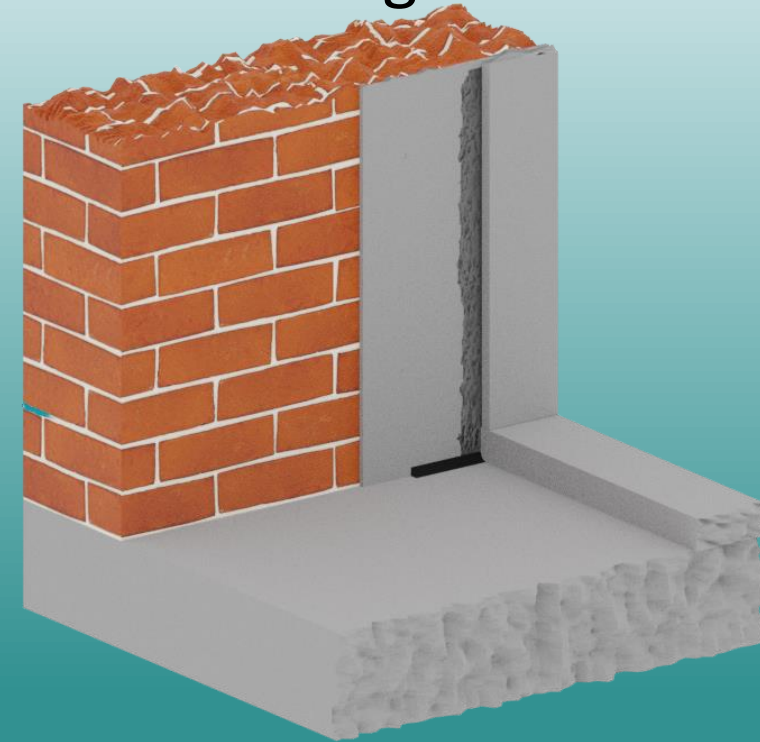
- Cement based, very fast setting premixed mortar with swellable characteristics
- Stops active water leaks in only a few seconds
- Crystalline growth into the substrate
- Highly reactive





# PT Surface Sealing Mortar Crystal

- Cement based, crystalline active, shrinkage-free, tight against pressurized water, pressure resistant premixed mortar according to DIN EN 998-1
- Used in new and old construction
- Penetration and crystal growing into the substrate
  - crystal growing inside the mortar
  - self healing properties



# proof-tec crystalline waterproofing materials

- React with moisture and natural chemical by-products of cement hydration (calcium hydroxide, mineral salts, mineral oxides and unhydrated and partially hydrated cement particles)
- The proof-tec chemicals utilize water as the medium to migrate throughout the concrete

# PT Crystalline Powder Admixture

- Powder admixture for **integral** waterproofing by crystallization
- By reaction with the cement paste it forms nano-crystals
- In the cement matrix PT Crystalline Powder Admixture is reducing the capillary and pore size
- The formed crystal structure is not soluble
- Permanently active
- Seals microcracks and hairline cracks, up to 0.4 mm (sometimes higher)
- Self healing properties
- Permanent waterproof concrete
- Protection for reinforcement steel
- Withstands high water pressure (up to 12 bars)
- Non toxic
- Compatible with most types of concrete admixtures





# Application

- Dosage general: 0.8 – 1.7% by cement weight. Minimum 2.8 kg per cbm of concrete
- The amount of dosage depends on the required concrete or mortar mix design and the reactivity of the cement
- Reference values:
- Dosing PT Crystalline Powder Admixture

	Amount of water in concrete formulation			
Cement content per cbm	40%	45%	50%	55%
280 kg/cbm	2.80 kg	3.15 kg	3.50 kg	3.85 kg
310 kg/cbm	3.10 kg	3.49 kg	3.88 kg	4.26 kg
340 kg/cbm	3.40 kg	3.83 kg	4.25 kg	4.68 kg
370 kg/cbm	3.70 kg	4.16 kg	4.63 kg	5.09 kg

