

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Hamberger Flooring GmbH & Co. KG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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DISANO design floor  
Hamberger Flooring GmbH & Co. KG




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## 1. General Information

<p><b>Hamberger Flooring GmbH &amp; Co. KG</b></p> <hr/> <p><b>Programme holder</b>          IBU – Institut Bauen und Umwelt e.V.          Hegelplatz 1          10117 Berlin          Germany</p> <hr/> <p><b>Declaration number</b>          EPD-HAM-20220105-ICB1-EN</p> <hr/> <p><b>This declaration is based on the product category rules:</b>          Floor coverings, 02.2018          (PCR checked and approved by the SVR)</p> <hr/> <p><b>Issue date</b>          08.08.2022</p> <hr/> <p><b>Valid to</b>          07.08.2027</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters          (chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder          (Managing Director Institut Bauen und Umwelt e.V.)</p>	<p><b>DISANO design floor</b></p> <hr/> <p><b>Owner of the declaration</b>          Hamberger Flooring GmbH &amp; Co. KG          Rohrdorfer Straße 133          83071 Stephanskirchen          Germany</p> <hr/> <p><b>Declared product / declared unit</b>          1 m<sup>2</sup> DISANO by HARO Design floor</p> <hr/> <p><b>Scope:</b>          This product declaration refers to an average square metre of Hamberger design flooring produced at the factory in Germany. The average was calculated according to the surface area produced in one year.</p> <p>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.</p> <p>The EPD was created according to the specifications of <i>EN 15804+A2</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p><b>Verification</b></p> <table border="1"> <tr> <td colspan="2">The standard <i>EN 15804</i> serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to <i>ISO 14025:2011</i></td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Prof. Dr. Birgit Grahl          (Independent verifier)</p>	The standard <i>EN 15804</i> serves as the core PCR		Independent verification of the declaration and data according to <i>ISO 14025:2011</i>		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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## 2. Product

### 2.1 Product description/Product definition

**DISANO** is a multi-layer, modular design floor covering manufactured by Hamberger taking into account *EN 16511*. By combining layers and materials into different product structures, this product line creates floor coverings for a wide variety of applications and needs.

**DISANO ClassicAqua:** The surface of the design floor is equipped with a pressure distribution layer for maximum walking comfort. The ClassicAqua flooring is available in many stone and wood designs in tile and plank format with a height of 9.3 mm.

**DISANO LifeAqua** and **HydroStar:** The LifeAqua and HydroStar ranges differ in the designs of the surface, in the formats of the planks and tiles and in the height (LifeAqua: 8.5 mm, HydroStar: 6.5 mm).

**DISANO WaveAqua:** The highly scratch-resistant floor covering is available in wood designs as short plank or country house plank (height 8 mm).

**DISANO Saphir:** A plastic film on a solid plastic core board forms a completely waterproof floor. The available formats are tile and short plank with 4.5 mm height.

**DISANO Project:** The completely waterproof floor covering is built on a resilient support mat. The floor covering is only suitable for full-surface gluing and is particularly renovation-friendly with a height of only 2 mm. Available as tile or short plank.

The surface of all product groups is printed with a decorative wood or stone look. By embossing the surface structure, an authentic copy of natural materials can be created. With the exception of DISANO Project, the planks are equipped with a milled connection profile all around the sides for glueless installation. All layers are glued together. The declared product represents an area-weighted average of the design floors produced within one year.

*Regulation (EU) No 305/2011 (CPR)* applies to the placing of the product on the market in the EU/EFTA (with the exception of Switzerland). The product has a declaration of performance according to harmonised standard *DIN EN 14041:2008, Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics* and a CE marking. The respective national regulations apply to the use.

## 2.2 Application

DISANO is a multi-layer, semi-rigid, modular floor covering manufactured taking into account *EN 16511* for commercial and private use in dry interior areas, which can be laid as a floating floor or glued down over the entire surface (DISANO Project: only glued down installation possible).

The installation must be carried out in accordance with the installation instructions, the rules of the trade and the current state of the technology.

