

ENVIRONMENTAL PRODUCT DECLARATION

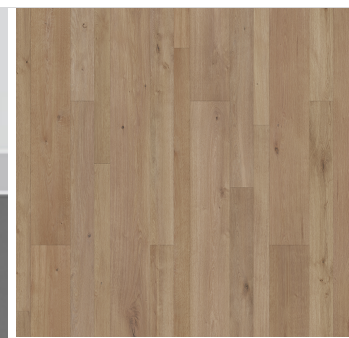
as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Teknoflor®
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-TKF-201800120-CBA1-EN
Issue date	18.09.2018
Valid to	17.09.2023




TEKNOFLOR® Naturescapes HPD™
Bio-based polyurethane sheet flooring

Teknoflor®

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



General Information

<p>Teknoflor®</p> <hr/> <p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-TKF-201800120-CBA1-EN</p> <hr/> <p>This declaration is based on the product category rules: Floor coverings, 02/2018 (PCR checked and approved by the SVR)</p> <hr/> <p>Issue date 18.09.2018</p> <hr/> <p>Valid to 17.09.2023</p> <hr/> <p></p> <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder (Managing Director IBU)</p>	<p>TEKNOFLOR® Naturescapes HPD™ Bio-based polyurethane sheet flooring</p> <hr/> <p>Owner of the declaration Teknoflor 1005 South 60th Street Milwaukee, WI 53214 United States of America</p> <hr/> <p>Declared product / declared unit 1 m² resilient Flooring 'TEKNOFLOR® Naturescapes HPD™'</p> <hr/> <p>Scope: The manufacturer declaration applies to the bio-based polyurethane sheet flooring TEKNOFLOR® Naturescapes HPD™. It is manufactured externally in Germany.</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> <hr/> <p>Verification</p> <p>The standard /EN 15804/ serves as the core PCR Independent verification of the declaration and data according to /ISO 14025:2010/</p> <p><input type="checkbox"/> internally <input checked="" type="checkbox"/> externally</p> <hr/> <p></p> <hr/> <p>Angela Schindler (Independent verifier appointed by SVR)</p>
--	---

Product

Product description / Product definition

Teknoflor Naturescapes HPD is a commercial-grade resilient sheet flooring made, in part, from polyurethane processed with the renewable plant product castor oil. This resilient sheet flooring product has all the advantages of resilient sheet vinyl: durability, easy maintenance and versatility, but without the vinyl. The product offers twenty-four beautiful designs in three distinct styles that can be used independently or together. Naturescapes HPD brings life to resilient flooring with design, color, performance and an environmental focus perfect for any commercial space.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 Construction Products Regulation /CPR/ applies.

The Declaration of Performance of the products taking into consideration /EN 14041/ and the CE-marking of the products can be found on the manufacturer's technical information section.

Application

According to the use class as defined in /ISO 10874/ the product can be used

- in all domestic areas, classified as use class 23,
- in all commercial areas, classified as use class 34
- in all industrial areas, classified as use class 43



Technical Data

Name	Value	Unit
Grammage	3.9	kg/m ²
Product thickness	2.5	mm
Product Form	several dimensions	-

Additional product properties in accordance with /EN 16776/ and performance data of the product in accordance with the Declaration of Performance with respect to its Essential Characteristics according to /EN 14041/ are available from the manufacturer.

Base materials / Ancillary materials

Name	Value	Unit
Polyurethane including 64% renewable material	45.2	%
Filler	50.2	%
Paper	1.7	%
Glass fibre	0.8	%
Polyester	2.1	%

This product contains substances listed in the /REACH/ Candidate List of Substances of Very High Concern for Authorisation" (SVHC) (27.06.2018) exceeding 0.1 percentage by mass: no

LCA: Calculation rules

Declared Unit

Name	Value	Unit
Declared unit	1	m ²
Conversion factor to 1 kg	0.26	-
Mass reference	3.9	kg/m ²

The declared unit refers to 1 m² produced floor covering. Output of module A5 'Assembly' is 1 m² installed floor covering.

