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# 产品资料与销售咨询

PRODUCT DOCUMENTATION & SALES CONTACT

## KERAFIX Flexpan-Flexpress-Flextrem - Environmental product declaration NEPD-12917-14166-en


澳迪斯防火科技（廊坊）有限公司

Aodisi Fire Technology (Langfang) Co., Ltd.

销售及选型联系 / Sales & product enquiries

**19931333348**

492048031@qq.com

www.gmfireproof.com


以上为销售联系信息，不替代安全数据表中的应急联系电话。
原始技术内容及制造商、检测机构和证书签发信息见后续资料页。

Sales contact only; emergency contacts in safety data sheets remain applicable.
Original technical, manufacturer and certification details follow.

epd-global
Powered by EPD-Norway

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, KERAFIX® Flexpress 300



kuhnodice

EPD-Global

**Owner of the declaration:**
KuhnOdice Germany GmbH

**Product:**
KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, KERAFIX® Flexpress 300

**Declared unit:**
1 kg

**This declaration is based on Product Category Rules:**
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

**Program operator:**
EPD-Global

**Declaration number:**
NEPD-12917-14166

**Issue date:**
31.10.2025

**Valid to:**
31.10.2030

**EPD software:**
LCAno EPD generator ID: 1192748

## General information

**Product**

KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, KERAFIX® Flexpress 300

**Owner of the declaration:**

KuhnOdice Germany GmbH
Contact person:
Phone: +49 2753 5945-0
e-mail: info@kuhnodice.com

**Program operator:**

EPD-Global
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-global.com

**Manufacturer:**

KuhnOdice Germany GmbH

**Declaration number:**

NEPD-12917-14166

**Place of production:**

KuhnOdice Germany GmbH
Jägersgrund 10
57339 Erndtebrück, Germany

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

**Management system:**

ISO 9001 : 2015

**Statement of liability:**

The owner of the declaration shall be liable for the underlying information and evidence. EPD-Global shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

**Organisation no:**

DE 323725769

**Declared unit:**

1 kg KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, KERAFIX® Flexpress 300

**Issue date:**

31.10.2025

**Declared unit with option:**

A1-A3, A4

**Valid to:**

31.10.2030

**Year of study:**

2024

**Functional unit:**

**Comparability:**

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

**General information on verification of EPD from EPD tools:**

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global's General Programme Instructions for further information on EPD tools

**Development and verification of EPD:**

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD-Global. Company verification tool # : NEPDT80

Developer of EPD: Dr. Poorya Zargaran

Reviewer of company-specific input data and EPD: Dr. Oliver Fastje

**Verification of EPD tool:**

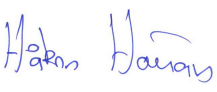
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Global's procedures and guidelines for verification and approval of EPD tools. NEPDT73

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

**Approved:**



Håkon Hauan, CEO EPD-Global

## Product

### Product description:

KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, and KERAFIX® Flexpress 300 are high-quality intumescent materials based on expandable graphite. They are developed to meet the highest fire protection standards according to European Technical Assessment requirements. When exposed to heat, they expand to form a stable, pressurized foam layer that acts as an effective barrier against fire and smoke. For more information use our website: https://kuhnodice.com/products

### Product specification

The KERAFIX® Flexpan and Flexpress range comprises halogen-free, non-hazardous intumescent materials that are resistant to moisture and ageing, and classified as Reaction to Fire Class E according to DIN EN 13501-1. These materials are easy to process and install, offering versatile applications across the building sector. Typical uses include fire protection doors made of steel, aluminium or wood, facades, glazing systems, safety and control cabinets, dry lining applications such as inspection flaps, partition walls and ceiling structures, as well as structural joints, penetration seals, and thermal insulation elements. The products are also employed in specialised applications, including fire dampers, elevator shafts, lock case insulation, and escape and rescue routes.

Within this product family, the individual variants — KERAFIX® Flexpan NG-A, KERAFIX® Flexpan NG-G, KERAFIX® Flexpress 100, and KERAFIX® Flexpress 300 — differ in activation temperature, expansion behaviour, and mechanical properties, providing tailored solutions for a wide range of technical requirements while maintaining consistent reliability and compliance with fire protection standards.

The products are manufactured with an emphasis on efficiency and continuous improvement, certified to ISO 9001:2015. Incoming materials undergo inspection prior to use, and each batch is subject to internal quality control to ensure compliance with fire protection standards, supplemented by regular external monitoring. Raw materials are securely stored to prevent environmental release, and worker safety is prioritised through minimal direct contact, the use of protective clothing and dust masks, and adequate extraction systems. Waste is sorted, stored, and returned to the recycling process wherever possible.