## 2.3 Technical Data

According to *Regulation (EU) No 305/2011*, the following technical data of the products within the scope of the EPD shall be provided:

### Technical data DISANO ClassicAqua, HydroStar, LifeAqua, Saphir and WaveAqua

- Total thickness: 6.5-9.3 mm
- Weight per unit area: 5.6-8.7 kg/m<sup>2</sup>
- Product shape: Tile, Plank
- Length of the top layer: 631-2200 mm
- Width of the top layer: 193-313 mm
- Use class: 23/33
- Emissions of VOC: ≤ 0.025 mg/m<sup>3</sup>
- Formaldehyde emissions according to *EN 717-1*: < 100 µg/m<sup>3</sup>
- Content of hazardous substances: compliant, not actively added
- Thermal conductivity: 0.125-0.15 W/(m\*K)
- Slip resistance:  $\mu \geq 0.30$
- Electrical behaviour: no performance declared
- Resistance to water: no performance declared

### Technical data DISANO Project

- Total thickness: 2 mm
- Weight per unit area: 3.33 kg/m<sup>2</sup>
- Product shape: Tile, Plank
- Length of the top layer: 650-1300 mm
- Top layer width: 248-310 mm
- Emissions of VOC: ≤ 0.017 mg/m<sup>3</sup>
- Formaldehyde emissions according to *EN 717-1*: < 100 µg/m<sup>3</sup>
- Content of hazardous substances: compliant, not actively added
- Thermal conductivity: 0.147 W/(m\*K)
- Slip resistance:  $\mu \geq 0.30$
- Electrical behaviour: Antistatic
- Resistance to water: no property specified

The performance values of the product correspond to the declaration of performance in relation to its essential characteristics according to *EN 14041*. The assessment and verification of constancy of performance are carried out according to system 3 by involving notified bodies.

## 2.4 Delivery status

The DISANO product range includes flooring planks in various formats:

- Stone design tiles with lengths from 631 to 650 mm and widths from 310 to 313 mm
- Wood design planks with lengths from 1282 to 2200 mm and widths from 193 to 248 mm

The wood moisture content of the high-density fibreboard (HDF) is approx. 5 % on delivery.

One packaging unit corresponds to approx. 1.4 to 3.5 m<sup>2</sup>, depending on the format. The weight per unit area is between 3.3 and 8.7 kg/m<sup>2</sup>.

## 2.5 Base materials/Ancillary materials

One square metre of DISANO flooring, averaged over the area produced in one year of each type, is made up of the following material components (in mass %):

- HDF core board 67 %
- Water content 4 %
- Polyethylene terephthalate (PET) core board 5 %.
- PET decorative layer 7 %
- Polyethylene (PE) insulation mat 9 %
- Cork 4 %
- Polyurethane (PUR) adhesive 4%
- Lacquer < 1 %

The product/product/at least one sub-product contains substances on the *ECHA Candidate List of Substances of Very High Concern (SVHC)* (date 08.07.2021) above 0.1% by mass: no.

The product/product/at least one sub-product contains other CMR substances of category 1A or 1B not on the candidate list above 0.1% by mass in at least one sub-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 (*EU*) No 528/2012): no.

## 2.6 Manufacture

To produce DISANO ClassicAqua, LifeAqua and HydroStar floor coverings, an HDF core board is laminated on both sides. A vapour barrier and a cork mat are glued to the underside. For ClassicAqua, a decoratively printed plastic film is laminated over an elastic pressure distribution layer as a surface on the board. For LifeAqua and HydroStar floor coverings, the plastic film is applied directly to the HDF board.

For DISANO WaveAqua, a polymer surface and an embossed underside are pressed onto an HDF board. The surface is sealed with a multi-layer lacquer finish.

For the production of DISANO Saphir and Project floor coverings, a plastic film is laminated onto a waterproof backing material; in the case of Saphir onto a plastic board, in the case of Project onto an elastic mineral-filled insulation mat.

Solvent-free hot-melt adhesive is used for gluing in all DISANO variants.

In the final production stage, the glued panels are cut into the plank or tile dimensions and profiled. In the

process, a geometry corresponding to the respective joint system is milled. DISANO Project is cut to a smooth edge.

The final product is packaged in cardboard and foil, which protect the elements from climatic fluctuations and mechanical damage.

