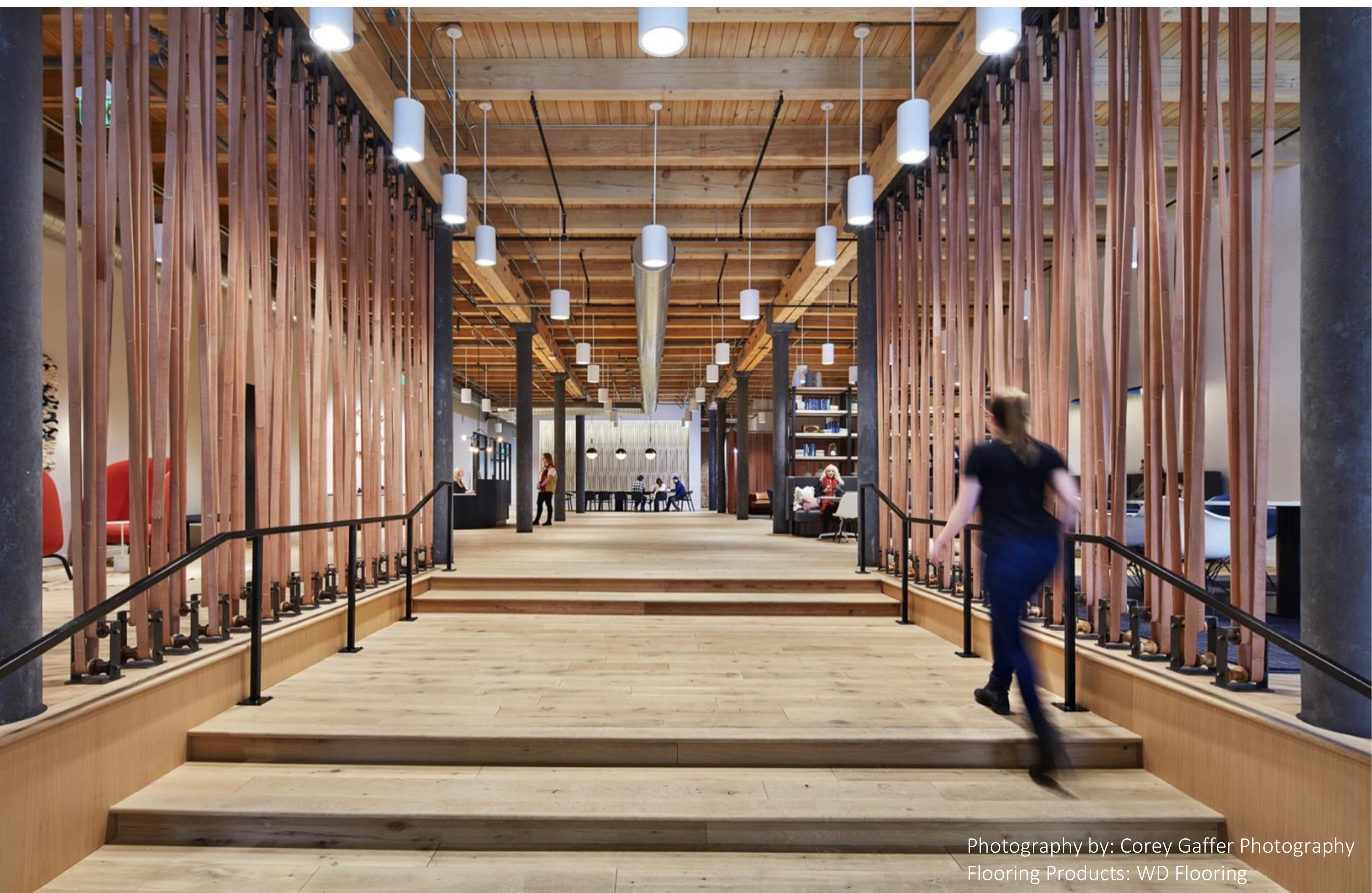
Environmental Product Declaration

Cradle-to-grave EPD for industry average solid wood flooring products.

