

HENSEL
FIRE PROTECTION SYSTEMS

FIRE PROTECTION COATING FOR STRUCTURAL STEEL SECTIONS

TECHNICAL DATA SHEET HENSOTHERM® 471 KS

- Water-based, intumescent coating system
- Free from halogens, APEO, borates, plasticizers and silicones
- Approved according to BS 476, Certifire No. CF 5344
- Fire resistance rates from R 15 up to R 180 for open and hollow profiles

warrington fire certifire CERTIFICATION
APPROVED PRODUCT CF 5344

THIRD-PARTY VERIFIED EPD ISO 14025 and EN 15804 Institut Bauen und Umwelt e.V.

LEED v4

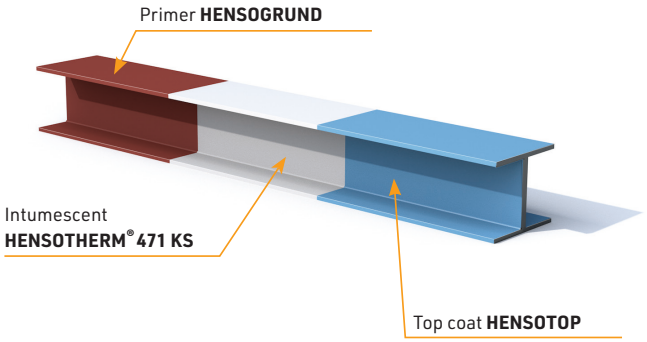
SINGAPORE GREEN BUILDING PRODUCT SGBC
SGBP 5560
VERY GOOD

green product HENSEL

Brandschutz-Beschichtungen Fire Protection Coatings HENSEL Rudolf Hensel GmbH Made in Germany

TECHNICAL INFORMATION

HENSOTHERM® 471 KS is a waterborne, single component (1C) fire protection coating for upgrading steel sections and steel structures in indoor areas, open buildings, and outdoor areas shielded against driving rain and condensation. HENSOTHERM® 471 KS presents a convincing combination of ultra thin coating thicknesses, short drying times, and high cost effectiveness. Based on the primer HENSOGRUND, the insulation layer former HENSOTHERM® 471 KS, and the top coat HENSOTOP, this fire protection system is maintenance free.

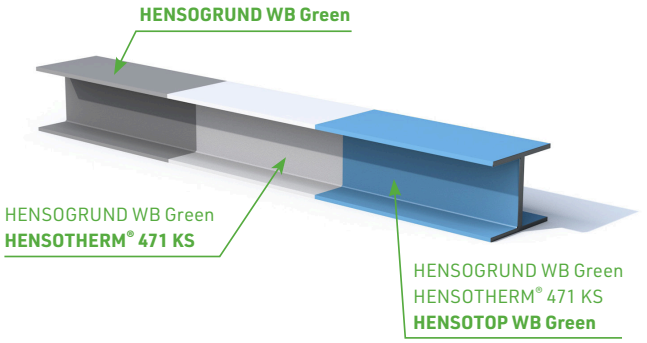


With a fire resistance time of R 15–R 180, the fire protection system HENSOTHERM® 471 KS is suitable for the following applications on steel structures:

coating of standard R 15/30/60/90/120 sections

- ✓**I/H sections:** girders / compression members / columns
- ✓**Hollow sections** (circular/square): compression members / columns
- ✓**Box sections:** girders/supports

Suitable system components like e.g. primers and top coats can be taken from the following page 3. In general, the 1C fire-protection system is applied directly on site. This poses no problems especially when applied as an upgrading and/or renovation measure in existing buildings, e.g. public offices, schools, and hospitals.



