SENTINEL HOLDING
INSTITUT

# SHI PRODUCT PASSPORT

**Find products. Certify buildings.**

SHI Product Passport No.:

**1782-10-1010**

# Modular ONE Hydron

Product group: Design floors

**PARADOR**

Parador GmbH
Millenkamp 7 – 8
48653 Coesfeld

## Product qualities:

- SHI Product Assessment 2024
- QNG Qualitätssiegel Nachhaltiges Gebäude
- DGNB NEW CONSTRUCTION 2023.2
- DGNB NEW CONSTRUCTION 2023
- DGNB NEW CONSTRUCTION 2018
- BNB-BN NEUBAU V2015
- EU TAXONOMY
- BREEAM DE NEUBAU 2018
- LEED v4.1 (outside US)

CERTIFIED SUSTAINABLE PRODUCT
SHI PRODUCT PASSPORT
SENTINEL HOLDING INSTITUT
www.sentinel-holding.eu

Köttner

**Helmut Köttner**
Scientific Director
Freiburg, 17 August 2026

SENTINEL HOLDING
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Product:
# Modular ONE Hydron

SHI Product Passport no.:
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# Contents


| | |
|---|---|
| SHI Product Assessment 2024 | 1 |
| QNG - Qualitätssiegel Nachhaltiges Gebäude | 2 |
| DGNB New Construction 2023.2 | 3 |
| DGNB New Construction 2023 | 4 |
| DGNB New Construction 2018 | 5 |
| BNB-BN Neubau V2015 | 6 |
| EU taxonomy | 7 |
| BREEAM DE Neubau 2018 | 8 |
| LEED v4.1 | 9 |
| Product labels | 10 |
| Legal notices | 11 |
| Technical data sheet/attachments | 12 |


The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar

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Product:
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SHI Product Passport no.:
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# SHI Product Assessment 2024

Since 2008, Sentinel Holding Institut GmbH (SHI) has been establishing a unique standard for products that support healthy indoor air. Experts carry out independent product assessments based on clear and transparent criteria. In addition, the independent testing company SGS regularly audits the processes and data accuracy.

| Criteria | Product category | Harmful substance limit | Assessment |
|---|---|---|---|
| SHI Product Assessment | Other floor coverings | TVOC ≤ 160 µg/m$^3$<br>Formaldehyd ≤ 10 µg/m$^3$ | Indoor Air Quality Certified |
| **Valid untill: 21 August 2027** | | | |

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Product:
**Modular ONE Hydron**

SHI Product Passport no.:
**1782-10-1010**

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# QNG - Qualitätssiegel Nachhaltiges Gebäude

The Qualitätssiegel Nachhaltiges Gebäude (Quality Seal for Sustainable Buildings), developed by the German Federal Ministry for Housing, Urban Development and Building (BMWSB), defines requirements for the ecological, socio-cultural, and economic quality of buildings. The Sentinel Holding Institut evaluates construction products in accordance with QNG requirements for certification and awards the QNG ready label. Compliance with the QNG standard is a prerequisite for eligibility for the KfW funding programme. For certain product groups, the QNG currently has no specific requirements defined. Although classified as not assessment-relevant, these products remain suitable for QNG-certified projects.

| Criteria | Pos. / product group | Considered substances | QNG assessment |
|---|---|---|---|
| 3.1.3 Schadstoffvermeidung in Baumaterialien | 2.2 Resilient floor coverings – including multilayer systems | VOC / Emissions / hazardous substances / polycyclic aromatic hydrocarbons (PAH) / SVHC / heavy metals | QNG ready |
| **Verification:** Blauer Engel zertifiziert | | | |

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Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

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## DGNB New Construction 2023.2

| Criteria | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects | Quality level |
|---|---|---|---|
| ENV 1.2 Local environmental impact | | | Not relevant for assessment |

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Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

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## DGNB New Construction 2023

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings. The 2023 version sets high standards for ecological, economic, socio-cultural, and functional aspects throughout the entire life cycle of a building.

| Criteria | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects | Quality level |
|---|---|---|---|
| ENV 1.2 Local environmental impact, 03.05.2024 (3rd edition) | 7 Floor coverings (Resilient floor coverings) | VVOCs, VOC, SVOC emissions and content of hazardous substances | Quality level 4 |
| **Verification:** Blauer Engel Zertifikat vom 30.06.2021 | | | |

| Criteria | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects | Quality level |
|---|---|---|---|
| ENV 1.2 Local environmental impact, 29.05.2025 (4th edition) | 7 Floor coverings for indoor use (elastic floor coverings) | VVOCs, VOC, SVOC emissions and content of hazardous substances | Quality level 4 |
| **Verification:** Blauer Engel Zertifikat vom 30.06.2021 | | | |

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Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

PARADOR

# DGNB New Construction 2018

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings.

| Criteria | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects | Quality level |
|---|---|---|---|
| ENV 1.2 Local environmental impact | 7 Floor coverings (Resilient floor coverings) | VOC / SVOC / hazardous substances | Quality level 4 |
| **Verification:** Blauer Engel Zertifikat vom 30.06.2021 | | | |

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INSTITUT

Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

PARADOR

# BNB-BN Neubau V2015

The Bewertungssystem Nachhaltiges Bauen (Assessment System for Sustainable Building) is a tool for evaluating public office and administrative buildings, educational facilities, laboratory buildings, and outdoor areas in Germany. The BNB was developed by the former Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is now overseen by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

| Criteria | Pos. / product type | Considered substance group | Quality level |
|---|---|---|---|
| 1.1.6 Risiken für die lokale Umwelt | 2a Elastic floor coverings – with and without bonded underlay or insulation layer | VOC / hazardous substances / heavy metals | Quality level 5 |
| **Verification:** Blauer Engel zertifiziert | | | |