- The material can be used in high w/c ratio (water/cement ratio) concrete, up to 0.52
- It is recommended to carry out trial mixes to adjust the exact dosage rate required

# Application

## Dosage in **batching plant** (ready-mix factory)

- PT Crystalline Powder Admixture must be added to the aggregates and mixed at least 30 seconds before adding cement and water.
- The mixing must be continued for at least 50 seconds until the concrete mix has reached the working properties

## Dosage in **transport mixer truck**

- In case of adding PT Crystalline Powder Admixture on the construction site (transport mixer truck), it must be added as a suspension in water, not in powder form.
- For this the mixing ratio is 1:1 (powder:water). Mix the material in a bucket and add this slurry completely into the mixing drum of the transport mixer truck.
- Average mixing time is 1 minute per cbm content, but minimum 5 minutes.
- Note that the additional slurry water does not increase the water/cement ratio above the projected value. The water of the slurry must be included in the water/cement calculation at batching plant.

# With PT Crystalline Powder Admixture - Improved Concrete

- Higher ageing resistance
- Higher abrasion resistance
- Protect against: sea water, waste water, aggressive ground water, and chemical solutions
- Still able to „breathe“
- Increased performance of concrete generally



# Conclusions for the system!

- Permanently working waterproofing systems
- Concrete can „breathe“, no water penetration in liquid form
- Reinforcement steel is protected
- Construction joints are sealed
- High resistance against chemical attack
- Increases the structural strength and durability of concrete



# PT Reactive Slurry Crystalline

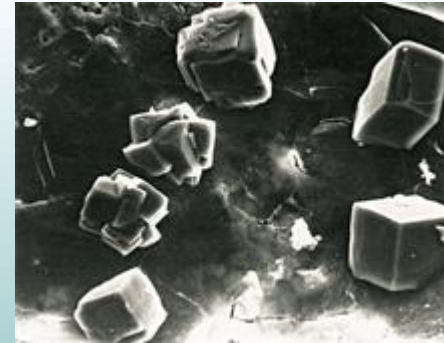
## PT Reactive Slurry Sulphate

- Rigid slurry
- Usable as a two component system with PT Bonding Emulsion Plus
- Excellent penetration into the surface
- Crystalline system
- Capillary plugging agents
- Creates an insoluble barrier
- Usable against high pressure water (up to 10 bar and more)
- Usable for inside and outside waterproofing
- Absolutely waterproof
- PT Reactive Slurry sulphate is resistant against sulphate salts



