

Waterproofing Systems / Capillary Waterproofing Systems

AQUAFIX® S

Sulphate Resistant Crystallized Waterproofing Material

Approved by METU Chemical Eng. Dept.
according to BS 6920 Standard
for potable water contact compatibility.
Report no: 2009.03.04.718/02

DESCRIPTION

Cement based, **sulphate resistant, crystallized** waterproofing material that can be applied in both **positive** and **negative** hydrostatic pressure directions and becomes reactive with water and moisture. Penetrates in depth into the concrete, in reaction with the water, moisture and free lime inside the concrete (old/new) with sulphate resistant cement, chemicals and specially selected fine aggregates in its formula, forms crystals that do not dissolve in capillary voids and pores. As it is resistant to sulphate and reactive, it protects the building against sulphate attacks, water and moisture throughout the life of the concrete and prevents the steel reinforcement from corroding.

The negative effects of sulphate for concrete:

Sulphate attack is a common form of deterioration and occurs when concrete comes into contact with sulphate (SO_4) containing water. It causes both physical and chemical deterioration in concrete. Sulphate:

- Reduces the strength of concrete.
- Causes a hollow structure by losing the impermeability of the concrete. Therefore, it causes corrosion of the reinforcement.
- Causes many other problems in terms of aesthetics.

APPLICATION AREAS

Negative Water Pressure:

- Reinforced concrete buildings for which sulphate causes risks,
- Interior waterproofing of basement walls and foundations,
- Exterior waterproofing of water tanks which are not in the ground,
- Retaining walls,
- Tunnels and subways,
- Floors and horizontal joints,
- Elevator pits.

Positive Water Pressure:

- Waterproofing of all kinds of reinforced concrete constructions which are exposed to sulphate and corrosive salts
- Foundations and shear walls,
- Water tanks (positive applications from both inside and outside of the water tanks under the ground)
- Swimming pools,
- Irrigation canals and concrete pipes,
- Tunnels and culverts,
- Dams,
- Cisterns.

TECHNICAL PROPERTIES

Appearance	Red and grey colored fine powder
Powder Density	~ 1.20 kg/L
Water/Aquafix S Mixing Ratio	Shear Walls: 9 – 10 L water / 25 kg powder Cold Joints: 6.5 – 7.5 water / 25 kg powder
Resting Period	3 – 5 minutes
Pot Life	20 – 40 minutes
Setting Time	30 – 60 minutes
Service Temperature	Between -20°C and +70°C

ADVANTAGES

- Since it fills the capillary voids and the cracks up to 0.5 mm in the concrete, it prevents the penetration of water, moisture and sulphate into the concrete. It prevents reinforcement corrosion by protecting concrete from chemical and physical damages caused by **sulphate attacks**.
- Applied from the direction of both **positive** and **negative** hydrostatic pressure.
- Since it is reactive, it continues to react with water molecules throughout the life of the reinforced concrete and provides waterproofing during the service life of the structure.
- Sub-foundation sprinkle application can be done in any weather condition where concrete can be poured. However, if there is a puddle on lean concrete in rainy weather, concrete pouring and dry sprinkling should be done at the same time.
- Red and gray colors of AQUAFIX S provide ease of application and control.
- No need to use a primer before the application, curing with water is sufficient.
- AQUAFIX S slurry application is an extremely easy and effective method for insulating horizontal work joints.
- Since it penetrates the concrete and does not form an insulating layer, XPS, drainage board and protection wall are not required before backfilling.
- Allows the concrete to breathe as it is air and water vapour permeable. Prevents dampness and odor.
- Can be applied on unset concrete, new concrete and old concrete.
- Not affected from UV and oxidation.
- Saves time and labor, economical.
- Resistant to freeze – thaw cycle.
- Non-toxic, suitable for potable water tanks.

Consumption

Under Foundations	Dry Sprinkle	3 kg/m ²
Shear Walls	Coating	Positive water pressure: 2 kg/m ² (2 layers) Negative water pressure: 2.5 kg/m ² (2 layers)
Cold Joints	Slurry	3 kg/m ²

PACKAGING

25 kg kraft bags

APPLICATION

PREPARATION OF THE SURFACE

1. UNDER FOUNDATIONS

There is no need to make any surface preparation for dry sprinkle.

2. SHEAR WALLS

- The surface must be clear of dust, oil, tar, bitumen, paint, silicone, curing material, detergent and mold oils that prevent penetration.
- Repair the segregations and static cracks in the concrete with **AQUAFIX EXPAN High Strength Non-Shrinkage Waterproofing Structural Repair Mortar** which contains active material. Repair the dynamic (moving) cracks with FIXA's appropriate MS, hybrid or polyurethane sealants. Fill the rod holes and bevel horizontal-vertical cold joints with **AQUAFIX EXPAN**. Block water incoming holes with **AQUASTOP**.

3. COLD JOINTS

The surface must be clear of any material that prevents bonding.

