



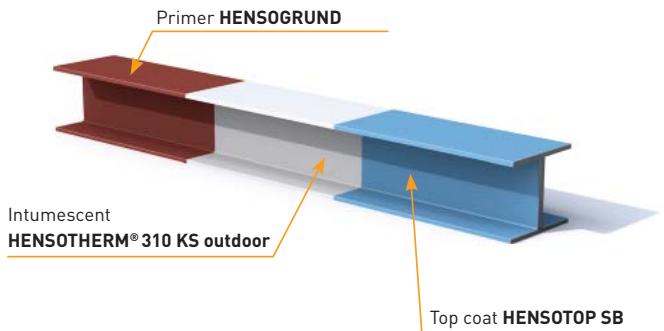
HENSOTHERM® 310 KS outdoor

FIRE PROTECTION SYSTEM FOR STEEL TECHNICAL DATA SHEET

- Fire resistance class R 30–R 60; R 30 up to U/A 470 m¹
- DIN EN 13501-2 approved
- ETA 20/1230
- **Application: Indoor / temporary and protected outdoor applications / outdoor applications¹**
- AgBB tested: approved for use in common rooms
- Suitable for construction sites and workshop coatings
- Certified minimum service life of 25 years in dry indoor areas

TECHNICAL INFORMATION

HENSOTHERM® 310 KS outdoor is a solvent based, single component (1C) fire protection coating for upgrading steel sections and steel structures in indoor and outdoor areas and in open buildings¹. **HENSOTHERM® 310 KS outdoor** presents a convincing combination of ultra thin coating thicknesses, short drying times, and high cost effectiveness. This maintenance-free fire protection system consists of the primer **HENSOGRUND**, the intumescent **HENSOTHERM® 310 KS outdoor**, and the top coat **HENSOTOP**. In dry indoor areas (Z2) it is also suitable without top coat.



With a fire resistance time of R 30–R 60, the fire protection system **HENSOTHERM® 310 KS outdoor** is suitable for the following applications on steel structures:

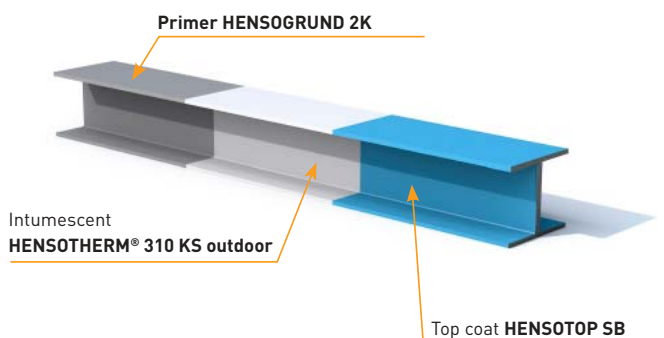
coating of standard R 30/60 sections

- ✓ **I/H sections:** girders / compression and tension members (loading rate when cold < 78%)
- ✓ **Hollow sections (circular/square):** compression members / columns

Suitable system components like e.g. primers and top coats can be taken from the following page 3. The 1C fire protection system is applied before shipping or directly on site. This poses no problems especially when applied as an upgrading or renovation measure in existing buildings.

25
YEARS
SERVICE LIFE
HENSOTHERM® 310 KS

Rudolf Hensel GmbH is the first manufacturer of fire-protection systems to be awarded the **official certificate** under the European assessment procedures for the **extended 25-year service life in dry indoor environments (Z₂)**. The current general type approval (aBG) verifies a minimum 25-year service life in dry indoor areas for **HENSOTHERM® 310 KS outdoor** fire-protection system for steel.



Buildup on galvanised steel sections

- The galvanising plant must fulfil additional requirements if the zinc coating is subsequently treated or is to take an additional coating (see 6.3): DIN EN ISO 1461:2009-10, Annex A
- The galvanised components must have degassed completely prior to coating with HENSOGRUND 2K (blistering!)
- Clean / remove completely all coatings and residue compromising adhesion. Afterwards prime with HENSOGRUND 2K.

¹No warranty accepted for outdoor applications when there are no annual inspections, documentations, and repairs!

TECHNICAL INFORMATION

Approval/classification

- DIN EN 13381-8 tested
- ETA-20/1230
- VKF no. 24647
- CE marking in accordance with 93/68/EEC

Field of application

- According to EAD 350402-00-1106 use categories X/Y/Z1/Z2, suitable for indoor / temporary and protected outdoor applications / outdoor applications¹
- Stagnant moisture must be eliminated by the design! Bases, e.g. in multistorey car parks, must be designed accordingly.
- According to EN 10025-1 for construction steels (designation S, but not S185), not suitable for machine steel (designation E)

Notes on cladding, jacketing, connections

The steel components treated with this reactive fire protection coating may not be clad or jacketed: this may prevent the intumescent from foaming.

The sites connecting to other components must afford adequate protection against the effects of fire on the treated component, or the connected components must suppress the heat transferred to the treated component.

Applying in all other cases is DIN 4102-4: "Fire behaviour of building materials and building components – Part 4: Synopsis and application of classified building materials, components and special components".

Coating instructions

NOTE: 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, and he must specify the coating materials that may be used to repair and renew the reactive fire protection coating.

Fire protection coatings in outdoor areas must be subjected to annual inspections / visual checks and repairs.

The coated components must be accessible to inspection and maintenance work.