The company Hamberger Flooring carries the following certifications:

- Quality management according to *ISO 9001* since 1995
- Environmental management according to *ISO 14001* since 1998
- Energy management according to *ISO 50001* since 2012

## 2.7 Environment and health during manufacturing

Environmental protection measures in the manufacturing process:

- Use of wood-based materials from suppliers with *PEFC certification*
- Generating electricity and heat from wood residues from the production
- Electricity generation from hydropower

Health protection measures in the manufacturing process:

- Provision of hearing protection
- Provision of safety shoes
- Provision of protective clothing, goggles and gloves where required
- Use of solvent-free paint and adhesive systems
- Instruction on occupational safety and behaviour in an emergency
- First aider training for employees

## 2.8 Product processing/Installation

DISANO can be processed with tools suitable for woodworking. The work safety instructions applicable to wood processing (e.g. ear protection, protective goggles) must be followed. In case of dust formation attention should be paid to exhaust ventilation or the wearing of respiratory protection.

Required tools may only be used for their intended purpose and in accordance with the manufacturer's operating instructions. In case of commercial processing, the regulations of the employers' liability insurance associations must be followed.

The installation instructions can be downloaded from the "Service" section at [www.haro.com](http://www.haro.com).

The design floors can be installed as floating floors or glued to the subfloor over the entire surface. A low-emission adhesive approved for floor coverings, e.g. HARO Flexible Glue, is recommended. DISANO Project must be glued down over the entire surface. DISANO Project and DISANO Saphir are also approved for installation in bathrooms.

## 2.9 Packaging

The packaging is composed of cardboard and PE foil. The various packaging materials are to be collected separately and recycled in accordance with local legal regulations.

## 2.10 Condition of use

Wood-based materials can absorb and release water (vapour). If the carrier board of the design floor consists of a high-density fibreboard, an indoor climate with a temperature of approx. 20 °C and a relative humidity between 30 and 65 % protects the floor from unwanted dimensional changes.

Cleaning the floor according to the care instructions is recommended.

If used as intended, no damage is to be expected.

## 2.11 Environment and health during use

When used as directed, no hazards to water and soil are expected.

According to emission test reports the indoor air quality is not impaired by DISANO. The product meets the criteria of the following specifications:

- *AgBB Scheme - August 2018*
- *A+ émissions dans l'air intérieur according to French VOC regulation FR*
- *DE-UZ 176 Blue Angel; DISANO Project: DE-UZ 120 Blue Angel*

## 2.12 Reference service life

According to the BBSR table "Service Life of Building Components for life cycle analysis according to *BNB*", the service life is 20 years (code no. 352.711).

If used as intended, no damage is to be expected.

## 2.13 Extraordinary effects

### Fire

According to the fire test in accordance with *EN 13501-1*, the design floor covering has been rated with the following classifications:

- DISANO Project: Cfl -s1
- DISANO Saphir: Dfl -s2; for full-surface bonding: Cfl -s2
- DISANO ClassicAqua: Dfl -s1
- DISANO LifeAqua and WaveAqua: Cfl -s1

### Water

No components that could be harmful to water can be washed out. Floor coverings with an HDF core board are not resistant to permanent exposure to water.

### Mechanical destruction

Mechanical damage can be repaired locally. There is no danger to the environment. There is a risk of injury at broken edges.

## 2.14 Re-use phase

Floating design floor coverings can be removed and re-installed without destroying the floor.

## 2.15 Disposal

Disposal of the floor covering with household waste (AVV class 20 03 01) is possible.

The packaging materials cardboard and PE foil can be separately assigned to *AVV classes* 20 01 01 (paper and cardboard) and 15 01 02 (plastic packaging). Floor

coverings contaminated with adhesive residues can be disposed of as construction site waste.

## 2.16 Further information

Further product information and documents on installation, maintenance and explained services are available at [www.haro.com](http://www.haro.com).

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declared unit is one square metre (1 m<sup>2</sup>) of average DISANO design floor including packaging materials. The average was formed on the basis of the m<sup>2</sup> produced in 2020 of the floors considered.