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Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

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## EU taxonomy

The EU Taxonomy classifies economic activities and products according to their environmental impact. At the product level, the EU regulation defines clear requirements for harmful substances, formaldehyde and volatile organic compounds (VOCs). The Sentinel Holding Institut GmbH labels qualified products that meet this standard.

| Criteria | Product type | Considered substances | Assessment |
|---|---|---|---|
| DNSH - Pollution prevention and control | Floor coverings (including associated adhesives and sealants) | Stoffe nach Anlage C, Formaldehyd, Karzinogene VOC Kategorie 1A/1B | compliant |
| **Verification:** Blauer Engel zertifiziert | | | |

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INSTITUT

Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

PARADOR

# BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) is a UK-based building assessment system that evaluates the sustainability of new constructions, refurbishments, and conversions. Developed by the Building Research Establishment (BRE), the system aims to assess and improve the environmental, economic, and social performance of buildings.

| Criteria | Product category | Considered substances | Quality level |
|---|---|---|---|
| Hea 02 Indoor Air Quality | Flooring materials (including floor levelling compounds and resin flooring) | Emissions: Formaldehyde, TVOC, TSVOC, carcinogens | Exemplary quality |
| **Verification:** Eco Institut Prüfbericht vom 21.08.2025 (Nr. 60172-A001-BE-L) | | | |

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Product:
# Modular ONE Hydron

SHI Product Passport no.:
**1782-10-1010**

PARADOR

## LEED v4.1

LEED (Leadership in Energy and Environmental Design) is an internationally recognised building certification system developed by the U.S. Green Building Council. It is one of the most widely used sustainability standards for buildings worldwide and is particularly applied in internationally oriented projects. LEED assesses buildings holistically across categories such as energy efficiency, resource conservation, material selection, indoor environmental quality and site sustainability. Depending on the number of points achieved, projects are awarded one of the certification levels: LEED Certified, Silver, Gold or Platinum.

| Criteria | Product category | Considered substances | Assessment |
|---|---|---|---|
| EQ Credit: Low-Emitting Materials | Bodenbeläge | Emissionen: Formaldehyd, VOC, Krebserregende Stoffe | compliant |
| **Verification:** Eco Institut Prüfbericht vom 21.08.2025 (Nr. 60172-A001-BE-L) | | | |

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Product:
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# Product labels

In the construction industry, high-quality materials are crucial for a building's indoor air quality and sustainability. Product labels and certificates offer guidance to meet these requirements. However, the evaluation criteria of these labels vary, and it is important to carefully assess them to ensure products align with the specific needs of a construction project.

The *Blue Angel* ("Blauer Engel") ecolabel, awarded by the German Federal Environment Agency, is one of the oldest and most widely used ecolabels in Germany. It exists in several variants for many different product groups. Since the test criteria, such as threshold values, differ between these variants, it is important to consider each one individually when assessing indoor air quality.

The IBU ("Institut Bauen und Umwelt e.V.") is an initiative of building product manufacturers committed to sustainability in construction. It serves as the programme operator for Environmental Product Declarations (EPDs) in accordance with the EN 15804 standard. The IBU EPD programme provides comprehensive life cycle assessments and environmental impact data for construction products, supported by independent third-party verification.

Products bearing the Sentinel Holding Institute QNG-ready seal are suitable for projects aiming to achieve the "Qualitätssiegel Nachhaltiges Gebäude" (Quality Seal for Sustainable Buildings). QNG-ready products meet the requirements of QNG Appendix Document 3.1.3, "Avoidance of Harmful Substances in Building Materials." The KfW loan program Climate-Friendly New Construction with QNG may allow for additional funding.

This product is SHI Indoor Air Quality certified and recommended by Sentinel Holding Institut. Indoor-air-focused construction, renovation, and operation of buildings is made possible by transparent and verifiable criteria thanks to the Sentinel Holding concept.

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Product:
**Modular ONE Hydron**

SHI Product Passport no.:
**1782-10-1010**

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# Legal notices

(*) These criteria apply to the construction project as a whole. While individual products can positively contribute to the overall building score through proper planning, the evaluation is always conducted at the building level. The information was provided entirely by the manufacturer.

**Find our criteria here: https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte**

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SGS

SGS TÜV SAAR


## Publisher

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79111 Freiburg im Breisgau
Germany
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info@sentinel-holding.eu
www.sentinel-holding.eu

# PARADOR

**Modular ONE Hydron**

| Produkteigenschaften | | | |
|---|---|---|---|
| **Format** | | 856 x 403 x 5,5 mm | 1290 x 196 x 5,5 mm |
| **Verpackung** | **Paket:** | 8 Elemente / 2,76 m2 / 19,44 kg | 8 Elemente / 2,023 m2 / 14,34 kg |
| | **Palette:** | 30 Pakete / 82,792 m2 / 598,14 kg | 48 Pakete / 97,091 m2 / 703,42 kg |

| Toleranzen (Anforderung EN 16511:2023) | | |
|---|---|---|
| **Rechtwinkligkeit des Elementes (≤ 0,20mm)** | | ≤ 0,15 mm |
| **Bestimmung der Kantengeradheit (≤ 0,30 mm/m)** | | ≤ 0,20 mm/m |
| **Ebenheit konkav/konvex** | **längs (≤ 0,50 / ≤ 1,0 %)** | ≤ 0,35 / ≤ 1,0 % |
| | **breit (≤ 0,15 / ≤ 0,20 %)** | ≤ 0,10 / ≤ 0,15 % |
| **Höhendifferenz** | **(mittel ≤ 0,10 mm)** | mittel ≤ 0,10 mm |
| | **(max. ≤ 0,15 mm)** | max. ≤ 0,15 mm |
| **Fugenöffnung** | **(mittel ≤ 0,15 mm)** | mittel ≤ 0,05 mm |
| | **(max. ≤ 0,20 mm)** | max. ≤ 0,10 mm |

