

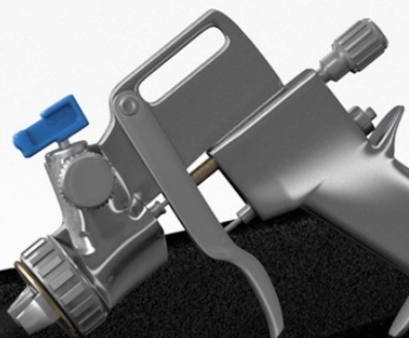
ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Rudolf Hensel GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-RHG-20240228-IBA3-EN
Issue date	14.02.2025
Valid to	13.02.2030

HENSOTHERM® 7 KS
Rudolf Hensel GmbH

www.ibu-epd.com | <https://epd-online.com>



1. General Information**Rudolf Hensel GmbH****Programme holder**

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-RHG-20240228-IBA3-EN

This declaration is based on the product category rules:

Pre-formed fire protection systems for cable and duct insulation ,
01.08.2021
(PCR checked and approved by the SVR)

Issue date

14.02.2025

Valid to

13.02.2030



Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)



Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

HENSOTHERM® 7 KS**Owner of the declaration**

Rudolf Hensel GmbH
Lauenburger Landstraße 11
21039 Börnsen
Germany

Declared product / declared unit

The declared product is HENSOTHERM® 7 KS. The declared unit refers to one kilogramme of product. Packaging is included in the calculation. The declared unit is given in [kg].

Scope:

This document refers to HENSOTHERM® 7 KS. Specific data from the Börnsen manufacturing plant of Rudolf Hensel GmbH was collected for the preparation of the life cycle assessment (LCA). Data from the year 2022 is used as a basis, which corresponds to the annual average. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR		
Independent verification of the declaration and data according to ISO 14025:2011		
☐	internally	☒ externally



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

2. Product

2.1 Product description/Product definition

HENSOTHERM® 7 KS is an intumescent grey-black paint based on expandable graphite. It is a factory-produced dispersion paint with organic binding agents, water and additives.

The coating is classified as low-emission and contains no borates, solvents, plasticisers, halogens, formaldehydes, alkylphenol ethoxylates (APEO), PFAS, or asbestos.

The fire protection coating is part of the Green Product line at Rudolf Hensel GmbH.

Products according to CPR with ETA:

Regulation (EU) No. 305/2011 (CPR) applies to the placing on the market of the HENSOTHERM® 7 KS product in the EU / EFTA (with the exception of Switzerland). The product requires a Declaration of Performance in accordance with *ETA No. 16/0369* for HENSOTHERM® Service Transit and the corresponding CE marking. The respective national regulations apply for use.

2.2 Application

HENSOTHERM® 7 KS has a sound-absorbing effect with a loss factor d from 0.02 to 0.31, in accordance with *DIN 53440 / DIN EN ISO 6721-3*. HENSOTHERM® 7 KS is used for thin-walled sheet metal structures and as a fire-protection coating for aluminium and sheet metal structures, plastics, and insulating materials.

European Technical Assessment according to *EAD 350005-00-1104*: HENSOTHERM® 7 KS is rated as a product that foams up in the event of fire for fire-sealing and fire-retardant applications.

HENSOTHERM® 7 KS is classified in accordance with *EN 13501-1* as Euroclass **E**.

HENSOTHERM® 7 KS was rated by Exova Warringtonfire and fulfils the requirements of class HL 3 for R7 in accordance with *EN 45545-2 - 2016*.

2.3 Technical Data

HENSOTHERM® 7 KS does not contain any hazardous substances above the limit values according to *REACH Regulation, Annex XVII*.

Structural data

Name	Value	Unit
Density (wet)	1150 - 1250	kg/m³
Solids content	61 - 66	%
Reaction to fire acc. to EN 13501-1	Construction material class E	-
Durability / EAD 350005-00-1104 / EOTA TR 024	X, Y1, Y2, Z1 und Z2	-
Lost factor d / DIN 53440 / DIN EN ISO 6721-3	0,02 - 0,31	-

HENSOTHERM® 7 KS is an emission-rated coating material. Sampling, testing and evaluation were carried out in accordance with *AgBB*, *LEED*, *ISO 16000-3*, *ISO 16000-6*, *ISO 16000-9*, and *ISO 16000-11* in their respective current versions; see also Test Report No. 392-2013-00063401.