System boundary

Type of EPD: Cradle-to-grave

System boundaries of modules A, B, C, D:

A1-A3 Production:

Energy supply and production of the basic material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material and waste processing up to the landfill disposal of residual waste (except radioactive waste). Benefits for generated electricity and steam due to the incineration of production waste are aggregated.

A4 Transport:

Transport of the packed floor covering from factory gate to the place of installation.

A5 Installation:

Installation of the floor covering, processing of installation waste and packaging waste up to the landfill disposal of residual waste (except radioactive waste), the production of the amount of floor covering that occurs as installation waste including its transport to the place of installation.

Generated electricity and steam due to the incineration of waste are listed in the result table as exported energy.

Preparing of the floor and adhesives are beyond the system boundaries and not taken into account.

B1 Use:

Indoor emissions during the use stage. After the first year, no product related VOC emissions are relevant due to VOC decay curves of the product.

B2 Maintenance:

Cleaning of the floor covering for a period of 1 year:
Vacuum cleaning – electricity supply

Reference service life

A calculation of the reference service life according to /ISO 15686/ is not possible.

The service life of resilient floor coverings depends on the correct installation taking into account the declared use classification and the adherence to cleaning and maintenance instructions.

A minimum service life of 20 years can be assumed /BNB/, technical service life can be considerably longer.

Wet cleaning – water consumption, production of the cleaning agent, waste water treatment.

The declared values in this module have to be multiplied by the assumed service life of the floor covering in the building in question.

B3 - B7:

The modules are not relevant and therefore not declared.

C1 De-construction:

Energy consumption of the de-construction machine.

C2 Transport:

Transport of the floor covering waste to a landfill or to the municipal waste incineration plant (MWI).

C3 Waste processing:

C3-1: Landfill disposal needs no waste processing.
C3-2: Impact from waste incineration (plant with R1>0.6), generated electricity and steam are listed in the result table as exported energy.

C4 Disposal

C4-1: Impact from landfill disposal,
C4-2: The floor covering waste leaves the system in module C3-2,

D Recycling potential:

D-A5: Benefits for generated energy due to incineration of packaging and installation waste (incineration plant with R1 > 0.6),
D-1: Benefits for generated energy due to landfill disposal of floor covering waste at the end-of-life,
D-2: Benefits for generated energy due to incineration of floor covering waste at the end-of-life (incineration plant with R1 > 0.6),

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.

Background data are taken from the /GaBi database 2018/, service pack 35 and from the /ecoinvent 3.3/ database

LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations. The indicated values refer to the declared functional unit.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel , diesel, truck EURO 0-6 mix	0.009	l/100km
Litres of fuel , heavy fuel oil, ship	0.001	l/100km
Transport distance truck	540	km
Transport distance ship	750	km
Capacity utilisation (including empty runs) truck	60	%
Capacity utilisation (including empty runs) ship	48	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.12	kg

Coated packaging paper and installation waste are considered to be incinerated in a municipal waste incineration plant. Pure cardboard packaging waste is going to be recycled. Preparation of the floor and adhesives are not taken into account.

Maintenance (B2)

The values for cleaning refer to 1 m² floor covering used in commercial areas per year. Depending on the application based on /EN ISO 10874/, the technical service life recommended by the manufacturer and the anticipated strain on the floor by customers, the case-specific useful life can be established. The effects of Module B2 need to be calculated on the basis of this useful life in order to obtain the overall environmental impacts.

Name	Value	Unit
Maintenance cycle (wet wiping)	103,2	1/year
Maintenance cycle (vacuum cleaning)	37,4	1/year
Water consumption (wet wiping)	0.026	m ³
Cleaning agent (wet wiping)	0.05	kg
Electricity consumption	0.09	kWh

Further information on cleaning and maintenance see www.teknoflor.com

End of Life (C1-C4)

Two different end-of-life scenarios are declared and the results are indicated separately in module C. Each scenario is calculated as a 100% scenario.