| Garantieleistung (laut Parador Garantiebestimmungen) | | Hinweise |
|---|---|---|
| Privater Bereich | Gewerblicher Bereich | - geeignet für vollflächige Verklebung |
| Lifetime | 10 Jahre | - Reinigung und Pflege siehe Anleitung |
| | | - Technische Änderungen vorbehalten |

EN 14041:2004/AC:2006 · ÉMISSIONS DANS L'AIR INTÉRIEUR A+ · BLAUER ENGEL DE-UZ 120 · floor score · TÜVRheinland ZERTIFIZIERT · THIRD-PARTY VERIFIED EPD ISO 14025 and EN 15804

## Klassifizierung

| Nutzungsklasse 23 = privater Wohnbereich mit intensiver Nutzung | Nutzungsklasse 33 = gewerblicher Bereich mit intensiver Nutzung |
|---|---|
| Der Designboden erfüllt alle Eigenschaften der ausgewiesenen Nutzungsklasse. | |

| Anforderungen / Eigenschaften | | Prüfnorm | Bewertung |
|---|---|---|---|
| | Brandverhalten | EN 13501-1 | $C_{fl}$ s1 |
| | Gleitreibung | EN 13893<br>EN 14041 | μ ≥ 0,30<br>DS |
| | Fleckenunempfindlichkeit | EN 438-2 | Gruppe 1+2: Grad 5, keine sichtbare Veränderung<br>Gruppe 3: Grad 4, leichte Veränderung |
| | Lichtechtheit | EN ISO 105 – B02 Verfahren 3 | Wollblauskala: Stufe ≥ 6 |
| | Beanspruchung durch Stuhlrollen | EN ISO 4918 | Typ W, keine sichtbaren Veränderungen |
| | **Wärmedurchlasswiderstand**<br>Zur Verlegung auf Fußbodenheizung geeignet. | EN 12667 | 0,033 m²*K/W |
| | Verschieben eines Möbelfußes | EN ISO 16581 | kein sichtbarer Schaden (Stempel Typ 0) |
| | Eindruck nach konstanter Belastung | EN ISO 24343-1 | ≤ 0,05 mm |
| | Trittschallminderung | EN ISO 10140-3 | 17 dB |
| | Verbindungsfestigkeit | ISO 24334 | Längs ≥ 1 KN/m<br>Quer ≥ 1,5 KN/m |
| | Beständigkeit gegen Abrieb | ISO 24338, Verfahren B | > 7.000 Umdrehungen |
| | Beständigkeit gegen Stoßbeanspruchung | EN 13329 Anhang F | ≥ 1.800 mm |
| | Maßhaltigkeit unter Temperatureinfluss | EN ISO 23999 | ≤ 0,10 % |
| | Schüsselung unter Temperatureinfluss | EN ISO 23999 | ≤ 2mm |
| | Wasserbeständigkeit | EN 317 | wasserfest |
| | Mikrokratzbeständigkeit | EN 16094 | Verfahren A MSR-A2<br>Für matte Oberflächen (Glanz ≤ 7):<br>≤ 1,5 Einheitenänderung bei 60° |
| | Rutschhemmung | EN 16165, Anh. B<br>Schiefe Ebene | R10 |
| | | EN 16165, Anh. C<br>Pendelprüfung | PTV (trocken (Gleiter 96)) ≥ 36<br>Low slip potential<br>gem. UK Slip resistance group |
| | Entsorgung | EAK-Schlüssel<br>(Europäischer Abfallkatalog) | 17 02 03 |

# URKUNDE

## PARADOR GmbH
## 48653 Coesfeld, Deutschland

wird aufgrund des Zeichenbenutzungsvertrages Nr. 36424 zur DE-UZ 120 Ausgabe 2011 das Recht verliehen, für das Produkt

## PARADOR Modular ONE Hydron

das nachstehend abgebildete Umweltzeichen als Ausweis für die besondere Umweltfreundlichkeit zu führen.

Bonn, den 30. Juni 2021

Geschäftsführer
RAL gGmbH

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

Umwelt Bundesamt

Jury Umweltzeichen

RAL gGmbH

# ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

| | |
|---|---|
| Owner of the Declaration | Parador GmbH |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number | EPD-PAR-20210321-IBC1-EN |
| Issue date | 31.01.2023 |
| Valid to | 30.01.2028 |

## Design flooring Modular ONE Hydron

## Parador GmbH

Institut Bauen und Umwelt e.V.

**www.ibu-epd.com | https://epd-online.com**

ECO PLATFORM EPD VERIFIED



PARADOR

# 1. General Information

## Parador GmbH

**Programme holder**

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

**Declaration number**

EPD-PAR-20210321-IBC1-EN

**This declaration is based on the product category rules:**

Floor coverings, 01.01.0001
(PCR checked and approved by the SVR)

**Issue date**

31.01.2023

**Valid to**

30.01.2028

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

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.)

## Design flooring Modular ONE Hydron

**Owner of the declaration**

Parador GmbH
Millenkamp 7-8
48653 Coesfeld
Germany

**Declared product / declared unit**

The declared unit is one square metre (1 m²) of design flooring Modular ONE Hydron.