Germany: HENSOTHERM® 7 KS fulfils the requirements in accordance with the approval principles for the health assessment of building products in interior rooms in conjunction

with the LCI values issued in June 2012 by the *AgBB* (German board for the health assessment of building products).

France: CMR substances: The tested product fulfils the requirements of the *French directive DEVP0908633A* of 30 April 2009 and *DEVP0910046A* of 28 May 2009.

VOC classification: HENSOTHERM® 7 KS has been classified in VOC emission class A+. The recommendation for classification is given on the basis of the French regulation for the labelling of building products or wall and floor coverings, paints and varnishes with regard to emissions of volatile pollutants, as published on 25 March 2011 (*décret DEVL1101903D*) and 13 April 2011 (*arrêté DEVL1104875A*).

Belgium: HENSOTHERM® 7 KS fulfils the requirements set down in the Royal Decree establishing threshold levels for the emissions to the indoor environment from construction products for certain intended uses (draft from December 2012).

HENSOTHERM® 7 KS fulfils the requirements 'for low emitting paint and coating material in credit EQ c4.2 of the *LEED v4* Rating System', and complies with the requirements according to (i) VOC content and *ASTM D 2369-10* and (ii) *SCAQMD Rule 1113*.

Products according to CPR with ETA:

Performance values of the HENSOTHERM® 7 KS product correspond to the Declaration of Performance with regard to its essential characteristics according to *ETA No. 16/0369* and the corresponding CE marking. The respective national regulations apply for use.

2.4 Delivery status

HENSOTHERM® 7 KS is a liquid coating material and is available in plastic containers of various sizes from 6 to 20 kg.

2.5 Base materials/Ancillary materials

Name	Value	Unit
Vinyl acetate copolymer	40 - 60	%
Expandable graphite	15 - 30	%
Ammonium polyphosphate	10 - 20	%
Xanthan-Gum	2 - 10	%
Wasser	1 - 10	%

The in-can preservative contained in the product comes from the isothiazolione group.

2.6 Manufacture

HENSOTHERM® 7 KS is manufactured in a fully-automatically controlled dispersion system. The dosing of liquid raw materials is largely automatic, powders are dosed manually. The preliminary products required for production are made available after an incoming goods inspection. After production of the batches, an in-house quality control is carried out. This includes technical coating and fire protection quality features.

In addition to the factory inspection, official external monitoring is carried out at regular intervals.

2.7 Environment and health during manufacturing

The preliminary products are stored in such a way that they cannot, according to human judgement, enter the environment.

In the case of raw materials that are automatically dosed, direct

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contact between workers and the preliminary products is avoided. Direct contact with the raw material is minimised when dosing the powdered raw materials manually. In addition to sufficiently dimensioned extraction systems, workers are provided with protective clothing and dust masks. Suitable personal protective equipment is also provided.

The production process is optimised in such a way that the system components are cleaned in situ. Any cleaning water produced is fed into the production process as production water. If this is not possible due to a product change, the cleaning water is collected and thermally utilised.

All types of waste are separated, stored, and returned to the recycling circuit.

HENSOTHERM® 7 KS does not contain any substances subject to declaration according to *REACH Regulation, Annex XVII*, and the *ECHA Candidate List*.

2.8 Product processing/Installation

The product can be applied by brushing, rolling, or spraying. Details on substrate pre-treatment, application requirements, and drying behaviour can be found in the relevant technical data sheet
(see www.rudolf-hensel.de)

2.9 Packaging

The coatings are filled into plastic containers made of polypropylene (PP), which are recycled by the customer through a packaging return system. The plastic containers are packed on pallets for shipping and protected with a shrink film made of low-density polyethylene (LDPE).