Scenario 1: 100% landfill disposal
 Scenario 2: 100% municipal waste incineration (MWI) with R1>0.6

If combinations of these scenarios have to be calculated this should be done according to the following scheme:

EOL-impact = x% impact (Scenario 1)
 + y% impact (Scenario 2)

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	3.9	kg
Landfilling (scenario 1)	3.9	kg
Energy recovery (scenario 2)	3.9	kg

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

Recovery potentials due to the two end-of-life scenarios (module C) are indicated separately.

LCA: Results

The declared result figures in module B2 have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration.

Information on un-declared modules:

Modules B3 - B7 are not relevant during the service life of the floor covering and are therefore not declared.

Modules C3/1 and C4/2 cause no additional impact (see "LCA: Calculation rules") and are therefore not declared.

Module C2 represents the transport for scenarios 1 and 2. Column D represents module D/A5.

The /CML/ characterisation factors version January 2016 are applied.

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

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	X	X	MNR	MNR	MNR	MND	MND	X	X	X	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C1	C2	C3/2	C4/1	D	D/1	D/2
GWP	[kg CO ₂ -Eq.]	4.26E+0	1.92E-1	3.68E-1	0.00E+0	2.88E-1	6.55E-3	1.18E-2	7.23E+0	3.01E+0	-5.52E-2	0.00E+0	-1.65E+0
ODP	[kg CFC11-Eq.]	1.47E-7	5.11E-15	4.26E-9	0.00E+0	2.07E-8	2.90E-14	3.24E-16	8.69E-13	7.40E-14	-1.19E-13	0.00E+0	-3.55E-12
AP	[kg SO ₂ -Eq.]	4.80E-2	1.54E-3	1.50E-3	0.00E+0	8.50E-4	1.85E-5	5.01E-5	2.02E-3	7.48E-4	-9.20E-5	0.00E+0	-2.75E-3
EP	[kg (PO ₄) ³⁻ -Eq.]	3.27E-2	2.69E-4	9.77E-4	0.00E+0	4.99E-4	1.74E-6	1.28E-5	4.98E-4	7.65E-4	-9.96E-6	0.00E+0	-2.98E-4
POCP	[kg ethene-Eq.]	1.43E-3	-2.60E-4	2.41E-5	1.79E-6	1.02E-4	1.16E-6	-2.09E-5	1.33E-4	8.18E-5	-7.22E-6	0.00E+0	-2.16E-4
ADPE	[kg Sb-Eq.]	2.51E-5	1.44E-8	7.33E-7	0.00E+0	8.33E-7	3.47E-9	9.83E-10	1.39E-7	5.93E-8	-1.55E-8	0.00E+0	-4.63E-7
ADPF	[MJ]	1.10E+2	2.58E+0	3.42E+0	0.00E+0	3.58E+0	6.94E-2	1.61E-1	2.03E+0	3.97E+0	-7.58E-1	0.00E+0	-2.27E+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

RESULTS OF THE LCA - RESOURCE USE: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C1	C2	C3/2	C4/1	D	D/1	D/2
PERE	[MJ]	6.57E+1	1.26E-1	3.00E+0	0.00E+0	6.30E-1	4.48E-2	8.93E-3	3.80E+1	3.07E-1	-1.84E-1	0.00E+0	-5.51E+0
PERM	[MJ]	3.77E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-3.77E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	1.03E+2	1.26E-1	3.00E+0	0.00E+0	6.30E-1	4.48E-2	8.93E-3	3.13E-1	3.07E-1	-1.84E-1	0.00E+0	-5.51E+0
PENRE	[MJ]	1.03E+2	2.59E+0	3.60E+0	0.00E+0	4.07E+0	1.19E-1	1.62E-1	1.50E+1	4.12E+0	-9.61E-1	0.00E+0	-2.88E+1
PENRM	[MJ]	1.27E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.27E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	1.16E+2	2.59E+0	3.60E+0	0.00E+0	4.07E+0	1.19E-1	1.62E-1	2.31E+0	4.12E+0	-9.61E-1	0.00E+0	-2.88E+1
SM	[kg]	1.41E-1	0.00E+0	4.24E-3	0.00E+0	0.00E+0	0.00E+0	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	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	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	8.20E+0	2.32E-4	2.38E-1	0.00E+0	7.45E-3	6.10E-5	1.65E-5	1.55E-2	-1.06E-5	-2.51E-4	0.00E+0	-7.51E-3