# “What is a „Crystalline system“

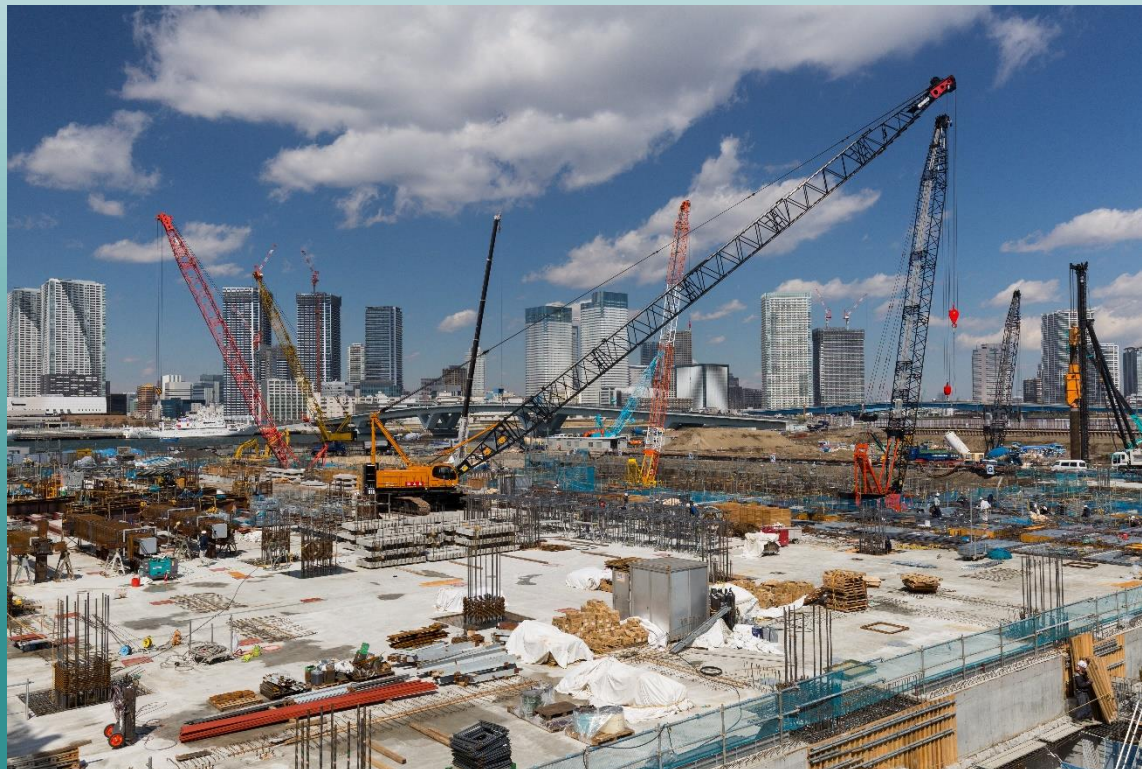
- „normal situation“ of fresh Crystal Slurry
- Situation after 7 days
- Situation after 29 days



# PT Reactive Slurry Crystalline

## PT Reactive Slurry Sulphate

- The crystalline properties are still working, it's not necessary that this material is permanently humid.



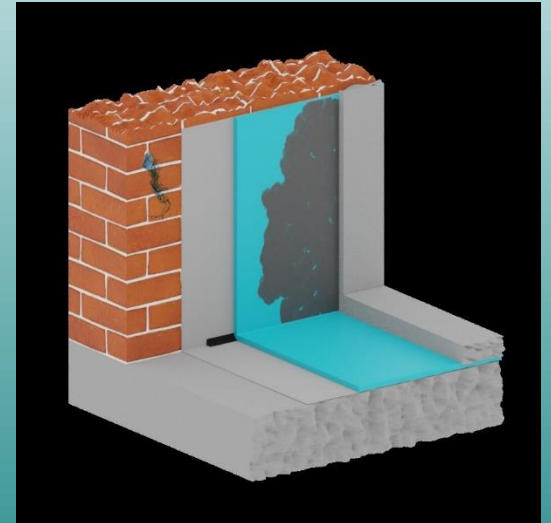
# PT Reactive Slurry Crystalline PT Reactive Slurry Sulphate advantages

- Crystallizing waterproofing system
- Permanently working, self healing properties
- Abrasion resistant
- Usable on all mineral surfaces (concrete or brick walls)
- Open to water vapour diffusion
- Suitable on moist surfaces
- Easy to apply
- Resistant against Chlorides, Sulphates and Phosphates
- Suitable for inside and outside waterproofing
- Absolutely waterproof (up to 10 bar)



# PT Water Stop Mortar crystalline

- Must be mixed with water
- After adding water it must be formed by hand and immediately pressed into the leak
- Reacts in max. 30 seconds
- Stops active water leaks in seconds
- Crystalline growth into the substrate



# PT Surface Sealing Mortar Crystal

- Must be mixed with 5.5 l of water per 30 kg bag
- Used in new and old construction
- Penetration and crystal growth into the substrate
  - crystal growing inside the mortar
  - self healing properties



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# Watertight concrete basements perform against high water pressure!!!



- Because of crystalline system we have self healing properties, but the crack width is limited (0.4 mm)