

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Moland A/S
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-MOL-20230309-CCA1-EN
Issue date	21/12/2023
Valid to	20/12/2028

Moland // Circular - The floor for generations
Moland A/S

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General Information

Moland A/S

Programme holder

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

Declaration number

EPD-MOL-20230309-CCA1-EN

This declaration is based on the product category rules:

Floor coverings, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

21/12/2023

Valid to

20/12/2028

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

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

Moland // Circular - The floor for generations

Owner of the declaration

Moland A/S
Strandvejen 16
7800 Skive
Denmark

Declared product / declared unit

1 m² Moland // Circular

Scope:

This document relates to the Circular product manufactured in Switzerland. 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	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally

Ms Jane Anderson,
(Independent verifier)

Product

Product description/Product definition

Circular is an elastic, multi-layer and decorative floor covering in the form of a plank or a tile. Thanks to the combination of different layers and materials Circular is a suitable floor covering for different applications and demands.

The main components of Circular are described below:

Circular HDF:

A high-density wood fiber board as the core board, with a thin cork sound underlay laminated to the back. A comfort layer made of natural fibers is laminated on top, which is digitally printed with a decor and sealed with an abrasion-resistant, UV-curing lacquer compound. An authentic wood or stone structure can be achieved by embossing the surface structure. The edges of the product are processed with a click connection which enables a form-fitting assembly of the product to form a larger, flat unit. The product is laid as a floating floor system and is declared according to product standard EN 16511. The product corresponds to class 33.

Sustainability:

Moland A/S offers its customers the Second Life service with the aim of sustainably extending the lifespan of Circular. In this way, Moland A/S makes a decisive contribution to ensuring that floor coverings that have already been used are remanufactured. As a result, natural resources can be saved and the environmental impact during the process of remanufacturing can be reduced to a minimum.

Regulation (EU) No. 305/2011(CPR) applies to market the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland). The product requires a declaration of performance according to EN 16511:2014+A1:2019, Panels for floating installation - Semi-rigid, multi-layer, modular floor coverings (MMF) with abrasion resistant top layer and the CE marking. The respective national regulations apply. A declaration of performance is available and can be sent on request (info@lico.ch).

Application

Circular is a multi-layer, semi-rigid, modular flooring for commercial and residential use, manufactured in accordance with EN 16511. Depending on the application the floor covering is laid indoors on screed or other subfloors such as wood, tiles or plastic as a floating floor or fully glued. The substrate must be clean, resistant to tension and pressure, permanently dry and level. The laying is to be carried out in accordance with the laying instructions and the state of the art.

The floor coverings have a high-performance surface layer and are suitable products for areas with heavy traffic, such as commercial, business, or general public areas. This floating

flooring product meets the requirements of the usage classes 33 for commercial use and 23 for domestic use according to EN 16511. Class 33 products are suitable for commercial areas with high traffic.

Technical Data

The technical data of the products are tested according to EN 16511. The corresponding data sheets for the products can be sent on request.

Technical Data Circular HDF

Name	Value	Unit
Total thickness	9	mm
Abrasion Class	33	-
Reaction of fire	Clf-s1	-
Thermal resistance	0,08	m ² K/W
Slip resistance	R10	-
Formaldehyde	<60	µg/m ³
Pentachlorophenol	0,00	µg/m ³
Grammage	7300-7500	g/m ²

The values correspond to the declaration of performance related to its essential properties according to EN 16511:2014+A1:2019, Panels for floating installation - Semi-rigid, multi-layer, modular floor coverings (MMF) with abrasion-resistant top layer.

Base materials/Ancillary materials

One m² of Circular HDF flooring, averaged over the amount that was produced in one year, consists of the following material components (in mass %):

Name	Value	Unit
Cork Sound Underlay	5	%
HDF Core Board	75	%
Natural Fiber Layer	15	%
Polyurethane (PUR)-Glue	1,6	%
PU-Acrylic Primer and Ink	1,6	%
PUR Lacquer Compound	1,8	%

The product contains substances from the ECHA list of substances of very high concern (SVHC) (date April 14, 2023) that are eligible for authorization above 0.1% by mass: **No.**

Reference service life

According to the Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) table "Useful lives of components for life cycle analysis according to "BNB" the useful life is 20 years (code no. 352.711). No damage is to be expected if used, maintained, cared for and cleaned as recommended. A service life in accordance with the BBSR table is not a RSL (reference service life) according to ISO 15686.

LCA: Calculation rules

Declared Unit

1 m² of floor covering.

Name	Value	Unit
Declared unit	1	m ²
Layer thickness	0.009	m
Grammage	7.45	kg/m ²

System boundary

Type of EPD: cradle to gate with options, modules C1–C4, and module D (A1–A3, C, D and additional modules: A4, A5 and B2).

Modules A1-A3 include processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing.

Module A4 includes transport of the floor covering to the place of installation (100km).

Module A5 includes the incineration of packaging material. No adhesives are declared in the EPD.