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 – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C1	C2	C3/2	C4/1	D	D/1	D/2
HWD	[kg]	3.23E-7	1.31E-7	1.93E-8	0.00E+0	1.33E-9	5.59E-11	9.36E-9	1.31E-8	1.76E-8	-3.91E-10	0.00E+0	-1.17E-8
NHWD	[kg]	1.69E-1	1.91E-4	3.05E-2	0.00E+0	3.84E-2	8.40E-5	1.36E-5	8.42E-1	3.89E+0	-4.10E-4	0.00E+0	-1.23E-2
RWD	[kg]	1.94E-3	3.49E-6	6.00E-5	0.00E+0	1.29E-4	1.97E-5	2.22E-7	1.11E-4	5.85E-5	-8.09E-5	0.00E+0	-2.42E-3
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	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	0.00E+0	1.29E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	2.32E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.93E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	4.26E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.28E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0

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; EEE = Exported thermal energy

The CO₂ uptake during the growth phase of renewable materials in the product is 2.74 kg. This amount is stored in the material as biogenic carbon. At the end of life the stored carbon is released into the air again as 2.74 kg CO₂ emissions.

References

/IBU 2016/

IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 1.1 Institut Bauen und Umwelt e.V., Berlin.

www.ibu-epd.de

/ISO 14025/

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

/EN 15804/

/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

/EN 16810/

DIN EN 16810: 2017-08: Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules

/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, V1.7, March 2018
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 floor coverings, V1.2, February 2018
www.bau-umwelt.de

/EN 16776/

DIN EN 16776: 2016-09: Resilient floor coverings - Heterogeneous polyurethane floor coverings - Specification

/EN 14041/

DIN EN 14041: 2008-05: Resilient, textile and laminate floor coverings - Essential characteristics

/ISO 10874/

DIN EN ISO 10874: 2012-04: Resilient, textile and laminate floor coverings - Classification

/EN 13501-1/

DIN EN 13501-1:2010-01: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

/ISO 15686/

ISO 15686: Buildings and constructed assets - Service life planning

ISO 15686-1: 2011-05: Part 1: General principles and framework

ISO 15686-2: 2012-05: Part 2: Service life prediction procedures

ISO 15686-7: 2006-03: Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

/CPR/

Construction Products Regulation, Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

/BNB/

Bundesministerium des Innern, für Bau und Heimat, „Nutzungsdauern von Bauteilen zur Lebenszyklusanalyse nach BNB, 2017“ des Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR)

/REACH/

Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency (ECHA), European Union Regulation No 1907/2006, June 2017,

/GaBi database 2018/

GaBi Software-System and Database for Life Cycle Engineering, thinkstep AG, Leinfelden-Echterdingen, service pack 35, 2018

/ecoinvent 3.3/

ecoinvent, Zurich, Switzerland, Database Version 3.3, August 2016

**Publisher**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 - 3087748 - 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Author of the Life Cycle**

Assessment
Gemeinschaft umweltfreundlicher
Teppichboden (GUT) e.V.
Schönebergstraße 2
52068 Aachen
Germany

Tel +49 (0)241 96843 410
Fax +49 (0)241 96843 400
Mail mail@gut-ev.de
Web www.gut-ev.org

TEKNOFLOR®

A PROUD MEMBER OF THE HMTX FAMILY

Owner of the Declaration

Teknoflor®
South 60th Street 1005
53214 Milwaukee, WI
United States

Tel 800.522.9166
Fax 414.944.0550
Mail orders@teknoflor.com
Web www.teknoflor.com