2.10 Condition of use

HENSOTHERM® 7 KS is an intumescent fire protection coating for the protection of cables and fire protection bulkheads based on an aqueous synthetic resin dispersion. After application of the coatings, the film is formed by physical drying (evaporation) of the receptively contained water. The dried polymer film including the non-aqueous ingredients remains on the coated component.

If HENSOTHERM® 7 KS is exposed to high temperatures in the event of a fire, the product expands and forms a foam that has a fire-sealing and fire-retardant effect. The foam closes joints and gaps, seals gaps and cavities, and thus prevents the passage and spread of heat, smoke, flames, or a combination of these.

2.11 Environment and health during use

HENSOTHERM® 7 KS is a coating with extremely low emissions and is considered to be harmless to human health. Emission tests - carried out in independent laboratories - confirmed that the fire protection coatings fulfil the requirements of various national and international emission standards, with classification in the lowest emission class (see section 7).

The coatings contain no borates, solvents, plasticizers, halogens, formaldehydes, alkylphenol ethoxylates (APEO), PFAS, and no asbestos.

2.12 Reference service life

In accordance with *EAD 350005-00-1104*, HENSOTHERM® 7 KS has a service life of at least 10 years when used as intended.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be

regarded only as a means for choosing the right products in relation to the anticipated and economically reasonable working life of the building.

The prerequisite for a long service life is that the requirements for proper handling and regular inspection of the coated areas are met.

2.13 Extraordinary effects

Fire

Intumescent fire protection coatings are reactive systems, which under the influence of temperature – due to a strong increase in volume (physical blowing agent expandable graphite) – form a carbon-rich insulation layer. Due to its very low thermal conductivity, the insulation layer protects the substrate against a material-destroying temperature increase. Further exposure to temperature finally produces a stable inorganic insulation layer. The effect of the fire protection coating is therefore not reversible.

Fire protection

Name	Value
Building material class acc. to EN 13501-1	E

Water

HENSOTHERM® 7 KS is a fire protection coating for dry indoor areas / open halls and must not be exposed to permanent wetness.

Mechanical destruction

HENSOTHERM® 7 KS can be repaired with itself. The area to be repaired must be checked to ensure that it is free of dust and grease.

There are no known consequences for the environment due to unforeseen mechanical destruction.

2.14 Re-use phase

Due to the organic content, HENSOTHERM® 7 KS has a substance-inherent energy content that can be recovered in incineration plants.

Taking into account the carbon content of the coating, the steel coated with the aforementioned fire protection coatings can be fed directly into the steel recycling process. In the event that the fire protection coating is to be deposited separately, landfillability is guaranteed. Due to the thermoplastic properties of the fire protection coating, it can be softened with a hot air gun and then removed mechanically with a scraper.

2.15 Disposal

Liquid product residues:

AVV No. (recommended): 080120 Aqueous suspensions containing paints or varnishes other than those mentioned in 080119

AVV No. (recommended): 080119 Aqueous suspensions containing paints and varnishes with organic solvents or other hazardous substances

AVV No. (recommended): 150102 Plastic packaging 150104 Metal packaging

2.16 Further information

Further product information is available at:
www.rudolf-hensel.de.

3. LCA: Calculation rules

3.1 Declared Unit

The declared product is HENSOTHERM® 7 KS. The declared unit refers to one kilogramme of product. Packaging is included in the calculation. The declared unit is given in [kg].

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	kg
Density (mean value)	1200	kg/m³

3.2 System boundary

Type of EPD: Cradle to gate with options. The following information modules are defined as system boundaries in this study:

Production stage (A1-A3):

A1: Raw material extraction

A2: Transport to the manufacturer

A3: Production

End of Life (C1-C4):

C1: Dismantling/demolition

C2: Transport

C3: Waste processing

C4: Disposal

Reuse, recovery and recycling potential (D)

In order to accurately record the indicators and environmental impacts of the declared unit, a total of 8 information modules are analysed. Information modules A1 to A3 describe the provision of materials, transport to the production site, and the production processes for the product itself.

The preliminary products are sourced from the European Union. Transportation is carried out by truck. The following flow charts illustrate the underlying production process.

