Koster BDM - Watertight Concrete Sealing Liquid

Integral Waterproofing is the term for the mass hydrophobization and waterproofing of concrete. This works in three different ways:

1. Densifiers
The materials consist of pozzolans (silica fume or other silicates) which react in contact with water. Desifiers have very small grain size, (usually 1/100th of a cement grain) and fill the micrscope pores of the concrete. They also create a higher compressive strength and resistance to salts. This makes them a favourite additive for bridging and road concrete.

2. Hydrophobizing agents 'Repellants'
Usually a stearate or petroleum based oil, but can also be siloxanes; these additives change the surface tension of the concrete pores and cause the water to bead on the surface. This type of integral waterproofing is mostly used above grade because it will not make the concrete resistant to pressurized water.

3. Crystallizing agents
These ingredients react in the presence of water with the calcium hydroxide ($Ca(OH)_2$) and other cementitious by-products to create water insoluble crystals. These agents can be applied to the surface or added to the concrete mixture. This agent reduces water loss, reduces the shrinkage, and increases the compressive strength of concrete. Crystalline integral waterproofing admixes have a "self healing effect" and can seal cracks up to 0.5mm. These agents are used where high hydrostatic pressure is to be expected.

Koster BDM is a product that combines all three ingredients and methods. Because of this it offers all the advantages that densifiers, hydrophobizing agents, and crystallizing agents have.

- It increases the chemical resistance of concrete
- It increases the compressive strength
- It hydrophobized and plugs the pore structure in the concrete

A big advantage is its use as a liquid additive, which is directly given to the mixing water during the concrete production process. Due to this clumping is avoided and the low viscosity allows for an even and equal distribution throughout the concrete microstructure.

Concrete members produced with Koster BDM are waterproof. The huge resulting advantage is that an additional waterproofing (for example with bituminous coatings) is no longer needed. An integral waterproofing with Koster BDM is also possible in hard to access construction members. Mechanical damages to the surface of the structure does not affect the water tightness.

Note: The final quality of a concrete is not only a question of its components. Mixing, transport, and placement all play a vital role in the final quality. The best additive can make a marginal concrete

acceptable, but it cannot make a bad concrete good. Quality begins with the concrete mix design. Monitoring and testing belong to the whole process as well as diligent control of the raw materials.

A complete waterproofing does not only consist of concrete. Openings, penetrations, control joints, and transitions must be planned in detail and carefully executed.

Koster Construction Chemistry offers solutions for all these situations.

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