#### Declared unit

Name	Value	Unit
Declared unit	1	m <sup>2</sup>
Grammage	6.52	kg/m <sup>2</sup>
Packaging materials	0.11	kg/m <sup>2</sup>
Total	6.63	kg/m <sup>2</sup>
Layer thickness	0.0072	m
Gross density	905	kg/m <sup>3</sup>

### 3.2 System boundary

Type of EPD: Cradle to factory gate with options.

#### Modules A1-A3 and A5

The product stage (A1-A3) begins with the consideration of the production of the necessary raw materials and energies, including all corresponding upstream chains and procurement transport. Furthermore, the entire manufacturing phase was mapped, including the treatment of production waste until the end-of-waste status (EoW) is reached. Module A5 considers the disposal of packaging materials. However, product losses as well as electricity-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 fractions until the end-of-waste status (EoW) is reached, including the associated transports at the end of the product life cycle. No processes are considered for dismantling (Module C1), as manual dismantling is assumed. In Module C3, thermal recovery is modelled. No materials are landfilled, so no loads/benefits are taken into account in Module C4.

#### Module D

Reporting of the loads and benefits of the product outside the system boundary. These consist of energy credits from thermal recovery (C3) in the form of the average European electricity mix or thermal energy from natural gas.

### 3.3 Estimates and assumptions

It was assumed that all offcuts from manufacturing are thermally utilised and that cork residues in A1-A3 are thermally utilised together with wood chips.

It was assumed that end-of-life thermal waste utilisation plants are those whose R1 factor (energy conversion efficiency or energy efficiency of waste

incineration plants according to the European Waste Framework Directive) is > 0.6.

### 3.4 Cut-off criteria

The polyolefin vapour barrier and the connecting profiles were cut off.

The sum of the neglected processes is < 1 % of the material inputs. It can therefore be assumed that the sum of the neglected processes does not exceed 5 % of the impact categories considered.

### 3.5 Background data

Basically, the background database *GaBi 10.5* in content version 2021.2 was used. If no suitable data sets were available in the GaBi background database, data sets from the *ecoinvent 3.6 database* were used.

### 3.6 Data quality

The primary data was provided by Hamberger Flooring GmbH & Co. KG and checked for plausibility. The quality and representativeness of the data collected can therefore be considered high.

The data quality of the background data used was rated as good in terms of technical, geographical, and temporal representativeness. The majority of the background data used is from the reference year 2020.

Regarding the robustness of the LCA values, it can be stated that the balanced potential environmental impacts largely result from the background data. Thus, the influence of the background data and pre-products is high compared to the environmental impacts caused by the actual production.

### 3.7 Period under review

The data basis of the present LCA is based on data recordings from the year 2021.

### 3.8 Allocation

#### Module A1-A3

Wood residues that are internally, thermally utilised were considered as a closed loop. An economic allocation of the by-products was dispensed with, as the product value exceeds that of the by-products many times over and no significant influence on the LCA results is to be expected.

### 3.9 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 *GaBi* background database Content version 2021.1 was used.

## 4. LCA: Scenarios and additional technical information

### Characteristic product properties Information on biogenic carbon

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

Name	Value	Unit
Biogenic carbon content in product	1.983	kg C
Biogenic carbon content in accompanying packaging	0.04	kg C

#### Reference service life

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

#### End of life (C1–C4)

Name	Value	Unit
Energy recovery	6.52	kg
Landfilling	0	kg
Transport distance (truck to waste-to-energy plant)	75	km
Truck load factor (including empty runs)	50	%

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

Name	Value	Unit
Combustion material	6.52	kg
R1 factor MVA	> 60	%
Lower calorific value	16.7	MJ/kg

## 5. LCA: Results

### Important notice:

EP-freshwater: This indicator was calculated as "kg P-eq." in accordance with the characterisation model (EUTREND-Modell, Struijs et al., 2009b, wie in ReCiPe umgesetzt; <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>)).