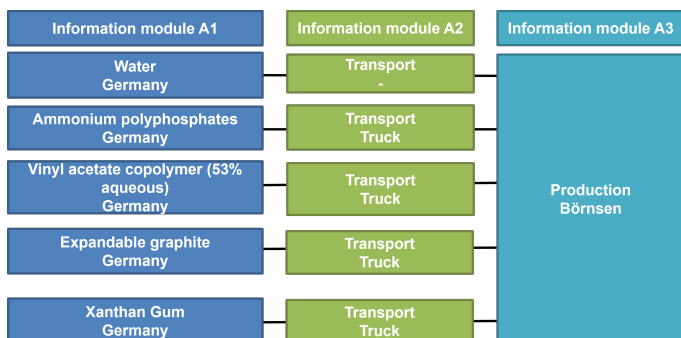


Figure 1: Information modules A1 to A3 of the product



Figure 2: Information modules A1 to A3 of the packaging

Information modules C1 to C4 cover the dismantling or demolition of the building, transport for waste disposal, waste treatment, and disposal of the product. Furthermore, reuse, recovery and recycling potential is shown in information module D.

3.3 Estimates and assumptions

The electricity mixes and underlying data are calculated on a country-specific basis for the production processes. An assumption was made for the calculation of xanthan. No assumptions were made for other substances.

3.4 Cut-off criteria

The cut-off criterion according to *EN 15804+A2* is applied. All energy and mass inputs were taken into account.

3.5 Background data

The databases used in this study are *LCA for Experts* and *Ecoinvent 3.9.1*.

3.6 Data quality

The assessment of the data quality is classified as appropriate, as the relevant data sets used to calculate the material provision of the declared unit are up to date. Data is provided in *LCA for Experts* under Data documentation with the respective reference year. Despite the use of different databases (*Sphera*, *Ecoinvent 3.9.1*), a consistent data basis is available, as all requirements for calculating the indicators in accordance with *EN 15804+A2* are met.

3.7 Period under review

Specific data from the Börnsen manufacturing plant in Germany was collected for the preparation of the life cycle assessment (LCA). The data for input and output flows is from 2022 and corresponds to the annual average.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Global

3.9 Allocation

The co-products are allocated in information modules A1-A3. The production waste from the injection-moulded components is thermally recycled. The ensuing electrical and thermal energy credits are offset in modules A1-A3. No further allocations are made.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The databases used in this study are *LCA for Experts* and *Ecoinvent 3.9.1*

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

No renewable raw materials are used in the product or the packaging. Biogenic carbon is therefore recognised as zero.

Information describing the biogenic carbon content at the plant gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	-	kg C



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Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

End of Life (C1-C4)

Demolition is carried out using an electric hot air gun. The electrical energy consumption for the tool is assumed to be 0.5 MJ for the declared unit. The electricity consumption is calculated using a European electricity mix. A transport distance of 50 km to the nearest waste treatment plant is assumed.

Name	Value	Unit
Collected separately waste type	1	kg
Landfilling	1	kg

Reuse, recovery and recycling potential (D), relevant scenario information

No reuse, recovery and recycling potentials arise in this calculation. The information module D is therefore declared and shown as zero.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg HENSOTHERM® 7 KS

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO ₂ eq	1.11E+00	5.86E-02	4.36E-03	4.24E-01	3.16E-10	0
Global Warming Potential fossil fuels (GWP-fossil)	kg CO ₂ eq	1.11E+00	5.86E-02	4.32E-03	4.24E-01	3.15E-10	0
Global Warming Potential biogenic (GWP-biogenic)	kg CO ₂ eq	0	0	0	0	0	0
Global Warming Potential luluc (GWP-luluc)	kg CO ₂ eq	1.22E-03	5.36E-06	3.96E-05	9.13E-06	9.78E-13	0
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	6.65E-09	5.76E-13	3.74E-16	2.01E-13	8.01E-22	0
Acidification potential of land and water (AP)	mol H ⁺ eq	3.69E-03	8.92E-05	3.68E-06	5.16E-04	2.23E-12	0
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.8E-04	5.79E-08	1.56E-08	1.08E-07	6.34E-16	0
Eutrophication potential aquatic marine (EP-marine)	kg N eq	8.3E-04	2.52E-05	9.72E-07	1.99E-04	5.77E-13	0
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	8.61E-03	2.66E-04	1.27E-05	2.51E-03	6.35E-12	0
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	3.22E-03	6.95E-05	3.01E-06	5.16E-04	1.74E-12	0
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	7.2E-06	2.84E-09	2.75E-10	1.85E-09	1.45E-17	0
Abiotic depletion potential for fossil resources (ADPF)	MJ	2.76E+01	1.29E+00	5.81E-02	5.18E-01	4.19E-09	0
Water use (WDP)	m ³ world eq deprived	6.72E-01	4.92E-03	4.92E-05	1.57E-01	3.46E-11	0

