Project Report/November 2024

Surface Protection through Hydrophobic Impregnation for the Pilaster Strips of the Egbert-Gymnasium

The Egbert-Gymnasium Münsterschwarzach (EGM), founded in 1901, is a state-recognised secondary school governed by the Benedictine Abbey of Münsterschwarzach in the Lower Franconian district of Kitzingen (Bavaria, Germany). School operations will continue during the comprehensive general renovation in several construction phases. The refurbishment is scheduled to be completed by the 125th anniversary celebrations in 2025.

In the fourth construction phase, the building owner decided to retain the visual structure of the day care centre's architecture. The approximately 700 square metres of pilaster strips of the modern concrete facade were given a thorough cleaning using high-pressure jets. The in-house craftsmen reprofiled any damage or breakouts that occurred using the **quick-repair mortars StoCrete SM** or **StoCrete SM P**. The latter was used when the damaged area required corrosion protection for the reinforcing steel. The rapid hardening of both mortars meant that a timely overcoating was possible.

The facade then received a hydrophobic impregnation with the silane gel **StoCryl HG 200**. The gel was applied undiluted to the concrete substrate using airless spraying method in the desired layer thickness.

Hydrophobic gel protects the concrete

StoCryl HG 200 forms a protective layer several millimetres thick under the concrete surface. Unlike a conventional hydrophobic impregnation, StoCryl HG 200 completely blocks the capillary absorbency of the porous concrete edge zone. This is made possible by the high penetration depth of the active agent of around six millimetres. The concrete edge zone remains permeable to water vapour.

Long-chain silanes and bentonite carrier material

The **StoCryl HG 200** hydrophobic gel is based on long-chain silanes and the bentonite carrier material. This non-Newtonian fluid allows large amounts of material to be applied in one step. Thus, a large active agent layer is available on the component surface. The interfacial tension

between the silane and the pore wall filled with water, actively transports the agent into the concrete edge zone. The surface tension of the long-chain silanes changes very slowly. This enables a long penetration time and a high penetration depth.

Positively influence the service life of concrete structures

Deep hydrophobic impregnation can increase the service life of new buildings, but also of existing structures. This significantly reduces the costs of a concrete structure in relation to its life cycle. This is sustainable.

Long-term studies confirm effectiveness and durability

StoCryl HG 200 protects reinforced concrete permanently and effectively against the penetration of water and water-soluble pollutants. It thus prevents damage caused by frost, chloride ingress and chloride-induced steel corrosion. The service life of the structure is significantly extended. Both research results and successful practical experience from the last 15 years prove that the deep hydrophobic impregnation of cement-bound components is an effective and sustainable protective measure against the ingress of substances that are aggressive to concrete.

It is precisely these properties that fulfil the building owner's refurbishment plan to secure and protect the high school and its buildings for the future.

Properties of **StoCryl HG 200**

- StoCretec hydrophobic impregnation gel (Class II)
- For the protection of concrete structures (concrete and reinforced concrete)
- Very good depth of penetration
- Very high and long-lasting effect
- Prevents the ingress of water and harmful substances dissolved in water
- As preventative protection against chloride corrosion
- Regulates moisture balance
- Very high agent content

- Very long contact time
- Very good application properties
- Application by airless spray method in required thickness in one application cycle
- In accordance with EN 1504-2
- Surfaces subject to foot or vehicle traffic on request
- Transparent appearance
- Can be overcoated with StoCryl V 100 or StoCryl V 200

Properties of **StoCrete SM / StoCrete SM P**

- StoCretec quick repair mortar
- StoCrete SM P: with integrated corrosion protection
- Polymer-modified, cementitious repair product (PCC / RM)
- For the repair of concrete structures (concrete, reinforced concrete, and lightweight concrete)
- As a fairing coat (3 - 5 mm)
- Layer thickness 3 - 40 mm
- Very good adhesive strength on a concrete substrate
- Very good application overhead
- Very good non-sag properties
- Rapidly curing
- Can be quickly over-coated
- In accordance with EN 1504-3

Who & What

Project:	Facade Egbert-Gymnasium, Münsterschwarzach, DE
Investor:	Abtei Münsterschwarzach K.d.ö.R., Münsterschwarzach, DE

StoCretec [Project]

Planner:	Jäcklein Architekten, Volkach, DE	
Applicator:	Abtei Münsterschwarzach, Münsterschwarzach, DE	
Realisation:	8/2024	
StoCretec Competence:	Deep hydrophobic impregnation	**StoCryl HG 200**
	Quick repair mortar	**StoCrete SM**
	Quick repair mortar	**StoCrete SM P**

Photos: Courtesy of Abtei Münsterschwarzach

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