HENSEL

FIRE PROTECTION SYSTEMS

HENSOTHERM® 820 KS

APPLICATION GUIDELINE

Water-based 1C coating system for upgrading concrete structural members in indoor areas

Member of DGNB

Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council

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FIRE PROTECTION SYSTEMS

Contents

Product | Coating instructions Page 3
Preparing the concrete substrates / surface requirements Page 3
Preparations on damaged concrete surfaces Page 3
Priming / carbonising blocker Page 3

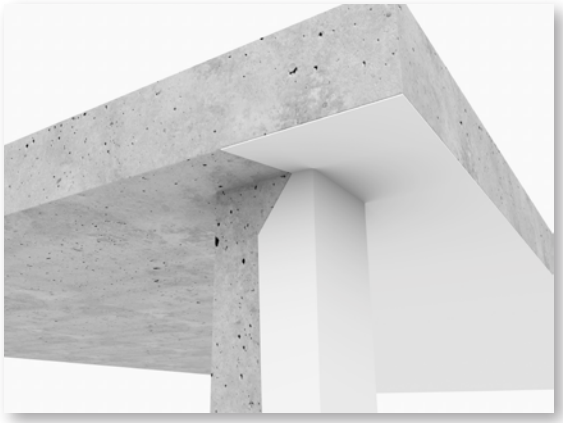
Airless spraying | Coating structure | Drying times Page 4

Application | Methods for measuring coating thicknesses Page 5

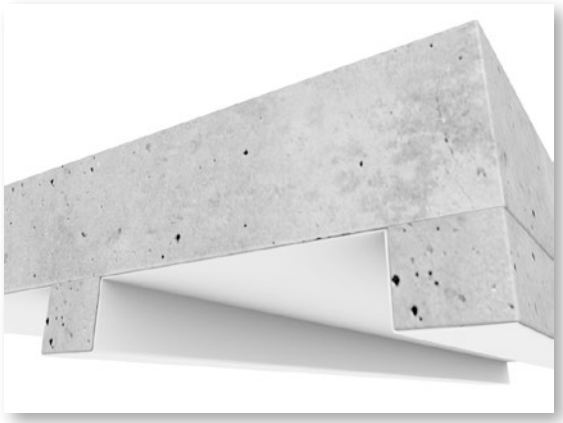
Notes on cladding/suspensions | Labelling Page 6
Use and inspection | Work safety / environmental protection Page 6

Note: HENSOTHERM® 820 KS may be applied only by specialists trained by us beforehand.

Field of application



Flat concrete floors and concrete supports



Flat concrete floors, -walls and concrete carriers

Concrete hollow core slabs

Ribbed floors on request

Product

HENSOTHERM® 820 KS is a water-based, single-component coating system for upgrading concrete structural members in indoor areas.

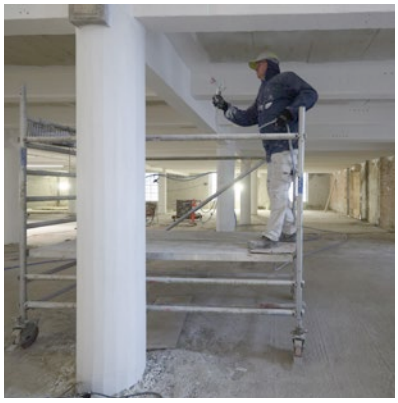
Colour: White, approx RAL 9010

Delivered form of HENSOTHERM® 820 KS: 25 kg packaged unit
Delivered form of BETON-CARBONSPERRE: 21 kg packaged unit
Delivered form of Betongrund AQ (concentrate): 5 kg packaged unit
Delivered form of HENSOTOP WB Green:5 kg / 10 kg packaged unit

Storage and transport at min +5 °C to max +30 °C. Protect against frost!
Unopened packaging has a 12-month shelf life.

NOTE: If necessary, HENSOTHERM® 820 KS can be thinned with water (max 5 %).
Opened packaging must be sealed carefully.