**Scope:**

This EPD relates to the manufacture, transport, installation and disposal of an average square metre of Parador design flooring Modular ONE Hydron. The technical characteristics are described in chapter 2.3. The product is manufactured in Coesfeld, Germany.
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 |

Angela Schindler,
(Independent verifier)

## 2. Product

### 2.1 Product description/Product definition

The multi-layered structure of Modular ONE Hydron floors is characterised by the coating of the decor foil with polypropylene (PP). This allows an authentic structuring of the decor foil and thus enables realistic reproduction of real wood surfaces.
The core material of Modular ONE Hydron flooring is a waterproof, dimensionally stable polymer core board (PP-based), which is equipped with a waterproof polymer acoustic backing (polyethylene (PE) backing). A polyurethane (PUR) adhesive is used to bond the layers.

Modular ONE Hydron is 100% waterproof due to this special product structure.

*Regulation (EU) No 305/2011* (Construction Products Regulation) applies to placing the product on the market in the European Union/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account the harmonised standard *DIN EN 14041:2018-05, Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics* and the CE marking. The respective national regulations apply to the use.

### 2.2 Application

Design floors are suitable for private and commercial indoor use. They are either installed floating on screed or other existing subfloors in conjunction with suitable underlays or glued to the full surface of the screed. The principles of proper installation can be found in the enclosed installation instructions or in the "Guide Design flooring Vinyl flooring and Modular ONE"

### 2.3 Technical Data

**Structural Data**

| Name | Value | Unit |
|---|---|---|
| Product thickness | 5.5 | mm |
| Wear class | 23/33 | |
| Grammage | 7135 | g/m$^2$ |
| Length of the surface layer | according to current type list | mm |
| Width of the surface layer | according to current type list | mm |
| Type of manufacture | Lamination | - |

Further technical information can be found at:
**https://parador.de/en/services/downloads/design-flooring**
and there under the heading "Technical data sheets.

Certificates can be found at:
https://parador.de/en/services/downloads/design-flooring and there under the heading "Certificates".

Performance values of the product as stated in the declaration of performance in relation to its essential characteristics according to *EN 14041:2018-05, Resilient, textile, laminate and modular multi-layer floor coverings - Essential characteristics*.

You will find the declarations of performance at:
https://parador.de/en/services/downloads/design-flooring
and there under the heading "CE - Declaration of Performance".

### 2.4 Delivery status

The Modular ONE Hydron floors are delivered in the following condition:

| Format | |
|---|---|
| Length | 856-1290 mm |
| Width | 196-403 mm |
| Height | 5.5 mm |

### 2.5 Base materials/Ancillary materials

The averaged percentage of ingredients per m² in mass per cent for the EPD is as follows:

- PP core board: 92 %
- PE backing: 3 %
- PP wear layer/top layer: 3 %
- PUR adhesive: 2 %

The product/at least one part of the product contains substances on the Candidate List (*ECHA*) (date 17.01.2022) above 0.1 % by mass: no.

The product/at least one part of the product contains other CMR substances of category 1A or 1B not on the candidate list (*ECHA*) above 0.1 % by mass in at least one part of the product: no.

Biocidal products have been added to the present construction product or it has been treated with biocidal products (it is therefore a treated product within the meaning of the Biocidal Products Regulation (*Regulation (EU) No 528/2012*)): no.

### 2.6 Manufacture

The polymer core board, the wear layer and the polymer backing are pressed together using an adhesive.

The planks are then formatted and given a longitudinal and transverse profile.

After quality control of the individual flooring elements, they are packed in half-shell cartons and shrink-wrapped in polyethylene (PE).

These individual packaging units are stacked on pallets according to the different formats and made available in the warehouse for subsequent delivery.

All processes are continuously inspected and documented as part of the in-house Factory Production Control (FPC).

### 2.7 Environment and health during manufacturing

At the Coesfeld site, wood chips and production waste are collected in containers provided for this purpose and disposed of.

Parador is certified according to the European Environmental Management System *EMAS*, which, in addition to environmental aspects, also reviews the energy aspects of the plant for continuous improvement.

### 2.8 Product processing/Installation

For the installation of design flooring, Parador recommends the use of the following tools: measuring tape, cutter, adhesive tape, pencil, hammer, and jigsaw or circular/mitre saw (ensure to use the finest possibleteeth). Spacer wedges, drawbars, protective block, and a MultiTool are also useful. The usual safety precautions (e.g. safety goggles and dust mask when sawing) must be observed. The shavings and sawdust

produced during installation should be extracted. The provisions of the employers' liability insurance association apply for commercial processing.

The residual material and packaging must be disposed of separately according to their waste category.

Further information can be found in the installation instructions enclosed with the product or in the "Guide design flooring Vinyl and Modular ONE" (https://parador.de/pcms/downloads/downloadfile/file_id/100/).

### 2.9 Packaging

The planks are packed in halfshell cartons which are wrapped in PE shrink film for better protection against moisture.

Exchangeable europallets and PET strapping are also used for transport.

All packaging components can be recycled pursuant to their category.

### 2.10 Condition of use

Polymer materials are temperature sensitive and react to temperature changes, such as strong heating due to solar radiation, with expansion.
During use it is therefore important to ensure a balanced room climate and, if necessary, shading, in order to avoid possible dimensional changes.

The room climate should be at a temperature of approx. 20 °C and a relative humidity of between 35 and 60 % all year round.