According to
EN 15804
ISO 21930
ISO 14025



Photography by: Corey Gaffer Photography
Flooring Products: WD Flooring

Summary Results – Landfilling per m² ***Full Results in Tables 1-3***		**Cradle-to-Grave Total**
Global Warming Potential, Total	kg CO_2e	9.16
Global Warming Potential, Fossil	kg CO_2e	26.72
Global Warming Potential, Biogenic	kg CO_2e	-17.55
Ozone Depletion	kg CFC11e	4.7E-06
Acidification	kg SO_2e	0.17
Eutrophication	kg Ne	0.15
SFP (Smog)	kg O_3e	1.89
Non-renewable Energy	MJ, NCV	486.14

1.0 General Information

EPD Program and Program Operator	**ASTM International** 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 USA www.astm.org
General Program Instructions and Version Number	ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs) - General Program Instructions, version: 6.0
Manufacturer	**National Wood Flooring Association** 111 Chesterfield Industrial Blvd. Chesterfield, MO 63005 https://nwfa.org
Declaration Number	EPD 393
Declared Product	Solid Wood Flooring
Functional Unit	1 m² of solid wood flooring installed in a building for 75 years.
Reference PCR and Version Number	**ISO 21930:2017** Sustainability in Building Construction — Environmental Declaration of Building Products. [7] **UL Environment**: Product Category Rules for Building-Related Products and Services **Part A:** Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, v3.2 [11] **Part B:** Flooring EPD Requirements UL 10010-7
Markets of Applicability	Construction Sector, Flooring
Date of Issue	25.11.2022
Period of Validity	25.11.2027
EPD Type	Industry Average EPD
EPD Scope	Cradle-to-Grave

Year of reported manufacturer primary data	2019		
LCA Software	SimaPro v8.5		
LCI Databases	USLCI [9], Ecoinvent 3.5 [15], Datasmart [8]		
LCIA Methodology	TRACI 2.1 [3]		
The sub-category PCR review was conducted by:	Jack Geibig, Chair Ecoform	Dr. Thomas Gloria Industrial Ecology Consultants	Thaddeus Owen
LCA and EPD Developer This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	**Athena Sustainable Materials Institute** 280 Albert Street, Suite 404 Ottawa, Ontario Canada K1P 5G8 www.athenasmi.org James Salazar		

This declaration was independently verified in accordance with **ISO 14025:2006[4]**.
The **UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v3.2** (September 2018), based on **ISO 21930:2017 and CEN Norm EN 15804 (2012),** serves as the core PCR, with additional considerations from the **USGBC/UL Environment Part A Enhancement (2017)**.

☐ INTERNAL x EXTERNAL

Independent Verifier This life cycle assessment was independently verified in accordance with ISO 14044 [6] and the reference PCR by:	**Tim Brooke** 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 USA www.astm.org

Limitations

1.0 Environmental declarations from different programs (ISO 14025) may not be comparable.

2.0 Comparison of the environmental performance of Flooring Products using EPD information shall be based on the products use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.

3.0 Full conformance with the PCR for Products allows EPD comparability only when all stages of the life cycle have been considered. However, variations and deviations are possible" Example of variations: Different LCA software and background LCI datasets may lead to different results for upstream or downstream of the life cycle stages declared.

LCA and EPD Manufacturer Participants

AMHF Allegheny Mountain Hardwood Flooring	Elite
Cumberland Lumber & Manufacturing Co., Inc.	BAREFOOT FLOORING Barefoot Brand Hardwood Flooring Cummings Lumber Co. Inc.
Hull forest products	LEBANON OAK FLOORING CO. LLC Lebanon Oak Lebanon, Kentucky
MAXWELL® HARDWOOD FLOORING	MULLICAN® HARDWOOD FLOORING
Roberts HARDWOOD FLOORING LLC www.RobertsHardwoodFlooring.com	SHEOGA®
1947 75 2022 Smith Flooring	WD

About the National Wood Flooring Association

NWFA represents all segments of the wood flooring industry including manufacturers, distributors, retailers, installers, importers/exporters, inspectors, and consultants. The mission of the not-for-profit organization is to unify and strengthen the wood flooring community through technical standards, education, networking, and advocacy. NWFA accomplishes this through various programs and services, such as hands-on training, an annual Wood Flooring Expo, Hardwood Floors magazine, and technical standards and publications that are recognized worldwide. More information about NWFA can be found at nwfa.org.

2. PRODUCT DESCRIPTION

Wood

Wood is the hard fibrous material that forms from the main substance of the trunk or branches and beneath the bark of a tree.