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg HENSOTHERM® 7 KS

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	1.3E+00	1.76E-01	4.11E-03	1.22E-01	6.83E-10	0
Renewable primary energy resources as material utilization (PERM)	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	1.3E+00	1.76E-01	4.11E-03	1.22E-01	6.83E-10	0
Non renewable primary energy as energy carrier (PENRE)	MJ	2.61E+01	1.29E+00	5.82E-02	5.18E-01	4.2E-09	0
Non renewable primary energy as material utilization (PENRM)	MJ	1.54E+00	0	0	0	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	2.76E+01	1.29E+00	5.82E-02	5.18E-01	4.2E-09	0
Use of secondary material (SM)	kg	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m ³	1.63E-02	2.95E-04	4.53E-06	3.7E-03	1.06E-12	0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:

1 kg HENSOTHERM® 7 KS

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	4.79E-10	7.46E-11	2.15E-13	1.78E-11	9.13E-20	0
Non hazardous waste disposed (NHWD)	kg	2.29E-03	2.84E-04	8.39E-06	5.11E-02	2.1E-08	0
Radioactive waste disposed (RWD)	kg	2.1E-04	2.01E-04	7.53E-08	2.52E-05	-2.1E-08	0
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:

1 kg HENSOTHERM® 7 KS

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	ND	ND	ND	ND	ND	ND
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND

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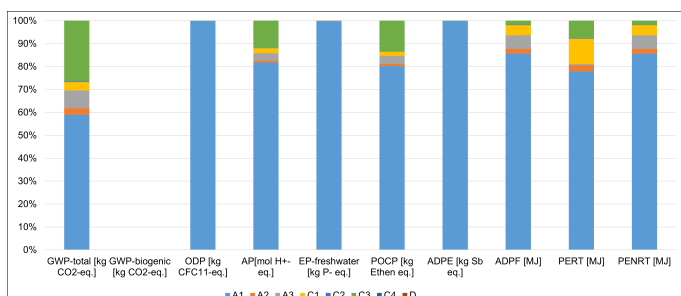
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND
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Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

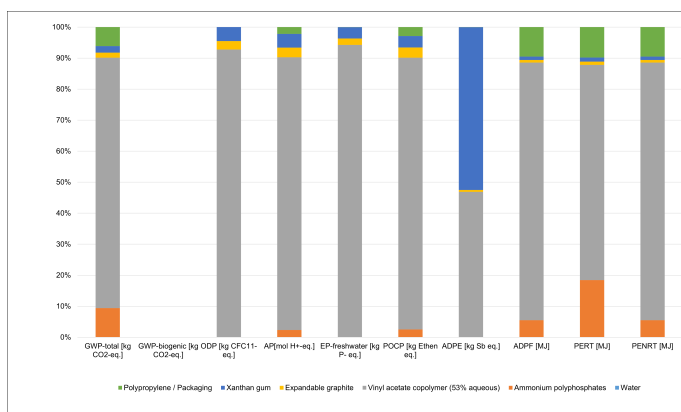
The dominance analysis shows that the main causes of the environmental impacts and indicators can be found in information module A1. This shows the total global warming potential for material provision at approx. 58% and approx. 26% for waste treatment, based on all information modules.