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	ND	X	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 DISANO design floor

Core Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	1.25E+0	2.01E-1	0.00E+0	4.43E-2	1.16E+1	0.00E+0	-4.12E+0
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	8.65E+0	5.55E-2	0.00E+0	4.39E-2	4.31E+0	0.00E+0	-4.12E+0
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-7.42E+0	1.45E-1	0.00E+0	1.95E-8	7.27E+0	0.00E+0	4.29E-5
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	2.09E-2	6.73E-6	0.00E+0	3.59E-4	2.12E-4	0.00E+0	-2.78E-3
ODP	[kg CFC11-Eq.]	4.62E-9	4.25E-18	0.00E+0	8.67E-18	2.41E-15	0.00E+0	-4.58E-14
AP	[mol H <sup>+</sup> -Eq.]	2.35E-2	8.28E-6	0.00E+0	1.57E-4	5.03E-3	0.00E+0	-5.31E-3
EP-freshwater	[kg P-Eq.]	1.14E-4	2.89E-9	0.00E+0	1.30E-7	3.56E-7	0.00E+0	-5.25E-6
EP-marine	[kg N-Eq.]	1.01E-2	2.46E-6	0.00E+0	7.31E-5	2.26E-3	0.00E+0	-1.52E-3
EP-terrestrial	[mol N-Eq.]	9.57E-2	4.02E-5	0.00E+0	8.15E-4	2.73E-2	0.00E+0	-1.63E-2
POCP	[kg NMVOC-Eq.]	2.55E-2	5.96E-6	0.00E+0	1.42E-4	5.85E-3	0.00E+0	-4.27E-3
ADPE	[kg Sb-Eq.]	3.57E-6	1.32E-10	0.00E+0	3.89E-9	3.76E-8	0.00E+0	-6.72E-7
ADPF	[MJ]	2.05E+2	1.72E-2	0.00E+0	5.85E-1	3.71E+0	0.00E+0	-7.14E+1
WDP	[m <sup>3</sup> world-Eq deprived]	4.70E+0	5.05E-3	0.00E+0	4.07E-4	1.24E+0	0.00E+0	-3.08E-1

Caption: 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 m2 DISANO design floor

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	[MJ]	5.12E+1	1.61E+0	0.00E+0	3.36E-2	8.29E+1	0.00E+0	-1.58E+1
PERM	[MJ]	8.38E+1	-1.61E+0	0.00E+0	0.00E+0	-8.22E+1	0.00E+0	0.00E+0
PERT	[MJ]	1.35E+2	1.92E-3	0.00E+0	3.36E-2	6.91E-1	0.00E+0	-1.58E+1
PENRE	[MJ]	1.51E+2	7.67E-1	0.00E+0	5.87E-1	5.68E+1	0.00E+0	-7.14E+1
PENRM	[MJ]	5.38E+1	-7.50E-1	0.00E+0	0.00E+0	-5.31E+1	0.00E+0	0.00E+0
PENRT	[MJ]	2.05E+2	1.72E-2	0.00E+0	5.87E-1	3.71E+0	0.00E+0	-7.14E+1
SM	[kg]	7.48E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m <sup>3</sup> ]	1.80E-1	1.19E-4	0.00E+0	3.85E-5	2.92E-2	0.00E+0	-1.54E-2

Caption: 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 m2 DISANO design floor

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	[kg]	1.14E-6	1.75E-12	0.00E+0	3.09E-11	7.75E-10	0.00E+0	-1.60E-8
NHWD	[kg]	2.45E-1	2.18E-4	0.00E+0	9.21E-5	2.31E-1	0.00E+0	-3.31E-2
RWD	[kg]	3.42E-3	3.99E-7	0.00E+0	1.06E-6	1.52E-4	0.00E+0	-5.07E-3
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	9.86E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	1.80E-1	1.75E-2	0.00E+0	0.00E+0	6.52E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	1.17E-1	0.00E+0	0.00E+0	1.72E+1	0.00E+0	1.73E+1
EET	[MJ]	1.95E+0	2.07E-1	0.00E+0	0.00E+0	3.26E+1	0.00E+0	3.28E+1

Caption: 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<sup>2</sup> DISANO design floor