Wood Flooring

A wood floor is any flooring product that contains real wood as the top-most, wearable surface of the floor. Wood floors come in many different options. These include, but are not limited to: hardwood/softwood, domestic/imported, solid/engineered, jobsite-finished/factory-finished, strip/plank/wide plank/parquet, newly harvested/antique reclaimed/recycled/salvaged, saw cut, grade, specie, length, thickness, profile, and finish type.

Solid Wood Flooring

Solid wood flooring is a solid piece of real wood from top to bottom. The most common thickness is ¾", and it can be sanded and refinished numerous times during its service life. This study inventories solid linear strip, plank, wide plank, and parquet hardwood flooring produced in the Eastern United States utilizing regionally sawn lumber. Wood flooring is classified as strip if it has a face width less than 3 inches, plank if it has a face width between 3 and 5 inches, and wide plank if it has a face width more than 5 inches. Parquet flooring is any pattern that is geometric in shape as opposed to linear. Herringbone, Chevron, and the traditional square-shaped finger-block pattern are examples of common parquet patterns. Figure 1 provides a visual representation of the product.

U.S. Forests

In the United States, the most-common domestic hardwood species used to produce solid hardwood flooring include red oak, white oak, hard (sugar) maple, hickory, pecan, cherry, birch, walnut, ash, and beech. Red oak and white oak are the dominant species in the U.S. hardwood forests, and therefore comprise the majority of solid hardwood flooring production.

Studies show hardwood used to make flooring is harvested sustainably in the United States. In fact:

- Net annual growth in U.S. commercial hardwood forests exceeds harvest and mortality by 33% each year.
- The volume of U.S. hardwood growing stock increased by more than 130%, from 5.2 billion m3 in 1953 to 12 billion m3 in 2012.
- The total annual growth of U.S. hardwood species is just more than 272 million m3.
- Hardwoods generally are harvested selectively a few trees at a time, not using large clear- cutting processes.

Figure 1: Installed solid hardwood flooring

3. METHODOLOGY

The underlying LCA [5] investigates the lifecycle stages of solid hardwood flooring production in the United States from cradle-to-grave with all modules included.

System Boundaries and Product Flow Diagram

The scope (Figure 2) covered resource extraction [A1], resource transportation [A2], and manufacturing of products [A3], transportation of products [A4], installation of products [A5], use [B1-B7], disposal at the end-of-life [C1-C4], and potential benefits [D] beyond system boundaries. All inputs (material, fuel, and energy), outputs (product and co-products), and direct emissions to air, water, and land were included in the development of LCI and LCIA. Indirect emissions from the consumption of materials were included in secondary datasets.

Building Life Cycle Information Modules																
Production stage			Construction Stage		Use stage							End-of-life stage				Substitution Effects
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport to waste processing or disposal	Waste processing	Disposal	Benefits Outside System
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Figure 2: Life Cycle Stages and Information Modules per ISO 21930:2017

Construction and Service Life Assumptions

The product system includes average assumptions as to the transportation of the product to the construction site, 167 miles [13] as well as construction energy use [2]. The reference service life for the product is 75 years which is the default specified by the UL Part A PCR [11]. The LCA report presents four scenarios with and without vacuuming and with a 44-year and 75-year reference service life. This scenario analysis shows the significant results variability depending on the service life assumptions. This EPD presents the results for the 75-year service life assumption with no vacuuming. To access the data for the other scenarios please refer to the LCA report. [2]

Benefits Outside the System Boundary

Module D estimates the benefits outside the system boundary, natural gas displacement and the avoidance of producing plywood for future construction projects. To estimated natural gas displacement, we first calculated the potential fuel higher heating value of the product based on a higher heating value of 20.9 MJ/odkg [2]. The energy equivalent amount of natural gas was calculated based on a higher heating value or 38.66 MJ/m3 [9].

Functional Unit

The functional unit for plywood is "*one square meter average solid wood flooring installed in a building for 75 years*".

Data Sources

Primary and secondary data sources, as well as the respective data quality assessment are documented in the underlying LCA project report [2] in accordance with UL PCR 2018.

Treatment of Biogenic Carbon

Biogenic carbon emissions and removals are reported in accordance with ISO 21930 7.2.7. and 7.2.12. Detailed information is provided in Section 5.1 of the underlying LCA [2].