### 2.11 Environment and health during use

There are no known negative effects between product, environment, and health. Risks to water, air, and soil cannot occur when used as intended. Emissions of pollutants are well below current legal limits.
In terms of emission behaviour, the modular flooring meets the award criteria of *DE-UZ 120* (Blue Angel) "Contract 36424".

### 2.12 Reference service life

The Sustainable Building Assessment System (*BNB*) takes a useful life of 20 years as a basis under code no. 352.711.

### 2.13 Extraordinary effects

**Fire**
In the area of fire protection, the following building material class according to *EN 13501-1* is complied with:

**Fire protection**

| Name | Value |
|---|---|
| Building material class | Cfl |
| Burning droplets | N.r. |
| Smoke gas development | s1 |

N.r.: Not relevant for floor coverings

**Water**
The product is waterproof and will not be damaged by water standing on the surface. However, penetration of moisture to the back of the floor covering can lead to mould growth. Dangerous impact on the environment due to water exposure is not to be expected.

**Mechanical destruction**
Mechanical destruction is not expected to have any negative consequences for the environment.

### 2.14 Re-use phase

In case of selective dismantling, the product can easily be reused even after the end of the useful life. Residues and waste of this modular flooring must be recycled in accordance with *AVV* 17 02 03. If repeated use as a floor covering is no longer possible, the product is sent for thermal recycling to generate process heat and electricity.
Open burning or burning in a chimney is not possible, as the combustion of plastics results in harmful emissions. Incineration should therefore take place in a plant with connected flue gas cleaning system, such as a waste incineration plant.

### 2.15 Disposal

Disposal is to be organized under the following *AVV* code: 17 02 03.

### 2.16 Further information

Additional information about the company and other products as well as information brochures – including the *EMAS* Environmental Statement – can be downloaded at: https://parador.de/en

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declared unit is one square metre (1 m²) of design flooring Modular ONE Hydron.

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | $m^2$ |
| Packaging materials | 0.99 | kg/m² |
| Layer thickness | 0.0055 | m |
| Grammage | 7.129 | $kg/m^2$ |
| Total | 7.227 | kg/m² |

### 3.2 System boundary

Type of EPD: Cradle to factory gate with options.

**Modules A1-A3, A4 and A5**
The product stage (A1-A3) begins with considering the production of the necessary raw materials and energies, including all corresponding upstream chains and the actual procurement transports. Furthermore, the entire manufacturing phase was mapped, including treatment of production waste until endofwaste status (EoW) was reached. In addition, both the distribution transports from Coesfeld/DE (A4) and the packaging waste generated during installation (A5) were taken into account. Product losses as well as power consuming tools, auxiliary materials, and installation materials were not considered in A5.

**Modules C1-C4**
The modules include the environmental impacts for the treatment of the waste categories until endofwaste status (EoW) is reached, including the associated transports at the end of the product life cycle.
Module C1 is declared with the value "0", as the Modular ONE Hydron design floor can be dismantled by hand and no power-operated tools are required. Module C4 does not contain any values because all the floor covering can be reused in another

form and is not put into landfill.

**Module D**
Identification of the benefits and costs of the product outside the system boundary. These consist of energy credits from the thermal utilisation of the foil packaging (A5) and the product (C3) in the form of the average European electricity mix or thermal energy from natural gas

### 3.3 Estimates and assumptions
It is assumed that the plastic chips (polyethylene (PE) and polypropylene (PP)) are thermally recycled in a waste incineration plant. The Modular ONE Hydron design flooring is completely recycled thermally at the end of the use phase. All benefits and avoided loads outside the system boundary are assigned to module D.

It was also assumed that thermal waste processing at end of life uses systems with an R1 factor (efficiency of energy conversion or energy efficiency of waste incineration plants according to the European Waste Framework Directive) > 0.6.

### 3.4 Cut-off criteria
Components in the decor/wear layer for which no matching data sets are available and whose mass fraction is significantly less than 0.1 % in each case, were partially truncated.

Euro pallets for transporting the flooring were truncated. PET strapping used to secure the packages on the pallet was also neglected due to the low apparent percentage (exact percentage not determined) of the total weight.

The sum of neglected substances is less than 5 % of the material use or influence on impact categories.

### 3.5 Background data
The software system for holistic balancing *GaBi* was used to model the life cycle. The entire manufacturing process as well as the energy consumption were modelled on the basis of manufacturer-specific data. However, generic background datasets were used for the upstream and downstream processes. The majority of the background datasets used were taken from the current version of the *GaBi* database. *Ecoinvent* datasets were only used for substances which in any case have only a very small mass fraction and could theoretically be truncated.

The data sets contained in the databases are documented online. For the modules A1-A3 - where possible - country-specific, and for the disposal scenarios (C modules) the corresponding European data sets were used.

### 3.6 Data quality
The background data sets used for balancing purposes originate from the *GaBi* databases current at the time of the calculation.

Ecoinvent datasets were only used for substances that have a very low mass fraction anyway and could theoretically be cut off.

The data for the examined products was captured on the basis of evaluations of internal production and environmental data, the collection of LCA relevant data within the supply chain, as well as the evaluation of relevant data for the energy supply. The collected data were checked for plausibility and consistency. Good representativity can be assumed

### 3.7 Period under review
The data was collected in 2021.

### 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: Europe

### 3.9 Allocation
All required energies, raw materials, and supplies could be clearly assigned to the declared product. No by-products are produced and no allocation is required.

Module A1-A3 credits electricity and heat for the thermal recovery of production waste.
Packaging materials and the product are incinerated at the end of life in a waste incineration plant. Any emissions that occur are taken into account in the model. Depending on their elementary composition and the resulting heating values, credits for recycling are taken into account in module D.