PREPARATION OF THE MORTAR

Add mixing water to the AQUAFIX S powder placed in a clean mixing bucket. Never do the opposite and always mix only the amount of material you can use within the pot life. Add the water slowly to AQUAFIX S and mix with a 400 – 600 rpm mixer for 3 – 5 minutes until it is homogeneous and lump-free. Add 25 kg of AQUAFIX S powder in 6.5 – 7.5 L water for use as slurry, in 9 – 10 L water for coating. Leave the mixture to rest for 3 – 5 minutes and mix again for 30 seconds before use.

APPLICATION

There are 3 different application methods of AQUAFIX S:

1. **Dry Sprinkle:** For the right amount of consumption, create 2 m x 3 m (6 m²) slabs after the molds are fixed on the lean concrete and the raft reinforcements are connected. Place the bags of 25 kg of AQUAFIX S into the slabs and spread the content of each bag into the slabs over the iron reinforcement with a consumption of 3 kg/m², just before the raft foundation concrete is poured. It is applied as dry sprinkle as the existing water molecules in the unset concrete are sufficient for AQUAFIX S to react.
2. **Slurry:** Add 25 kg of powder AQUAFIX S to 6.5 - 7.5 liters of water and pour the thick viscous slurry on horizontal and vertical cold joints before the mold is closed or apply with a brush. In cases where hydrostatic pressure is high, it is recommended to use **IMPERMO ACRYL-300 Acrylic Based Water Swelling Tape** or **IMPERMO Sodium Bentonite Based Water Swelling Tape** for cold joints.
3. **Coating:** Saturate the surface with water and keep it moist on foundation side and shear concrete surfaces. Add 25 kg of AQUAFIX S to 9 – 10 liters of water and apply to the surface with a brush, with a total consumption of 2 kg/m², 1 kg/m² on each layer. (For monitoring the application, it is recommended to use red AQUAFIX S in the first layer and grey AQUAFIX S in the second layer.) Apply the second layer within approximately 3-4 hours after the first layer is set but not completely dry. Spray water for curing for 3 – 4 days after the application for curing.

It is recommended to waterproof with AQUAFIX S coating application from the negative side due to segregations and cold joints that may occur in shear concrete when **AQUAFIX LIQUID Crystallized Capillary Waterproofing Concrete Admixture** poured from one-side using mold. Use **AQUAFIX EXPAN High Strength Non-shrinkage Waterproofing Structural Repair Mortar** for repairs and bevelling.

CAUTION

- Application in temperatures between +5°C and +35°C will increase the product performance on shear walls and cold joints.
- Avoid application in frozen areas, areas where there is a risk of freezing within 24 hours or open to direct sun and wind.
- Do not add powder and water to the expired mortar. Stir frequently to maintain the consistency of the mortar during application.
- Since water pressure accelerates the formation of crystals and the penetration of AQUAFIX S into the concrete, fill the structures such as water tanks with water 24 hours after the last layer of AQUAFIX S. A complete waterproofing is usually achieved after 5 – 7 days. Fill the soil at the end of this period.
- The formation of minerals in the concrete and the depth of their penetration into the concrete depend on the quality of the concrete, the capillary void ratio in the concrete and the absorbency of the surface. The better the curing with water, the better the material will penetrate into the concrete. Do not use any other curing liquid other than water.
- The crystals formed by AQUAFIX S can create an undecorative appearance on shear walls isolated from negative side. In order to prevent this, plaster when the last layer of AQUAFIX S is still wet and paint on the plaster. If the area will be covered with ceramic or tile, apply the ceramic adhesive directly on the freshly applied AQUAFIX S. If the coverings will be done on cured AQUAFIX S, wipe the crystals on the surface with diluted hydrochloric acid or bleach, then apply the plaster on it. This wiping process only destroys the crystals on the surface, does not damage the crystals that have penetrated into the concrete.
- Use protective glasses and gloves during application.
- The concrete poured must also contain sulphate-resistant cement.



Technical Data Sheet (TDS)

Form No: 5.01 TDS Aquafix S
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SHELF LIFE

Expires in 12 months. Store unopened packages in a dry environment, stack maximum 10 on a pallet.

HEALTH AND SAFETY

As with all chemical products, avoid contact with food, skin, eyes and mouth during usage and storage. During the application, use work clothes, protective gloves, goggles and mask in accordance with the occupational and worker health regulations. Consult a doctor if accidentally swallowed. In case of contact with skin, rinse with water. Keep out of reach of children.

The application instructions and technical values given for the products have been obtained in accordance with our tests and experiences in accordance with international standards at $23\pm 2^{\circ}\text{C}$ temperature and $50\pm 5\%$ relative humidity conditions. These values may vary depending on ambient conditions. High temperatures shorten the times, low temperatures lengthen them. Before starting the application, the user should test whether the product is suitable for the application and purpose. FIXA Construction Chemicals Ltd. is not responsible. This Technical Data Sheet remains valid until the next revision is published. FIXA reserves the right to change the values specified in this Technical Data Sheet, provided that the new version is published. It is the user's responsibility to check that the document is up-to-date. Please contact our sales department for more information.