ISO 21930 requires a demonstration of forest sustainability to characterize carbon removals with a factor of -1 kg CO2e/kg CO2. ISO 21930 Section 7.2.11 Note 2 states the following regarding demonstrating forest sustainability: "Other evidence such as national reporting under the United Nations Framework Convention on Climate Change (UNFCCC) can be used to identify forests with stable or increasing forest carbon stocks." The United States UNFCCC annual report Table 6-1 provides annual NET GHG Flux Estimates for different land use categories. This reporting indicates non-decreasing forest carbon stocks and thus the source forests meet the conditions for characterization of removals with a factor of -1 kg CO2e/kg CO2.

The Landfill Modeling for Biogenic Carbon is based on the United States EPA WARM model. The WARM model accounts for decomposition and emissions of landfill gas as a portion of the initial carbon in the product. WARM Model documentation: https://www.epa.gov/warm/documentation-waste-reduction-model-warm.

4. LCA Results

The results are presented for both the average end-of-life treatment, as well as individual scenarios for incineration with energy recovery and landfilling. The U.S. Environmental Protection Agency's Materials Management Fact Sheet estimates 0% recycling, 18% combustion with energy recovery and 82% landfilling as the average end-of-life treatment for durable wood products; this average treatment was adopted.

The impact categories and characterization factors (CF) are from the U.S. EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts -TRACI 2.1 [6]. SimaPro v8.5 [10] was used to accumulate the LCI data and to calculate the LCIA results.

The total primary energy consumption was based on Cumulative Energy Demand [18]. Lower heating value of primary energy carriers was used to calculate the primary energy values. Other inventory parameters concerning material use, waste, water use and biogenic carbon were drawn from the LCI results. ACLCA's Guidance to Calculating non-LCIA Inventory Metrics was followed in accordance with ISO 21930:2017 [1].

Table 1: Cradle-to-gate Results for 1.0 m^2 of solid wood flooring

Core Mandatory Impact Indicator	Indicator	Unit	A1-A3	A1	A2	A3
Global warming potential – Total	GWP_{TOTAL}	kg CO2e	9.793	-47.854	0.769	56.878
Global warming potential - Fossil	GWP_{FOSSIL}	kg CO2e	9.793	4.103	0.769	4.921
Global warming potential - Biogenic	$GWP_{BIOGENIC}$	kg CO2e	0.000	-51.957	0.000	51.957
Ozone depletion potential	ODP	kg CFC11e	7.06E-07	1.79E-07	2.93E-11	5.27E-07
Acidification potential of soil and water sources	AP	kg SO2e	0.053	0.025	0.005	0.024
Eutrophication potential	EP	kg Ne	0.038	0.014	0.000	0.023
Formation potential of tropospheric ozone	SFP	kg O3e	0.997	0.557	0.125	0.315
Abiotic depletion potential (ADPfossil)	ADPf	MJ, NCV	105.913	51.975	9.894	44.044
Fossil fuel depletion	FFD	MJ Surplus	12.652	6.118	1.474	5.060
Use of Primary Resources						
Renewable primary energy used as energy	RPRE	MJ, NCV	112.027	44.451	0.000	67.577
Renewable primary energy used as material	RPRM	MJ, NCV	236.301	236.301	0.000	0.000
Non-renewable primary energy used as energy	NRPRE	MJ, NCV	157.490	65.060	9.938	82.492
Non-renewable primary energy used as material	NRPRM	MJ, NCV	0.000	0.000	0.000	0.000
Secondary Material, Secondary Fuel and Recovered Energy						
Secondary material	SM	kg	0.000	0.000	0.000	0.000
Renewable secondary fuel	RSF	MJ, NCV	130.601	0.000	0.000	130.601
Non-renewable secondary fuel	NRSF	MJ, NCV	0.000	0.000	0.000	0.000
Recovered energy	RE	MJ, NCV	0.000	0.000	0.000	0.000
Mandatory Inventory Parameters						
Consumption of freshwater resources	FW	m3	0.019	0.011	0.000	0.008
Indicators Describing Waste						
Hazardous waste disposed	HWD	kg	0.068	0.063	0.000	0.005
Non-hazardous waste disposed	NHWD	kg	0.409	0.247	0.000	0.162
High-level radioactive waste	HLRW	m3	0.000	0.000	0.000	0.000
Intermediate- and low-level radioactive waste	ILLRW	m3	0.000	0.000	0.000	0.000
Components for re-use	CRU	kg	0.000	0.000	0.000	0.000
Materials for recycling	MR	kg	0.000	0.000	0.000	0.000
Materials for energy recovery	MER	kg	0.000	0.000	0.000	0.000
Recovered energy exported	EE	MJ, NCV	0.000	0.000	0.000	0.000

Table 1 presents the cradle-to-gate results. Table 2 and Table 3 present results for 100% landfilling and 100% incineration respectively.