### 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 used background database is *GaBi* version 10.6, content version 2021.2.

## 4. LCA: Scenarios and additional technical information

**Characteristic product properties biogenic carbon**
The product contains less than 5 % biogenic carbon. Therefore, the biogenic carbon content of the product is not indicated.

**Information describing the biogenic carbon content at the factory gate**

| Name | Value | Unit |
|---|---|---|
| Biogenic carbon content in product | < 5 % | kg C |
| Biogenic carbon content in accompanying packaging | 0.035 | kg C |

**Transport to construction site (A4)**

| Name | Value | Unit |
|---|---|---|
| Transport distance | 713 | km |
| Capacity utilisation (including empty runs) | 50 | % |

**Reference service life**

| Name | Value | Unit |
|---|---|---|
| Life Span (according to BBSR) | 20 | a |

**End of life (C2-C3)**

| Name | Value | Unit |
|---|---|---|
| Energy recovery | 7.129 | kg |
| Landfilling | - | kg |
| Transport distance truck to MVA | 75 | km |
| Truck load factor (including empty runs) | 50 | % |

**Reuse, recovery and recycling potential (D), relevant scenario data**

| Name | Value | Unit |
|---|---|---|
| Combustible material | 7.129 | kg |
| R1 factor waste incineration plant | > 0.6 | - |
| Lower heating value | 18.3 | MJ/kg |

The entire product is thermally utilised in a wasteto-energy plant. Module D contains credits from the energy recovery of packaging waste in module A5 and the resilient floor coverings in module C3.

## 5. LCA: Results

The environmental impacts for 1 m² of design flooring Modular ONE Hydron are shown below. The following tables show the results of the impact assessment, the use of resources as well as waste and other output flows in relation to the declared unit.

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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 | X | X | MND | MND | MNR | MNR | MNR | MND | MND | X | X | X | X | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m^2 Modular ONE Hydron**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg $CO_2$ eq | 1.15E+01 | 3.98E-01 | 1.75E-01 | 0 | 4.87E-02 | 1.04E+01 | 0 | -4.82E+00 |
| GWP-fossil | kg $CO_2$ eq | 1.16E+01 | 3.95E-01 | 4.77E-02 | 0 | 4.83E-02 | 1.04E+01 | 0 | -4.81E+00 |
| GWP-biogenic | kg $CO_2$ eq | -1.27E-01 | 0 | 1.27E-01 | 0 | 0 | 0 | 0 | 0 |
| GWP-luluc | kg $CO_2$ eq | 1.72E-02 | 3.22E-03 | 5.74E-06 | 0 | 3.95E-04 | 6.89E-04 | 0 | -2.96E-03 |
| ODP | kg CFC11 eq | 6.92E-10 | 7.77E-17 | 3.65E-18 | 0 | 9.53E-18 | 6.14E-15 | 0 | -4.86E-14 |
| AP | mol $H^+$ eq | 2.13E-02 | 1.32E-03 | 7.09E-06 | 0 | 1.73E-04 | 2.64E-03 | 0 | -5.9E-03 |
| EP-freshwater | kg P eq | 3.74E-05 | 1.17E-06 | 2.47E-09 | 0 | 1.43E-07 | 1.74E-06 | 0 | -5.6E-06 |
| EP-marine | kg N eq | 6.85E-03 | 6.08E-04 | 2.1E-06 | 0 | 8.03E-05 | 6.62E-04 | 0 | -1.73E-03 |
| EP-terrestrial | mol N eq | 7.29E-02 | 6.79E-03 | 3.44E-05 | 0 | 8.96E-04 | 1.15E-02 | 0 | -1.85E-02 |
| POCP | kg NMVOC eq | 2.11E-02 | 1.19E-03 | 5.11E-06 | 0 | 1.57E-04 | 1.79E-03 | 0 | -4.87E-03 |
| ADPE | kg Sb eq | 3E-06 | 3.49E-08 | 1.13E-10 | 0 | 4.28E-09 | 9.03E-08 | 0 | -7.36E-07 |
| ADPF | MJ | 3.03E+02 | 5.24E+00 | 1.47E-02 | 0 | 6.43E-01 | 8.44E+00 | 0 | -8.33E+01 |
| WDP | $m^3$ world eq deprived | 4.25E+00 | 3.65E-03 | 4.33E-03 | 0 | 4.48E-04 | 1.4E+00 | 0 | -3.27E-01 |

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m^2 Modular ONE Hydron**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 4.74E+01 | 3.02E-01 | 1.41E+00 | 0 | 3.7E-02 | 1.96E+00 | 0 | -1.67E+01 |
| PERM | MJ | 1.41E+00 | 0 | -1.41E+00 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 4.88E+01 | 3.02E-01 | 1.65E-03 | 0 | 3.7E-02 | 1.96E+00 | 0 | -1.67E+01 |
| PENRE | MJ | 1.73E+02 | 5.26E+00 | 1.47E-02 | 0 | 6.45E-01 | 1.39E+02 | 0 | -8.33E+01 |
| PENRM | MJ | 1.3E+02 | 0 | 0 | 0 | 0 | -1.3E+02 | 0 | 0 |
| PENRT | MJ | 3.03E+02 | 5.26E+00 | 1.47E-02 | 0 | 6.45E-01 | 8.44E+00 | 0 | -8.33E+01 |
| SM | kg | 7.48E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 9.2E-03 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 5.2E-02 | 3.46E-04 | 1.02E-04 | 0 | 4.24E-05 | 3.35E-02 | 0 | -1.64E-02 |