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND	ND

Caption: 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

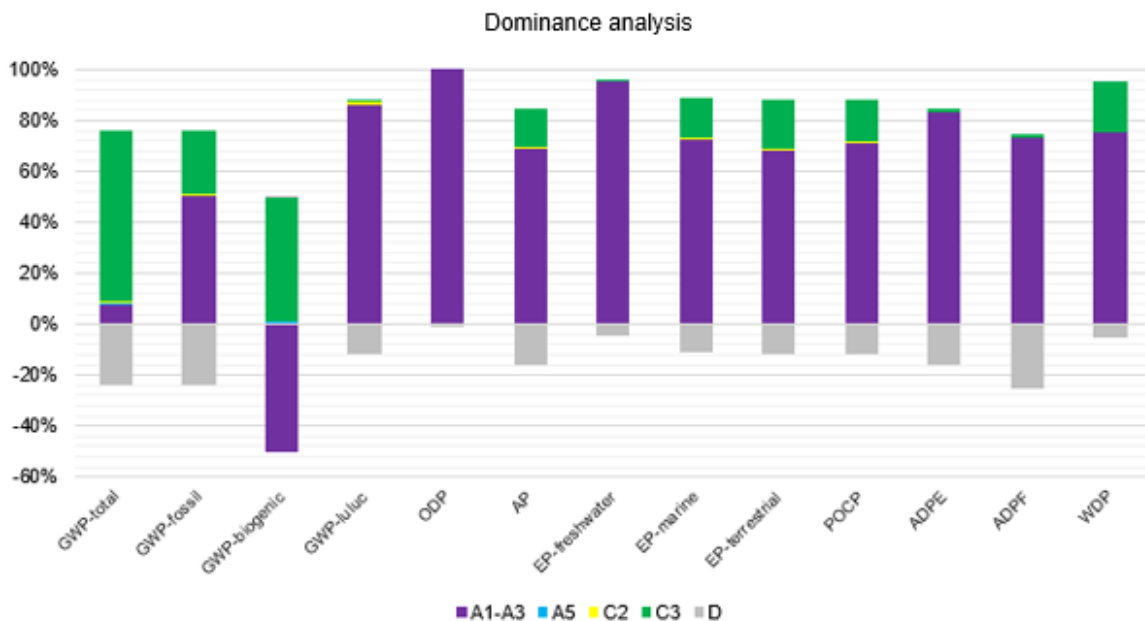
Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235” (IR).

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.

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 or as there is limited experienced 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 over the considered life cycle of the DISANO design floor. The indicators global warming potential total (GWP-total) and global warming potential biogenic (GWP-biogenic) are an exception. Here, the disposal of the design floor makes the largest contribution to the potential environmental impacts. This is due to the fact that in the assumed thermal utilisation of the flooring, the biogenic carbon stored in the product is emitted as biogenic CO<sub>2</sub> emissions. This is also the reason why the sum of the biogenic CO<sub>2</sub> emissions over the life cycle of the product is balanced (equal to 0).

In the manufacturing phase (modules A1-A3), the data sets used for the HDF board and the PUR adhesive contribute the most to the potential environmental impacts in majority of the categories considered.

The indicators global warming potential luluc (GWP-luluc), eutrophication potential freshwater (EPfreshwater), Abiotic depletion potential for non-fossil resources (ADPE) and water (user) deprivation potential (WDP) are most influenced by the data set for the PUR adhesive. The greatest impact on the indicators acidification potential of soil and water (AP), eutrophication potential saltwater (EP-marine), eutrophication potential (EP-terrestrial) and formation



# HARO

potential of tropospheric ozone photochemical oxidants (POCP) has the HDF board. The greatest impact on potential for depletion of abiotic resources - fossil fuels (ADPF) have plastic components of the flooring.

## **Primary energy**

The demand for renewable primary energy is mainly influenced by the manufacturing phase and there by the data set for the HDF board. The demand non-renewable primary energy demand is influenced by the plastic core board, PET decorative film and the insulation mat production.

## **Range of results**

For the range of results, the indicators GWP-fossil and PENRT were considered. For both indicators, both in the manufacturing phase (modules A1-A3) and across all modules considered (excluding module D), the highest values are recorded for floors consisting entirely of plastic components. Lower indicator values were calculated for floors with an HDF core board and thus lower plastic content.