Table 2: Cradle-to-Grave Results for 1.0 m^2 of solid wood flooring – Landfilling End-of-Life Treatment

Core Mandatory Impact Indicator	Indicator	Unit	A-C	A-D	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4, Landfill	D, Landfill
Global warming potential – Total	GWP_{TOTAL}	kg CO2e	9.16	9.16	-12.32	0.91	0.17	0.00	12.26	2.86	0.00	0.00	0.00	0.00	0.00	0.18	0.00	5.09	0.00
Global warming potential - Fossil	GWP_{FOSSIL}	kg CO2e	26.72	26.72	9.79	0.91	0.17	0.00	12.26	2.86	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.54	0.00
Global warming potential - Biogenic	$GWP_{BIOGENIC}$	kg CO2e	-17.55	-17.55	-22.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00
Depletion potential of the stratospheric ozone layer	ODP	kg CFC11e	4.7E-06	4.7E-06	7.1E-07	1.5E-09	1.2E-09	0.0E+00	1.6E-06	2.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-10	0.0E+00	7.2E-09	0.0E+00
Acidification potential of soil and water sources	AP	kg SO2e	0.17	0.17	0.05	0.01	0.00	0.00	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eutrophication potential	EP	kg Ne	0.15	0.15	0.04	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
Formation potential of tropospheric ozone	SFP	kg O3e	1.89	1.89	1.00	0.15	0.01	0.00	0.55	0.15	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00
Abiotic depletion potential (ADPfossil)	ADPf	MJ, NCV	389.11	389.11	105.91	11.42	1.51	0.00	123.66	143.62	0.00	0.00	0.00	0.00	0.00	2.30	0.00	0.68	0.00
Fossil fuel depletion	FFD	MJ Surplus	51.99	51.99	12.65	1.72	0.07	0.00	15.51	21.60	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.09	0.00
Use of Primary Resources																			
Renewable primary energy used as energy	RPRE	MJ, NCV	116.53	116.53	112.03	0.02	0.02	0.00	3.85	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Renewable primary energy used as material	RPRM	MJ, NCV	236.30	236.30	236.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-renewable primary energy used as energy	NRPRE	MJ, NCV	486.14	486.14	157.49	12.30	1.64	0.00	157.48	153.98	0.00	0.00	0.00	0.00	0.00	2.48	0.00	0.78	0.00
Non-renewable primary energy used as material	NRPRM	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Secondary Material, Secondary Fuel and Recovered Energy																			
Secondary material	SM	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Renewable secondary fuel	RSF	MJ, NCV	130.60	130.60	130.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-renewable secondary fuel	NRSF	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovered energy	RE	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mandatory Inventory Parameters																			
Consumption of freshwater resources	FW	m3	0.40	0.40	0.02	0.00	0.00	0.00	0.37	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indicators Describing Waste																			
Hazardous waste disposed	HWD	kg	0.07	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-hazardous waste disposed	NHWD	kg	0.41	0.41	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High-level radioactive waste	HLRW	m3	2.0E-08	2.0E-08	5.3E-09	9.0E-11	1.5E-11	0.0E+00	1.4E-08	8.8E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	0.0E+00	3.1E-11	0.0E+00
Intermediate- and low-level radioactive waste	ILLRW	m3	5.2E-07	5.2E-07	4.4E-08	4.3E-10	7.1E-11	0.0E+00	6.5E-08	4.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-11	0.0E+00	1.5E-10	0.0E+00
Components for re-use	CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials for recycling	MR	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials for energy recovery	MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovered energy exported	EE	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3: Cradle-to-Grave Results for 1.0 m² of solid wood flooring – Incineration End-of-Life Treatment