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m^2 Modular ONE Hydron**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 7.79E-08 | 2.77E-10 | 1.5E-12 | 0 | 3.4E-11 | 1.71E-09 | 0 | -1.84E-08 |
| NHWD | kg | 1.65E-01 | 8.25E-04 | 1.88E-04 | 0 | 1.01E-04 | 1.83E+00 | 0 | -3.7E-02 |
| RWD | kg | 9.02E-03 | 9.54E-06 | 3.43E-07 | 0 | 1.17E-06 | 5.24E-04 | 0 | -5.38E-03 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 0 | 0 | 8.4E-02 | 0 | 0 | 0 | 0 | 0 |
| MER | kg | 3.76E-01 | 0 | 1.5E-02 | 0 | 0 | 7.13E+00 | 0 | 0 |
| EEE | MJ | 0 | 0 | 1E-01 | 0 | 0 | 1.82E+01 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| EET | MJ | 0 | 0 | 1.78E-01 | 0 | 0 | 4.13E+01 | 0 | 0 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:**
**1 m^2 Modular ONE Hydron**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PM | Disease incidence | ND | ND | ND | ND | ND | ND | ND | ND |
| IR | kBq U235 eq | ND | ND | ND | ND | ND | ND | ND | ND |
| ETP-fw | CTUe | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-c | CTUh | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-nc | CTUh | ND | ND | ND | ND | ND | ND | ND | ND |
| SQP | SQP | ND | ND | ND | ND | ND | ND | ND | ND |

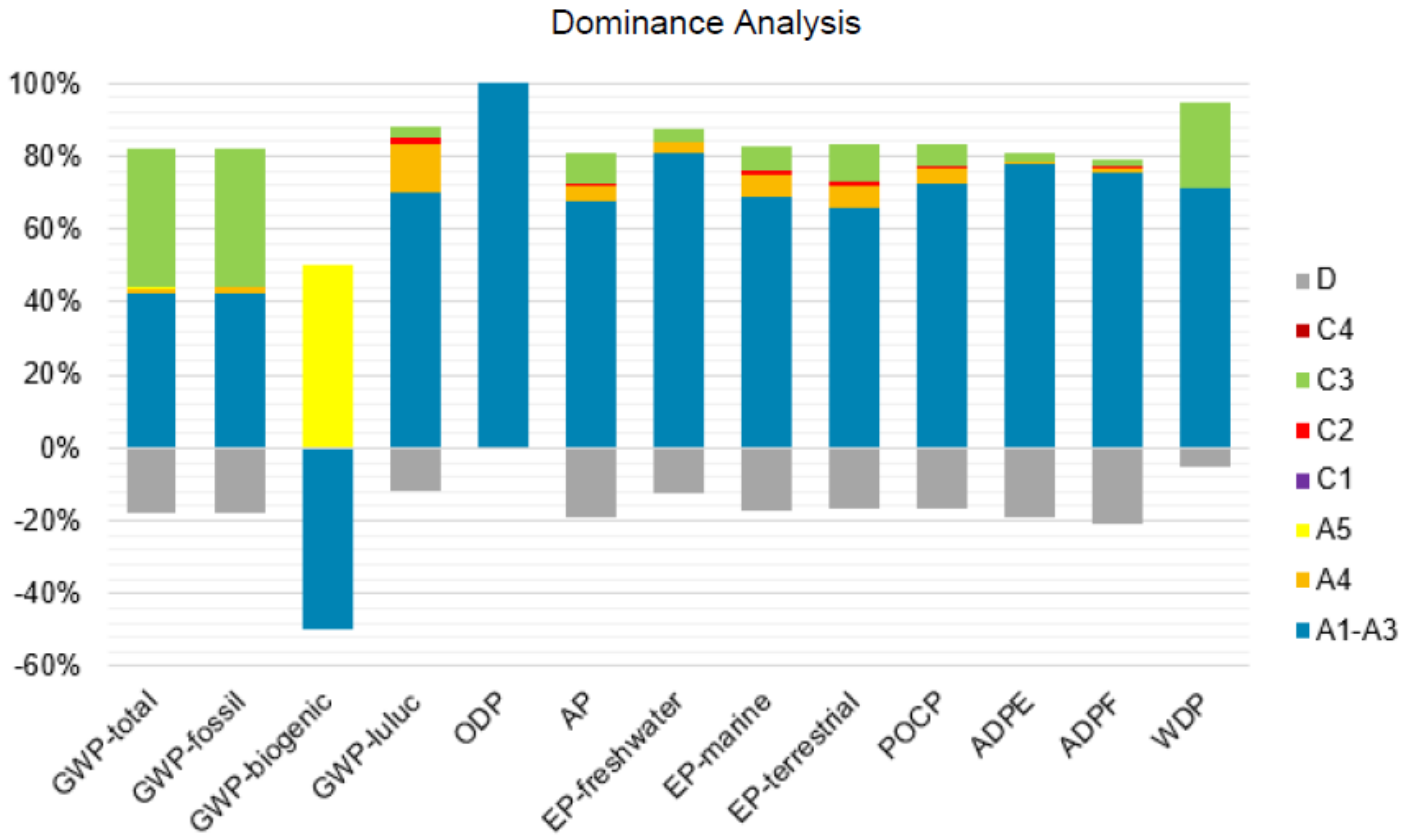
PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional indicators according to EN 15804+A2 are optional. The indicators are not shown in the EPD ("ND").

Limitation note 1 - applies to the indicator: Potential Human exposure efficiency relative to U235 (IR)
This impact category mainly addresses the possible effect of low-dose ionising radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure, nor does it consider the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some building materials is also not measured by this indicator.