- The coating system may be processed by trained professionals only!
- When each coating substance is being applied, the material, substrate, and air temperature may not fall below +5 °C nor the relative air humidity exceed 80%.
- During the application, the surface temperature of the coated parts must be at least +3 °C above the dew point of the ambient temperature.
- The treated surface temperature may not exceed 25 °C.
- Higher ambient temperatures and powerful air currents accelerate drying, resulting in an inhomogeneous surface (clouding).
- **Warranty claims must be supported by daily coating logs. Blank forms available from Rudolf GmbH.**
- **All supporting standards such as DIN 4102, aBG, DIN EN ISO 12944-4, etc., must be considered in the planning and application stages. Accessibility must be safeguarded for possible inspections.**

Outdoors: Annual inspection

Indoors: Inspection every 2 years

¹ **NOTE: No warranty accepted for outdoor applications when there are no annual inspections, documentations, and repairs!**

Workshop coating

The temperature of the steel surface and the ambient temperature must remain between +10 °C and max +25 °C during the coating procedure. Please request our technical data sheet for the workshop coating.

Surface preparation / primer

NOTE: Adequate corrosion protection must be provided. This varies with the surface roughness.

Uncoated sections

- Blasting according to preparation level Sa 2.5, DIN EN ISO 12944-4; afterwards priming with HENSOGGRUND 1966 E*, HENSOGGRUND 1K AK*, or HENSOGGRUND 2K EP*.
- There may have to be manual derusting according to preparation level PS2 / St 2, DIN EN ISO 12944-4; afterwards priming with HENSOGGRUND 1K AK*.

Primed sections

- Third party primer tested for its suitability as a substrate for HENSOTHERM® 310 KS outdoor; see data sheet "Testing old coatings on steel structures".
- If unsuitable, the third party primer must be removed. Then proceed as for uncoated sections.
- If suitable, it must be examined for damage and, if necessary, touched up with the primer used.

After extended weathering, primed sections must be examined for damage, and their dry film thickness measured and, if necessary, touched up prior to the application of HENSOTHERM® 310 KS outdoor! Further details can be taken from the technical data sheets for our HENSOGGRUND priming products.

Galvanised sections

- The galvanising plant must fulfil additional requirements if the zinc coating is subsequently treated or to take an additional coating (see 6.3): DIN EN ISO 1461:2009-10, Annex A.
- The galvanised components must have degassed completely prior to coating with HENSOGGRUND 2K* (blistering!).
- Clean / remove completely all coatings and residue compromising adhesion. Afterwards prime with HENSOGGRUND 2K*.

Application

Before application, mix thoroughly with a slow agitator! Clean equipment with water immediately after use!

Airless spraying

- The optimal spraying results are obtained when HENSOTHERM® 310 KS outdoor is at room temperature.
- The product may be diluted with max 5% HENSOTHERM® V45 or HENSOTHERM® V60.
- Suitable equipment is all airless pumps generating a material pressure of 200–250 bar, fitted with a spray nozzle of 0.017–0.025D, and delivering >4 l/min.
- Equipment filters may be left in place, but all others should be removed.
- Up to 1000 g/m² (approx 550 µm dry film thickness) can be applied in the one operation.

*** Please consult the respective technical data sheet.**

TECHNICAL INFORMATION

- If more than one spraying operation is needed to obtain the required dry film thickness, the first should not apply more than 500 g/m² (approx 275 µm dry film thickness). The next intumescent or top coat may not be applied until the material is fingernail proof.
- The actual quantity applied in the one operation varies with the section type.

Rolling and brushing

Apply with a solvent resistant, short to medium pile or mohair roller

- Apply with a solvent resistant, long China bristle brush

NOTE This product dries quickly, so brushes and rollers are recommended for touching up small areas only.

Drying time

- At a material, room, and substrate temperature of +20 °C and under a relative air humidity of 65%, each coating (max 1000 g/m²) requires at least 24 hours to dry.
- Each coating must have dried thoroughly before taking the next or touching up (fingernail proof).
- Lower temperatures, higher air humidities, and/or inadequate air circulation extend the drying time!

Top coats

HENSOTOP top coats offer a range of colours and protection against moisture and should be applied when the surfaces are exposed to environmental and cleaning effects. They may not be applied until the last HENSOTHERM® coating has dried thoroughly, i.e. no earlier than 24 hours and after a successful fingernail test! The top coat is not needed in dry indoor areas free of condensation. Dark top coats* should not be used on steel surfaces exposed regularly to temperatures in excess of +45 °C. HENSOTOP top coats are available in RAL and DB colours or matching custom colour samples.

HENSOTHERM® 310 KS outdoor is compatible with the following top coat*: HENSOTOP SB, HENSOTOP 2K PU

Storage and transport

- Storage and transport at min +5 °C and max +30 °C. Protect against frost!
- Shelf life of unopened packaging 20 months (at 20 °C).
- Seal opened packaging carefully!

NOTE: Temperatures outside of the specified limits reduce the shelf life.

Packaging

6 kg and 25 kg

Work safety

Use HENSOTHERM® 310 KS outdoor in accordance with all applicable regulations for work safety and environmental protection. Giscode: M-DF01

Labelling and environmental protection

Legal regulations change frequently. The labelling and environmental protection details must therefore be taken from the current safety data sheet.

*** Please consult the respective technical data sheet.**

Our technical advisers will be pleased to assist you with your enquiries.

Further details can be downloaded from: www.rudolf-hensel.de/310KSA

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