Module B2 is including provision of cleaning agent, energy and water consumption for the cleaning of the floor covering incl. wastewater treatment. The LCA results in this EPD are declared for a one-year usage.

Module C1 considers the manual deconstruction.

Module C2 includes transportation of the postconsumer waste to waste processing (100km).

Module C3/1: 100% Incineration in a waste incineration plant in EU

Module C3/2: reuse (second life) of HDF board (60- 70 % of the total product weight) and the rest in incineration.

Module C3/1 and C3/2 declares the biogenic carbon dioxide

emission. This is declared in order to ensure the carbon neutrality within the product system.

Module D/1 includes potential benefits from all net flows given in module A5 and C3/1 that leave the product boundary system after having passed the end-of-waste state in the form of recovery potential.

Module D/2 includes potential benefits from all net flows given in module A5 and C3/2 recovery potential from the reuse (substitution of core material- HDF) and incineration of the rest of the product.

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

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 data was collected for the year 2021. The used database is *LCA FE (GaBi) 2022*, version 2022.2.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	2.77	kg C
Biogenic carbon content in accompanying packaging	0.12	kg C

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

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.016	l/100km
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%
Vehicle Type	Euro 6	

Einbau ins Gebäude (A5)

In A5, only the effort for the thermal recycling of the of the packaging materials are declared. The credits from energy substitution are declared in D.

The production of the following packaging materials is included in the life cycle assessment:

Name	Value	Unit
Carton	0.18	kg
Wooden Pallet	0.10	kg

Biogenic carbon incorporated in the packaging material is released as CO₂ emissions in module A5.

Maintenance (B2) per year

Name	Value	Unit
Water consumption	0.003	m ³
Auxiliary	0.04	kg
Electricity consumption	0.55	kWh

End of Life (C1-C4)

Name	Value	Unit
Reuse (Scenario 2)	4.7	kg
Energy recovery Waste (Scenario 1)	7.45	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

For module D/1 the potential benefits given in module A5 and C3/1 are declared.

For Module D/2 potential benefits given in module A5 and credit for core material (HDF) from C3/2 and credit for incineration of the rest of the material from C3/2 are declared.

Name	Value	Unit
Core material (HDF)	4.7	kg

LCA: Results

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

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Fibrano Floorcovering (7,45kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C3/2	C4	D/1	D/2
GWP-total	kg CO ₂ eq	-4.58E+00	5.26E-02	4.37E-01	2.62E-01	0	5.07E-02	1.33E+01	1.22E+01	0	-2.5E+00	-3.9E+00
GWP-fossil	kg CO ₂ eq	5.95E+00	5.26E-02	8.76E-03	2.61E-01	0	5.06E-02	3.13E+00	2.04E+00	0	-2.49E+00	-3.89E+00
GWP-biogenic	kg CO ₂ eq	-1.05E+01	8.63E-05	4.28E-01	7.58E-04	0	8.31E-05	1.01E+01	1.01E+01	0	-1.12E-02	-7.35E-03
GWP-luluc	kg CO ₂ eq	1.74E-02	6.47E-07	1.48E-06	1.68E-05	0	6.23E-07	-3.86E-05	-2.36E-05	0	-2.38E-04	-1.66E-03
ODP	kg CFC11 eq	1.28E-10	3.22E-15	4.19E-14	2.27E-12	0	3.1E-15	1.32E-12	1.66E-12	0	-1.46E-11	-2.35E-11
AP	mol H ⁺ eq	5.33E-02	4.36E-05	9.61E-05	3.84E-04	0	4.2E-05	3.39E-03	2.22E-03	0	-3E-03	-1.02E-02
EP-freshwater	kg P eq	4.26E-04	1.06E-08	1.21E-08	8.34E-07	0	1.02E-08	5.24E-07	3.81E-07	0	-2.87E-06	-1.41E-05
EP-marine	kg N eq	9.74E-03	1.43E-05	3.4E-05	1.09E-04	0	1.38E-05	1.35E-03	8.84E-04	0	-8.48E-04	-4.55E-03
EP-terrestrial	mol N eq	2.26E-01	1.59E-04	4.41E-04	1.15E-03	0	1.53E-04	1.72E-02	1.12E-02	0	-9.11E-03	-3.7E-02
POCP	kg NMVOC eq	2.12E-02	4.22E-05	9.05E-05	3.36E-04	0	4.06E-05	3.49E-03	2.28E-03	0	-2.39E-03	-9.39E-03
ADPE	kg Sb eq	7.43E-06	2.15E-09	1.03E-09	4.51E-08	0	2.07E-09	1.62E-08	1.73E-08	0	-3.34E-07	-6.51E-07
ADPF	MJ	1.11E+02	7.09E-01	1.15E-01	5.63E+00	0	6.83E-01	3.61E+00	3.54E+00	0	-4.22E+01	-7.7E+01
WDP	m ³ world eq deprived	1.31E+00	9.74E-05	5.04E-02	1.11E-01	0	9.39E-05	1.15E+00	7.52E-01	0	-2.24E-01	-4.59E-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 m² Fibrano Floorcovering (7,45kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C3/2	C4	D/1	D/2
PERE	MJ	6E+01	2.68E-03	4.6E+00	7.19E-01	0	2.58E-03	1.23E+02	7.63E-01	0	-9.78E+00	-1.07E+02
PERM	MJ	1.27E+02	0	-4.57E+00	0	0	0	-1.22E+02	-1.22E+02	0	0	0
PERT	MJ	1.87E+02	2.68E-03	2.62E-02	7.19E-01	0	2.58E-03	7.43E-01	-1.21E+02	0	-9.78E+00	-1.07E+02
PENRE	MJ	1.05E+02	7.11E-01	1.15E-01	5.65E+00	0	6.85E-01	9.35E+00	3.54E+00	0	-4.22E+01	-7.7E+01
PENRM	MJ	5.74E+00	0	0	0	0	0	-5.74E+00	-5.74E+00	0	0	0
PENRT	MJ	1.11E+02	7.11E-01	1.15E-01	5.65E+00	0	6.85E-01	3.61E+00	-2.2E+00	0	-4.22E+01	-7.7E+01
SM	kg	0	0	0	0	0	0	0	0	0	0	4.79E+00
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	1.06E-01	4.04E-06	1.19E-03	3.28E-03	0	3.89E-06	2.71E-02	1.8E-02	0	-9.55E-03	-2.08E-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 m² Fibrano Floorcovering (7,45kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C3/2	C4	D/1	D/2
HWD	kg	6.67E-08	2.35E-12	1.14E-11	3.88E-10	0	2.26E-12	3.54E-10	2.73E-10	0	-5.91E-09	-1.32E-08
NHWD	kg	1.84E-01	6.66E-05	9.3E-03	2.86E-03	0	6.41E-05	8.51E-01	5.54E-01	0	-1.95E-02	-6.27E-02
RWD	kg	3.33E-03	7.79E-07	6.41E-06	8.1E-04	0	7.51E-07	1.76E-04	5.39E-04	0	-3E-03	-4.12E-03
CRU	kg	0	0	0	0	0	0	0	4.79E+00	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	0	0

MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	-9.17E-02	0	-6.48E-01	0	0	0	-9.08E+00	-5.9E+00	0	0	0
EET	MJ	-2.09E-01	0	-1.17E+00	0	0	0	-2.07E+01	-1.35E+01	0	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 m² Fibrano Floorcovering (7,45kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C3/2	C4	D/1	D/2
PM	Disease incidence	7.62E-06	2.33E-10	5.1E-10	3.37E-09	0	2.25E-10	1.92E-08	1.26E-08	0	-2.5E-08	-1.43E-07
IR	kBq U235 eq	5.09E-01	1.13E-04	1.04E-03	1.18E-01	0	1.09E-04	2.82E-02	6.27E-02	0	-5.01E-01	-6.75E-01
ETP-fw	CTUe	5.88E+01	4.94E-01	5.37E-02	1.84E+00	0	4.76E-01	1.86E+00	1.8E+00	0	-8.15E+00	-2.24E+01
HTP-c	CTUh	3.54E-08	9.14E-12	3.14E-12	3.62E-11	0	8.8E-12	1.61E-10	1.09E-10	0	-4.04E-10	-2.74E-08
HTP-nc	CTUh	8.6E-08	3.79E-10	1.27E-10	1.9E-09	0	3.65E-10	2.4E-08	1.58E-08	0	-1.58E-08	-4.79E-08
SQP	SQP	6.91E+02	1.96E-03	3.28E-02	4.55E-01	0	1.89E-03	8.81E-01	7.72E-01	0	-6.35E+00	-3.05E+02

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

References

Standards

DIN EN 15804:2012+A1 2013

DIN EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

DIN EN 15804:2012+A2:2019+AC:2021

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

DIN EN 16511:2014+A1:2019

DIN EN 16511:2014+A1:2019, Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer.

ISO 14025

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

Further References

BNB

BBSR table (german): 'Nutzungsdauern von Bauteilen zur Lebenszyklusanalyse nach BNB', Bundesinstitut für Bau-, Stadt- und Raumforschung, Referat II Nachhaltiges Bauen; online available under <https://www.nachhaltigesbauen.de/austausch/nutzungsdauern-von-bauteilen/>

CPR

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

LCA FE (GaBi) documentation

GaBi life cycle inventory data documentation (<https://www.gabisoftware.com/support/gabi/gabidatabase2020lcidocumentation/>)

LCA FE (GaBi) software

Sphera Solutions GmbH, GaBi Software System and Database for Life Cycle Engineering, CUP Version: 2022.2, University of Stuttgart, Leinfelden Echterdingen.

IBU 2021

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 www.ibu-epd.com

PCR Part A

Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. version 1.3, 08/2021 www.bau-umwelt.de

PCR Part B

Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floorcoverings, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, version 4, 06/2023

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