Products are supplied in standard lengths of 25,000 mm and 50,000 mm, with widths up to 320 mm. Standard thicknesses are 1.5 mm and 2.0 mm, with other thicknesses available on request. All cuts (length × width) are produced according to DIN ISO 2768-1-c, while moulded and punched parts comply with DIN 7715-5-p2.

Finally, 100% of the known ingredients of these products have been considered in the environmental footprint calculation.

| Materials | Value | Unit |
|---|---|---|
| Expandable graphite | 30 - 40 | wt.% |
| Binders | 40 - 60 | wt.% |
| Minerals | 15 - 30 | wt.% |

### Technical data:

KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100 and KERAFIX® Flexpress 300 are free from halogens, asbestos and conflict minerals, and are compliant with REACH, RoHS and VOC requirements as well as UV-resistant.

Some of the physical and chemical properties of the product are as follows:

| Name | Value | Unit |
|---|---|---|
| Bulk density | 1200 - 1315 (±10 %) | kg/m³ |
| Start of reaction temperature | 140 - 200 | °C |
| Expansion rate | 15 - 37 | times |
| Expansion pressure | 0.5 - 1.3 | N/mm² |

### Market:

Europe

### Reference service life, product

KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, and KERAFIX® Flexpress 300 have been in use worldwide for over 30 years.

### Reference service life, building

Not Relevant.

## LCA: Calculation rules

### Declared unit:

1 kg KERAFIX® Flexpan 200 NG-A, KERAFIX® Flexpan 200 NG-G, KERAFIX® Flextrem 100, KERAFIX® Flexpress 300

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

### Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

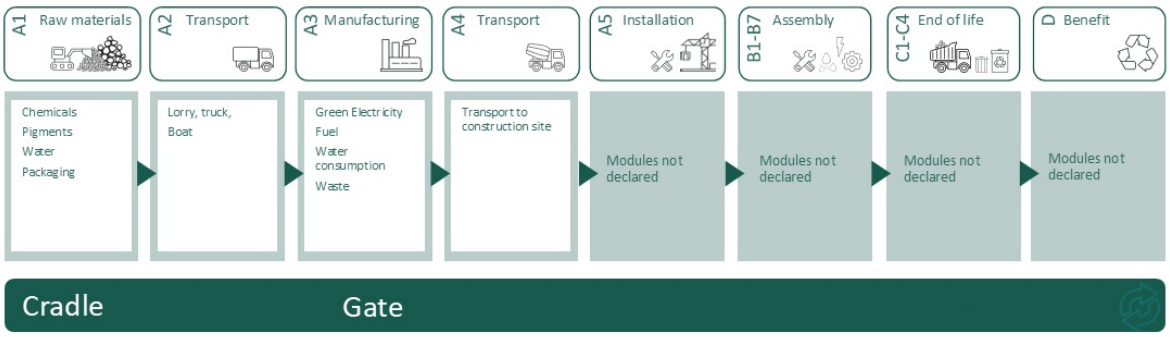
| Materials | Source | Data quality | Year |
|---|---|---|---|
| Chemical | ecoinvent 3.10.1 | Database | 2023 |
| Chemical | ecoinvent 3.6 | Database | 2019 |
| Raw materials, Mineral | ecoinvent 3.6 | Database | 2019 |

## System boundaries (X=included, MND=module not declared, MNR=module not relevant)

| Product stage | | | Construction installation stage | Use stage | | | | | | | | End of life stage | | | | Beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw materials | Transport | Manufacturing | Transport | 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 | X | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND |

### System boundary:

The manufacturer Cunstruction Stage (Assembly), Use Stage, End of Life Stage, and Beyond System Boundaries have not been considered for the product, as these stages typically involve no related actions.




### Additional technical information:

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

A4 : Average distance (500 km) to customers in Europe.

| Transport from production place to user (A4) | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit | Value (Liter/tonne) |
|---|---|---|---|---|---|
| Truck, unspecified, EURO 6 (km) - Europe | 46.1 % | 500.00 | 0.034 | l/tkm | 17.00 |

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

| Environmental impact | | | | |
|---|---|---|---|---|
| | **Indicator** | **Unit** | A1-A3 | A4 |
|  | GWP-total | kg $CO_2$ -eq | 1.39E+00 | 2.49E+00 |
|  | GWP-fossil | kg $CO_2$ -eq | 1.36E+00 | 2.49E+00 |
|  | GWP-biogenic | kg $CO_2$ -eq | 2.60E-02 | 1.10E-03 |
|  | GWP-luluc | kg $CO_2$ -eq | 2.63E-03 | 9.12E-04 |
|  | ODP | kg CFC11 -eq | 8.79E-08 | 5.70E-07 |
|  | AP | mol H+ -eq | 5.56E-03 | 7.51E-03 |
|  | EP-FreshWater | kg P -eq | 3.49E-05 | 2.11E-05 |
|  | EP-Marine | kg N -eq | 9.91E-04 | 1.53E-03 |
|  | EP-Terrestial | mol N -eq | 1.01E-02 | 1.71E-02 |
|  | POCP | kg NMVOC -eq | 3.96E-03 | 6.63E-03 |
|  | ADP-minerals&metals[1] | kg Sb-eq | 2.11E-05 | 6.73E-05 |
|  | ADP-fossil[1] | MJ | 3.57E+01 | 3.86E+01 |
|  | WDP[1] | $m^3$ | 2.48E+02 | 3.75E+01 |