## 7. Requisite evidence

### VOC emissions

DISANO	Test center	No. Test report	Date	Emissions Formaldehyde (AgBB 28d)	Emissions VOC (AgBB 2018 28d)
Classic Aqua	eco Institut Köln	56368-001-AgBB-L	16.07.2021	2 µg/m³	12 µg/m³
Life Aqua	eco Institut Köln	56359-002-AgBB-L	02.08.2021	3 µg/m³	25 µg/m³
Wave Aqua	eco Institut Köln	55212-B001 II	06.07.2020	3 µg/m³	7 µg/m³
Saphir	eco Institut Köln	54163-002-007 III	10.03.2020	< 2 µg/m³	7 µg/m³
Project	eco Institut Köln	56359-001-AgBB-L	05.08.2021	<< NIK	12 µg/m³

### Credentials for fire safety

DISANO	No. Test report	Date	Classification
Classic Aqua	2718343/2	31.08.2018	C <sub>1rs1</sub>
Life Aqua	2719648/2	17.12.2019	C <sub>1rs1</sub>
Wave Aqua	2720009	18.02.2020	C <sub>1rs1</sub>
Saphir	2718343/3 A1	23.10.2018	C <sub>1rs2</sub>
Project	2717255	29.05.2017	B <sub>1rs1</sub>

### "Blue Angel" eco label

DISANO	Contract no.	Date	Award basis
Classic Aqua	31327	12.10.2017	RAL-UZ 176 (2013)
Life Aqua	34351	27.02.2020	DE-UZ 176 (2013)
Wave Aqua	35273	28.01.2021	DE-UZ 176 (2013)
Saphir	32002	04.04.2018	DE-UZ 120 (2011)
Project	32003	28.03.2018	DE-UZ 120 (2011)

## 8. References

### Standards

#### EN 717-1

DIN EN 717-1:2005-01, Wood-based panels - Determination of formaldehyde emission - Part 1: Formaldehyde emission by the test chamber method.

#### ISO 9001

DIN EN ISO 9001:2015-11, Quality management systems - Requirements.

#### EN 12664

DIN EN 12664:2001-05, Thermal performance of building materials and building products - Determination of thermal resistance by the plate device method and the heat flux plate device - Dry and wet products with medium and low thermal resistance.

#### EN 13183-1

DIN EN 13183-1:2002-07, Moisture content of a piece of sawn timber - Part 1: Determination by kiln-drying.

#### EN 13489

DIN EN 13489:2017-12, Wood flooring and parquet - Multilayer parquet elements.

#### EN 13501-1

DIN EN 13501-1:2010-01, Fire classification of construction products and types of construction products - Part 1: Classification using the results of reaction to fire tests of construction products.

#### ISO 14001

DIN EN ISO 14001:2015-11, Environmental management systems - Requirements with guidance for use.

#### ISO 14025

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

#### EN 14041

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

#### EN 14342

DIN EN 14342:2013-09, Wood flooring and parquet - Characteristics, evaluation of conformity and marking.

#### EN 15804

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

#### EN 16511

DIN EN 16511:2019-07, Panels for floating installation - Semi-rigid, multi-layer modular flooring (MMF) with abrasion 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 50001

DIN EN ISO 50001:2018-12, Energy management systems - Requirements with guidance for use.

#### DIN 68364

DIN 68364:2003-05, Characteristic values of wood species - Bulk density, modulus of elasticity and strengths.

### Further literature

#### AgBB Scheme - August 2018

Indoor air quality requirements in buildings: health assessment of emissions of volatile organic compounds (VOCs, VOCs and SVOCs) from building products.

## **AltholzV**

Ordinance on Requirements for the Recovery and Disposal of Waste Wood (Waste Wood Ordinance), 15.08.2002.

## **AVV**

List of Wastes Ordinance (AVV) of 10 December 2001 (BGBl. I p. 3379), last amended by Article 2 of the Ordinance of 30 June 2020 (BGBl. I p. 1533).

## **BNB**

Service life of building components for life cycle analyses according to the Sustainable Building Assessment System: Linoleum, laminate, PVC, plastic parquet, cork, rubber, sports hall coverings. Berlin: Bundesministerium des Innern, für Bau und Heimat, 2017.

## **DE-UZ 120 a**

Blue Angel" eco-label for low-emission floor coverings, Panels and doors made of wood and wood-based materials for interior spaces. Saphir, Contract No.:32002; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 04.04.2018.

## **DE-UZ 120 b**

Blue Angel" eco-label for low-emission indoor floor coverings, panels and doors made of wood and wood-based materials. Project, Contract No.: 32003; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 28.03.2018.