Dominance analysis: Information modules per declared unit

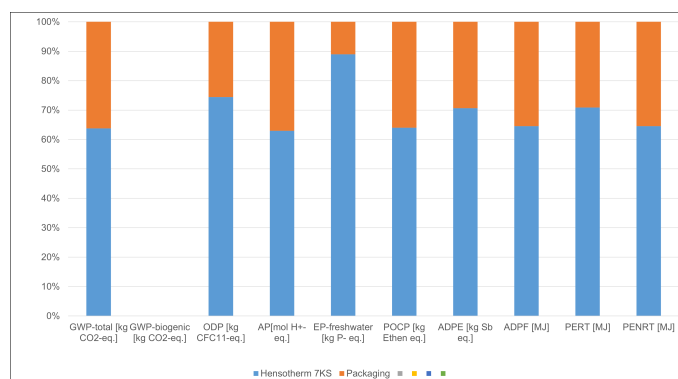
Looking at the material provision of the fire protection coating and the packaging in detail, it becomes clear which raw materials make a decisive contribution to the respective environmental impacts and indicators.

The vinyl acetate copolymer (53% aqueous) accounts for approx. 82% and the ammonium polyphosphate for approx. 8% of the total global warming potential in information module A1. Approx. 6% is attributable to the polypropylene in the packaging.



Overview: Information module A3

The dimensions of the raw materials and packaging are taken from the manufacturer's specifications. According to the manufacturer, this information can be assumed to be highly accurate.



Overview: Information module A3

The dimensions of the raw materials and packaging are taken from the manufacturer's specifications. According to the manufacturer, this information can be assumed to be highly accurate.

7. Requisite evidence

For products that are used indoors. Test method according to AgBB scheme with indication of measuring point, date and result as value range. The following must be declared as a minimum:

AgBB result overview (28 days [$\mu\text{g}/\text{m}^3$])

Name	Value	Unit
SVOC without LCI	< 5	$\mu\text{g}/\text{m}^3$

Test report from *Eurofins Product Testing A/S*

HENSOTHERM® 7 KS: Report no. 392-2013-000-63401 dated 29 October 2013

The emission values were determined directly after application of the coating materials.

8. References

DIN EN 15804

DIN EN 15804:2022-03, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

DIN EN ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and declarations – Type III environmental declarations

DIN EN ISO 14040

DIN EN ISO 14040:2021-02, Environmental management – Life cycle assessment – Principles and framework

DIN EN ISO 14044

DIN EN ISO 14044:2021-02, Environmental management – Life cycle assessment – Requirements and guidelines

EN 13501

EN 13501-1:2019, Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests

EN 13501-2:2016, Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance and/or smoke control tests, excluding ventilation services

EN 45545

EN 45545-2:2020-10, Fire protection in railway vehicles – Part 2: Requirements for fire behaviour of materials and components

ISO 16000

ISO 16000-3:2023, Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air – Active sampling method

ISO 16000-6:2022, Indoor air – Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID

ISO 16000-9: 2006, Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method

ISO 16000-11:2006, Indoor air – Part 11: Determination of the emission of volatile organic compounds from building products and furnishing – Sampling, storage of samples and preparation of test specimens

AgBB

Evaluation scheme for VOC emissions from indoor-relevant building products (2021)

AVV

Ordinance on the European Waste Catalogue (Waste Catalogue Ordinance, AVV) – Date of issue: 10 December 2001

EAD 350005-00-1104

EAD 350005-00-1104, May 2015: Products that foam up in the event of fire for fire-sealing and fire-retardant applications

ECHA Candidate List

European Chemical Agency (ECHA), Candidate List: Candidate List of Substances of Very High Concern for Authorization (published in accordance with Article 59(10) of the REACH Regulation)

Ecoinvent 3.9.1

Background data: ecoinvent 3.9.1, Zurich: [ecoinventhttp://www.ecoinvent.org](http://www.ecoinvent.org) (05 March 2024)

EOTA TR 024

Technical description and assessment of reactive products effective in case of fire

ETA No. 16/0369

European Technical Assessment dated 07 March 2023 for HENSOTHERM® 7 KS

IBU 2021

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