Coating instructions



Preparing the concrete substrates / surface requirements

- Remove old coatings, clean concrete substrates, repair damaged areas
- The concrete surfaces must be rough, have good grip, and be free of dusts, cement clouds, efflorescences, oils, and greases.
- The concrete must be dry (test as defined in ASTM D 4263) and/or residual moisture of max 4 % according to CM

Preparations on damaged concrete surfaces

Chipped spots, cracks, unevenness, roughness, pores, and blowholes must be sealed with DisboCRET repair mortars (please see the manufacturer's instructions).

- Defects: DisboCRET 505 Feinspachtel or DisboCRET 506 Planspachtel (with 15 – 20 % sand filler)
- Cracks: DisboCRET 505 Feinspachtel or DisboCRET 506 Planspachtel
- Alternatively, comparable STO and Ardex products may be used.

NOTE: The quality of concrete surfaces varies from project to project, so we recommend creating a suitable sample area. This sample area can be used to assess compatibility with the fire protection system.

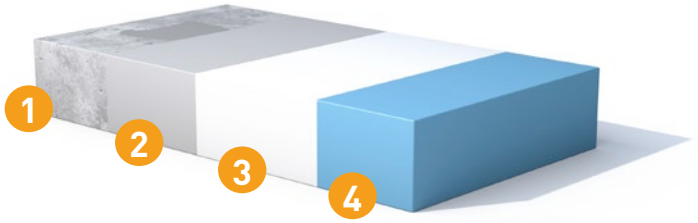
Priming / carbonising blocker

BETON-CARBONSPERRE primer is proof against the penetration of water and pollutants and impedes the infiltration of harmful CO_2 and SO_2. As an alternative, Betongrund AQ primer may also be applied to indoor concrete substrates without risk to the environment.

Airless spraying

- Recommended nozzle size: 0.017 – 0.025", depending on targeted coating thickness
- Recommended working pressure: 200 – 250 bar
- Discharge > 4.5 l/min
- Detach intake hose from airless sprayer
- Filters can be left in the airless pump and spraying gun.
- Apply a wet film thickness no thicker than 700 µm in the first operation.
- Wet film thickness per operation: max 1,500 µm
- Application volume: 1.00 mm dry film thickness = 1.4 mm wet film thickness = 2 kg/m²

Coating structure



1. Repair mortar
2. BETON-CARBONSPERRE or Betongrund AQ
3. HENSOTHERM® 820 KS
4. HENSOTOP WB Green

Coating structure for indoor concrete parts		Flat ceilings / walls	Carriers / supports	Ribbed ceilings	Prestressed concrete hollow ceilings
Concrete surfaces must be **rough**, have good grip, and be free of dusts, oils, and greases.		●*	●*	●*	●*
Primer	BETON-CARBONSPERRE [2 × 140 g/m²]	●	●	●	●
	Betongrund AQ [approx 120 g/m²]	○[1]	○[1]	○[1]	○[1]
Insulation layer former	HENSOTHERM® 820 KS	●	●	●	●
Top coat, with colour	HENSOTOP WB Green	○	○	○	○

● = mandatory use!
○[1] = alternatively, in dry indoor areas when infiltration by CO_2 and SO_2 need not be prevented (protected from adverse environmental effects)
○ = optionally in dry indoor areas (protected from adverse environmental effects)
* Old coatings must be removed free of residue. Blast treatment

Drying times

The drying time depends on temperature and air humidity.
Adequate ventilation must be provided during drying! Material, room, and building temperatures of +20 °C and a relative air humidity of about 65 % result in the following drying times for about 2,000 g/m² or a 1.0 mm dry film thickness:

Thoroughly dry / ready for recoating, depending on the applied coating thickness, at the earliest after 24 hours and after a successful fingernail test

Low temperatures, a higher air humidity, inadequate air circulation, and varying coating thicknesses can increase the above drying times.