Structure for sustainable building

Complete Green Product system – All components for forming the HENSOTHERM® 471 KS fire-protection system are waterborne for sustainable building:

- **NEW:** HENSOGRUND WB Green, primer with VOC < 1 g/m²
- **HENSOTHERM® 471 KS,** intumescent paint with VOC < 1 g/m²
- **NEW:** HENSOTOP WB Green, top coat with VOC 3.5 g/m²

Product properties of HENSOTHERM® 471 KS

- Waterborne, environmentally friendly
- Non-VOC, VOC emission class A+. LEED v4
- Environmental Product Declaration (EPD)
  EPD-RHG-20240229-IAA3-EN
- Singapore Green Building Product (SGBC - very good)

APPROVED PRODUCT
CF 5344

TECHNICAL INFORMATION

Approval/classification

- Approved according to BS 476
- Certifire Certificate No. CF 5344
- The product system is subject to internal and external monitoring.

Field of application

- For indoor use only
- Structural steel profiles as columns / beams / girders / I- / H-sections
- R 15 – R 180 open steel profiles
- R 15 – R 180 hollow sections
- Up to R 180 usable without top coat in dry indoor conditions[1)] according to BS 476
- Coated steel components shall not be receive coverings or miscellaneous jackets which prevent the intumescent fire protection coating from foaming / expanding! Only those components may be connected force-fit, which comply with the same fire resistance rate.

[1)] If surfaces are exposed to cleaning the use of the top coat HENSOTOP is mandatory!

Notes on cladding, jacketing, connections

The steel components treated with this reactive fire protection coating may not be cladded 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.

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.
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 +5 °C above the dew point of the ambient temperature.
- The treated surface temperature may not exceed +35 °C.
- **Warranty claims must be supported by daily coating logs. Blank forms available from Rudolf GmbH.**
- **All supporting standards such as EN ISO 12944-4, etc., must be considered in the planning and application stages. Accessibility must be safeguarded for possible inspections.**

Workshop coating

The temperature of the steel surface and the ambient temperature must remain between +10 °C and max +35 °C during the coating procedure. For further questions, please contact our technical support team.

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 HENSOGRUND WB Green*, HENSOGRUND 1966 E+, HENSOGRUND 1K AK, or HENSOGRUND 2K EP*.
- There may have to be manual derusting according to preparation level PSt 2 / St 2, EN ISO 12944-4; afterwards priming with HENSOGRUND 1K AK*.

Primed sections

- Third party primer tested for its suitability as a substrate for HENSOTHERM® 471 KS; 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® 471 KS!
Further details can be taken from the technical data sheets for our HENSOGRUND priming products.

Galvanised 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): EN ISO 1461: 2009-10, Annex A.
- The galvanised components must have degassed completely prior to coating with HENSOGRUND WB Green* or HENSOGRUND 2K* (blistering!)
- Clean / remove completely all coatings and residue compromising adhesion. Afterwards prime with HENSOGRUND WB Green* or HENSOGRUND 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® 471 KS is at room temperature.
- If necessary, dilute with max 3 % water.
- Suitable equipment is all airless pumps generating a material pressure of 200–250 bar, fitted with a spray nozzle of 0.017 "– 0.025 ", and delivering > 4 l/min.
- We recommend removing all filters.
- Up to 1.000 g/m² (approx 500 µm dry film thickness) can be applied in the one operation.
- If more than one spraying operation is needed to obtain the required dry film thickness, the first should not apply more than 700 g/m² (approx 350 µm dry film thickness). The next intumescent or top coat may not be applied until the material is fingernail proof and exhibits a residual moisture < 5 %.
  TIP: Quantifying the residual moisture, e.g. with the moisture meter EXTECH MO 100 or GMH 3850.
- The actual quantity applied in the one operation varies with the section type.

TECHNICAL INFORMATION

Rolling and brushing

- Apply with a lambskin roller or long-bristled Chinex brush

NOTE: Adequate ventilation must be provided during the application! If necessary, a blower must be used.

Drying time

- At a material, room, and substrate temperature of +20 °C and under a relative air humidity of 65 %, each coating (max 1.000 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® 471 KS is compatible with the following top coats*: HENSOTOP WB Green, HENSOTOP SB, and HENSOTOP 2K PU.

Storage and transport

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

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

Packaging

25 kg plastic bucket

Work safety

Use HENSOTHERM® 471 KS in accordance with all applicable local and national regulations.

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/471KS**

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