Core Mandatory Impact Indicator	Indicator	Unit	A-C	A-D	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4, Incineration	D, Incineration
Global warming potential – Total	GWP_{TOTAL}	kg CO2e	26.33	13.28	-12.32	0.91	0.17	0.00	12.26	2.86	0.00	0.00	0.00	0.00	0.00	0.18	0.00	22.26	-13.05
Global warming potential - Fossil	GWP_{FOSSIL}	kg CO2e	26.33	13.28	9.79	0.91	0.17	0.00	12.26	2.86	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.15	-13.05
Global warming potential - Biogenic	$GWP_{BIOGENIC}$	kg CO2e	0.00	0.00	-22.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.11	0.00
Depletion potential of the stratospheric ozone layer	ODP	kg CFC11e	4.7E-06	4.7E-06	7.1E-07	1.5E-09	1.2E-09	0.0E+00	1.6E-06	2.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-10	0.0E+00	2.4E-12	-2.7E-09
Acidification potential of soil and water sources	AP	kg SO2e	0.17	0.16	0.05	0.01	0.00	0.00	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Eutrophication potential	EP	kg Ne	0.08	0.08	0.04	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Formation potential of tropospheric ozone	SFP	kg O3e	1.95	1.71	1.00	0.15	0.01	0.00	0.55	0.15	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.07	-0.25
Abiotic depletion potential (ADPfossil)	ADPf	MJ, NCV	390.56	207.39	105.91	11.42	1.51	0.00	123.66	143.62	0.00	0.00	0.00	0.00	0.00	2.30	0.00	2.13	-183.17
Fossil fuel depletion	FFD	MJ Surplus	51.90	21.43	12.65	1.72	0.07	0.00	15.51	21.60	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	-30.47
Use of Primary Resources																			
Renewable primary energy used as energy	RPRE	MJ, NCV	158.55	158.53	112.03	0.02	0.02	0.00	3.85	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.03	-0.03
Renewable primary energy used as material	RPRM	MJ, NCV	236.30	236.30	236.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-renewable primary energy used as energy	NRPRE	MJ, NCV	487.58	284.13	157.49	12.30	1.64	0.00	157.48	153.98	0.00	0.00	0.00	0.00	0.00	2.48	0.00	2.22	-203.45
Non-renewable primary energy used as material	NRPRM	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Secondary Material, Secondary Fuel and Recovered Energy																			
Secondary material	SM	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Renewable secondary fuel	RSF	MJ, NCV	130.60	130.60	130.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-renewable secondary fuel	NRSF	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovered energy	RE	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mandatory Inventory Parameters																			
Consumption of freshwater resources	FW	m3	0.41	0.41	0.02	0.00	0.00	0.00	0.37	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indicators Describing Waste																			
Hazardous waste disposed	HWD	kg	0.07	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-hazardous waste disposed	NHWD	kg	0.41	0.41	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High-level radioactive waste	HLRW	m3	2.0E-08	2.0E-08	5.3E-09	9.0E-11	1.5E-11	0.0E+00	1.4E-08	8.8E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	0.0E+00	0.0E+00	-9.9E-11
Intermediate- and low-level radioactive waste	ILLRW	m3	5.2E-07	5.2E-07	4.4E-08	4.3E-10	7.1E-11	0.0E+00	6.5E-08	4.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-11	0.0E+00	0.0E+00	-4.8E-10
Components for re-use	CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials for recycling	MR	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials for energy recovery	MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovered energy exported	EE	MJ, NCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

LIMITATIONS

Comparability

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance using EPD information shall consider all relevant information modules over the full life cycle of the products within the building.

This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930:2017 §5.5 are met. In addition, to be compared EPDs must comply with the same core and sub-category PCRs (Part A and B) and include all relevant information modules. It should be noted that different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

Forest Management

While this EPD does not address landscape level forest management impacts, potential impacts may be addressed through requirements put forth in regional regulatory frameworks, ASTM 7612-15 guidance, and ISO 21930 Section 7.2.11 including notes therein. These documents, combined with this EPD, may provide a more complete picture of environmental and social performance of wood products.

While this EPD does not address all forest management activities that influence forest carbon, wildlife habitat, endangered species, and soil and water quality, these potential impacts may be addressed through other mechanisms such as regulatory frameworks and/or forest certification systems which, combined with this EPD, will give a more complete picture of environmental and social performance of wood products.

Scope of the EPD

EPDs can complement but cannot replace tools and certifications that are designed to address environmental impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, etc.

Accuracy of Results

EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact when averaging data.

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