Limitation note 2 - applies to the indicators: Abiotic depletion potential for non-fossil resources (ADPE), Abiotic depletion potential for fossil resources (ADPF), Water (user) deprivation potential (WDP), Potential comparative Toxic Unit for ecosystems (ETP-fw), Potential comparative Toxic Unit for humans (HTP-c), Potential comparative Toxic Unit for humans (HTP-nc), Potential Soil Quality Index (SQP). The results of this environmental impact indicator must be used with caution, as the uncertainties in these results are high or as there is limited experience with the indicator.

## 6. LCA: Interpretation




**Environmental impacts**
The dominance analysis shows that the manufacturing phase (modules A1-A3) is dominant in most impact categories of the floor covering. GWP-biogenic is offset in module A5 by the recycling of the packaging materials. Thermal recovery of the flooring at the end of life (Module C3) has a significant impact on the GWP-total and GWP-fossil indicators.

In the manufacturing phase (modules A1-A3), the datasets used for the core board contribute the most to the potential environmental impacts in most of the categories considered. This is due to the high mass proportion of core board in the product.

**Primary energy**
For both renewable and nonrenewable primary energy (PERT and PENRT, respectively), the influences are largely in the manufacturing phase and there in the production of the core board.

**Range of results**
The floors differ in the appearance of the decors. Therefore, a significant variance of the LCA results is not expected.

## 7. Requisite evidence

The certificates valid for the product and the manufacturer are listed below.

**VOC emissions**

Testing laboratory:
eco-INSTITUT Germany GmbH
Schanzenstraße 6-20
Carlswerk 1.19
D-51063 Cologne

*Test report: 56073-001*

Test method: Emission analysis according to *EN 16516*

**Results overview (3 days)**

| Name | Value | Unit |
|---|---|---|
| HCHO | 0 | µg/m³ |
| TVOC | 12 | µg/m³ |
| TSVOC | < 5 | µg/m³ |
| KMR 1 | < 1 | µg/m³ |

**Reaction to Fire**

Testing laboratory:
TFI Aachen GmbH
Charlottenburger Allee 41
D-52068 Aachen

*Test report: 21-000210-02*

Test method: Reaction to Fire according to *EN 13501-1*

**Certificate DE-UZ 120 Blue Angel**
Modular ONE Hydron (contract no. 36424) may use the eco-label "Blue Angel" on the basis of the above-mentioned trademark agreements of RAL gGmbH, Fränkische Straße 7, 53229 Bonn, Germany and the of the Federal Environment Agency because they are low in emissions.

## 8. References

**Standards**

**EN 13501-1**
DIN EN 13501-1:2019-05, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

**EN 14041**
DIN EN 14041:2018-05, Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics.

**EN 15804**
DIN EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

**EN 16511**
DIN EN 16511:2019-07, Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer.

**EN 16516**
DIN EN 16516:2020-10, Construction products: Assessment of release of hazardous substances - Determination of emissions to indoor air.

**ISO 14025**
DIN EN ISO 14025:2011-10, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

**Further literature**

**AgBB Scheme - August 2018**
Indoor air quality requirements in buildings: health assessment of emissions of volatile organic compounds (VVOCs, VOCs and SVOCs) from building products.

**AVV**
Waste Catalogue Ordinance (AVV) of 10 December 2001 (BGBl. I p. 3379), last amended by Article 1 of the Ordinance of 30 June 2020 (BGBl. I p. 1533).

**BNB**
BNB Code No. 352.711 Useful lives of building components for life cycle analyses according to the Sustainable Building Assessment System, 2017: Linoleum, laminate, PVC, plastic engineered wood flooring, cork, rubber, sports hall coverings. Berlin: Federal Ministry of the Interior, for Construction and Home Affairs.

**DE-UZ 120**
'Blue Angel" eco-label for low-emission elastic floor coverings.Modular ONE Hydron, Contract No.: 36424; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 30.06.2021.

**ECHA**
List of Candidate Substances of Very High Concern for Authorisation (ECHA Candidate List), dated 17.01.2022, published in accordance with Article 59(10) of the REACH Regulation. Helsinki: European Chemicals Agency.

**ecoinvent**
ecoinvent 3.6 Database on Life Cycle Assessment Inventories (Life Cycle Inventory data). Zurich: ecoinvent Association, 2020.

**EMAS**
Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC. https://www.emas.de/home/

**GaBi**
GaBi 10.6: Software System and Database for Life Cycle Engineering, Sphera Solutions GmbH, Leinfelden-Echterdingen, 2021.

**IBU 2021**
Institut Bauen und Umwelt e.V.: General guide for the EPD programme of the Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibuepd.com

**PCR Part A**
Product category rules for building-related products and services. Part A: Calculation rules for LCA and requirements for the project report according to EN 15804+A2:2019, version 1.2. Berlin: Institut Bauen und Umwelt e.V. (ed.), 2021.

**PCR: Floor coverings**
Product category rules for building-related products and services. Part B: EPD requirement for floor coverings, version 1.2. Berlin: Institut Bauen und Umwelt e.V. (ed.), 14.02.2018.

**Test report: 56073-001**
Emission analysis of Modular ONE Hydron according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 16.03.2021.

**Test report: 21-000210-02**
Classification of the Reaction to Fire of Modular ONE Hydron according to EN 13501-1:2010. Aachen: TFI Aachen GmbH. 26.03.2021.

**Regulation (EU) No 305/2011**
Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC. https://eur-lex.europa.eu/legal-content/DE/TXT/PDF/?uri=CELEX:02011R0305-20210716&from=EN

**Regulation (EU) No 528/2012**
Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocide products.

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