Application

HENSOTHERM® 820 KS may be applied only by trained professionals!

Note before applying:
- The primer BETON-CARBONSPERRE* must have dried thoroughly!
- The substrate's mean tear-off strength must be ≥ 1.5 N/mm².
- HENSOTHERM® 820 KS must be mixed thoroughly with a slow agitator!

HENSOTHERM® 820 KS should be processed preferably at a room temperature of ≥ +10 °C and a relative air humidity of < 80 %. The surface temperature should be at least 5 °C higher than the determined dew point, and in all cases above 0 °C.

NOTE: Cracking may be promoted by excessive quantities applied per pass, inadequate ventilation during drying, and failure to heed the required ambient conditions.

Methods for measuring coating thicknesses

Dry film thickness (DFT) can be measured electronically by means of the following methods:

1. **Steel plates:** Before commencing the application, use assembly adhesive or double sided adhesive tape to affix primed[1] or galvanised steel plates of 10 cm x 6 cm and approx 1 – 2 mm thickness to the dry concrete surface.

   [1] The dry film thickness of the primer must be deducted from the measured overall dry film thickness.

2. **Aluminium foil:** Before commencing the application, use spray/assembly adhesive or double sided adhesive tape to affix pieces of aluminium foil of 10 cm x 6 cm to the dry concrete surface.

Note: Do NOT forget to note the position of the affixed steel plates or the aluminium foil e.g. on a drawing. After coating and drying (nail hardness), they can then be located easily and quickly, and an electronic meter applied to them to measure the dry film thickness.
The steel plates or aluminium foil at the measuring sites remain under the coating because they do not compromise the fire protection properties of HENSOTHERM® 820 KS.

3. **Calculating the dry film thickness:** The dry film thickness (DFT) can also be calculated as a function of the ratio of total coated area in m² to the total material consumption in kg. The total material quantity is taken to be the net quantity of material applied. Pot and spatter losses must be deducted from this value.

$$\textbf{DFT}\ [\mu m] = \frac{\textbf{total material consumption}\ [kg]}{\textbf{coated area}\ [m^2]} \times \mathbf{500}$$

NOTE: While HENSOTHERM® 820 KS is being applied, the wet film thickness (WFT) should be checked regularly by means of a suitable gauge.

Notes on cladding/suspensions

Suspensions, threaded rods, pins, etc., may be fitted, but must not exceed a diameter of 20 mm. Other bearing sites may not exceed a diameter of 25 mm. Unless the quantity exceeds 1 per square metre, no compensation measures are necessary, and any heat input in the event of fire may be neglected.
The coatings may not be cladded or jacketed: this may prevent the insulation layer former from foaming.
(If necessary, request spacings)

Labelling

After the coating work has ended, the treated parts must be provided with the permanent labels provided for this purpose by Rudolf Hensel GmbH.

Use and inspection in dry indoor areas

For every application of reactive fire protection coating, the applicator must inform the principal in writing that the fire protection effects are safeguarded only when the reactive fire protection coating is maintained in a proper condition at all times. The coated components must be accessible to inspection and maintenance work.

Visual inspections and control and maintenance work are facilitated when the plans include the corresponding inspection flaps in suspended ceilings, walls, cladding, etc. We recommend planning for at least one inspection flap per room. Our experience has shown that about 3 – 5 flaps should be fitted at prominent places in a gross floor space of 1000 m². If necessary, visual inspection may also be conducted with an endoscope.

Work safety / environmental protection

Use HENSOTHERM® 820 KS in accordance with all applicable local and national regulations. **Giscode: M-DF01**
Legal regulations change frequently. The labelling and environmental protection details must therefore be taken from the current safety data sheet. This can be downloaded from the product's webpage:
www.rudolf-hensel.de/820KS

NOTES

Our technical advisers will be pleased to assist you with your enquiries.
Further details can be downloaded from: **www.rudolf-hensel.de/820KS**

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