## **DE-UZ 176 a**

Blue Angel" eco-label for low-emission floor coverings, panels and doors made of wood and wood-based materials for indoor use. ClassicAqua, Contract No.:31327; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 12.10.2017.

## **DE-UZ 176 b**

Blue Angel" eco-label for low-emission indoor floor coverings, panels and doors made of wood and wood-based materials. LifeAqua, Contract No.:34351; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 27.02.2020.

## **DE-UZ 176 c**

Blue Angel" eco-label for low-emission indoor floor coverings, panels and doors made of wood and wood-based materials. WaveAqua, Contract No.: 35273; Bonn: RAL gGmbH, Dessau-Roßlau: Federal Environment Agency, 28.01.2021.

## **ECHA Candidate List**

List of Substances of Very High Concern (Candidate List) for Authorisation (ECHA Candidate List), dated 08.07.2021, published in accordance with Article 59(10) of the REACH Regulation (Regulation (EC) No 1907/2006). Helsinki: European Chemicals Agency.

## **ecoinvent 3.6**

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 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) and repealing

Regulation (EC) No 761/2001, and Commission Decisions 2001/681/EC and 2006/193/EC. <https://www.emas.de/home/>

## **GaBi 10.5**

GaBi 10.5: Software System and Database for Life Cycle Engineering, Sphera Solutions GmbH, Leinfelden-Echterdingen, 2021.

## **IBU 2021**

Institut Bauen und Umwelt e.V.: Allgemeine Anleitung für das EPD-Programm des Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Berlin: Institut Bauen und Umwelt e.V., 2021. [www.ibu-epd.com](http://www.ibu-epd.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.

## **PEFC**

Programme for the Endorsement of Forest Certification Schemes. PEFC ST 2002:2013 - Production and distribution of laminate, resilient flooring, parquet, ceilings and other wood products. Hamberger certificate no.: HW-CoC-0005-18. Attenkirchen: HW-Zert GmbH, 10.12.2018.

## **Test report: 56368-001-AgBB-L**

Test report: 56368-001-AgBB-L, Emission analysis of Classic Aqua according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 16.07.2021.

## **Test report: 56359-002-AgBB-L**

Test report: 56359-002-AgBB-L, Emission analysis of Life Aqua according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 02.08.2021.

## **Test report: 55212-B001 II**

Test report: 55212-B001 II, Emission analysis of Wave Aqua according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 06.07.2020.

## **Test report: 54163-002-007 III**

Test report: 54163-002-007 III, Emission analysis of sapphire according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 10.03.2020.

## **Test report: 56359-001-AgBB-L**

Test report: 56359-001-AgBB-L, Emissions analysis of Project according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 05.08.2021.

## **Test report: 2718343/2**

Test report: 2718343/2, Classification of Classic Aqua for reaction to fire according to EN 13501-1:2010. Dresden: EPH Dresden: Entwicklungs- und Prüflabor Holztechnologie GmbH. 31.08.2018.

## **Test report: 2719648/2**

Test report: 2719648/2, Classification of Life Aqua for reaction to fire according to EN 13501-1:2010.

Dresden: EPH Dresden: Entwicklungs- und Prüflabor Holztechnologie GmbH. 17.12.2019.

**Test report: 2720009**

Test report: 2720009, Classification of Wave Aqua for reaction to fire according to EN 13501-1:2010.

Dresden: EPH Dresden: Entwicklungs- und Prüflabor Holztechnologie GmbH. 18.02.2020.

**Test report: 2718343/3\_A1**

Test report: 2718343/3\_A1, Classification of sapphire for reaction to fire according to EN 13501-1:2010.

Dresden: EPH Dresden: Entwicklungs- und Prüflabor Holztechnologie GmbH. 23.10.2018.

**Test report: 2717255**

Test report: 2717255, Classification of Project for reaction to fire according to EN 13501-1:2010.

Dresden: EPH Dresden: Entwicklungs- und Prüflabor Holztechnologie GmbH. 29.05.2017.

**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>

**VOC Regulation FR**

A+ émissions dans l'air intérieur according to French VOC Regulation, France, 2011.

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