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment: EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

### Remarks to environmental impacts

The dominance analysis reveals that most environmental impacts and indicators originate from information module A1. Approximately 70% of the Global Warming Potential (GWP) is attributed to material provision in this module, relative to all other information modules.

| Additional environmental impact indicators | | | | |
|---|---|---|---|---|
| Indicator | | Unit | A1-A3 | A4 |
| | PM | Disease incidence | 4.46E-08 | 1.71E-07 |
| | IRP[2] | kgBq U235 -eq | 3.57E-02 | 1.69E-01 |
| | ETP-fw[1] | CTUe | 1.81E+01 | 2.90E+01 |
| | HTP-c[1] | CTUh | 1.06E-09 | 0.00E+00 |
| | HTP-nc[1] | CTUh | 2.56E-08 | 3.80E-08 |
| | SQP[1] | dimensionless | 4.33E+00 | 3.30E+01 |

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

| Resource use | | | | |
|---|---|---|---|---|
| **Indicator** | | **Unit** | A1-A3 | A4 |
|  | PERE | MJ | 4.37E+00 | 5.65E-01 |
|  | PERM | MJ | 0.00E+00 | 0.00E+00 |
|  | PERT | MJ | 4.37E+00 | 5.65E-01 |
|  | PENRE | MJ | 1.67E+01 | 3.86E+01 |
|  | PENRM | MJ | 2.07E+01 | 0.00E+00 |
|  | PENRT | MJ | 3.74E+01 | 3.86E+01 |
|  | SM | kg | 1.63E-06 | 0.00E+00 |
|  | RSF | MJ | 5.46E-02 | 2.01E-02 |
|  | NRSF | MJ | 4.56E-03 | 7.09E-02 |
|  | FW | $m^3$ | 1.87E-02 | 4.43E-03 |

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

## End of life - Waste

| Indicator | | Unit | A1-A3 | A4 |
|---|---|---|---|---|
| | HWD | kg | 5.06E-02 | 2.10E-03 |
| | NHWD | kg | 2.84E-01 | 2.39E+00 |
| | RWD | kg | 3.74E-05 | 2.62E-04 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

## End of life - Output flow

| Indicator | | Unit | A1-A3 | A4 |
|---|---|---|---|---|
| | CRU | kg | 0.00E+00 | 0.00E+00 |
| | MFR | kg | 1.11E-02 | 0.00E+00 |
| | MER | kg | 2.13E-01 | 0.00E+00 |
| | EEE | MJ | 1.42E-01 | 0.00E+00 |
| | EET | MJ | 2.15E+00 | 0.00E+00 |

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

## Biogenic Carbon Content

| Indicator | Unit | At the factory gate |
|---|---|---|
| Biogenic carbon content in product | kg C | 0.00E+00 |
| Biogenic carbon content in accompanying packaging | kg C | 0.00E+00 |

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

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### Indoor environment

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products | | | |
|---|---|---|---|
| **Indicator** | **Unit** | A1-A3 | A4 |
| GWPIOBC | kg $CO_2$ -eq | 1.33E+00 | 2.49E+00 |

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

## Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
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NPCR 009 Part B for Technical - Chemical products for building and construction industry, Ver. 3.0, 06.10.2021, EPD Norway.

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| epd-global Powered by EPD-Norway | **Program operator and publisher**<br>EPD-Global<br>Post Box 5250 Majorstuen, 0303 Oslo, Norway | Phone:<br>e-mail:<br>web: | +47 977 22 020<br>post@epd-norge.no<br>www.epd-global.com |
| kuhnodice | **Owner of the declaration:**<br>KuhnOdice Germany GmbH<br>Jägersgrund 10, 57339 Erndtebrück, Germany | Phone:<br>e-mail:<br>web: | +49 2753 5945-0<br>info@kuhnodice.com<br>https://kuhnodice.com/ |
| LCA.no | **Author of the Life Cycle Assessment**<br>LCA.no AS<br>Dokka 6A, 1671 Kråkerøy, Norway | Phone:<br>e-mail:<br>web: | +47 916 50 916<br>post@lca.no<br>www.lca.no |
| LCA.no | **Developer of EPD generator**<br>LCA.no AS<br>Dokka 6A, 1671 Kråkerøy, Germany | Phone:<br>e-mail:<br>web: | +47 916 50 916<br>post@lca.no<br>www.lca.no |
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