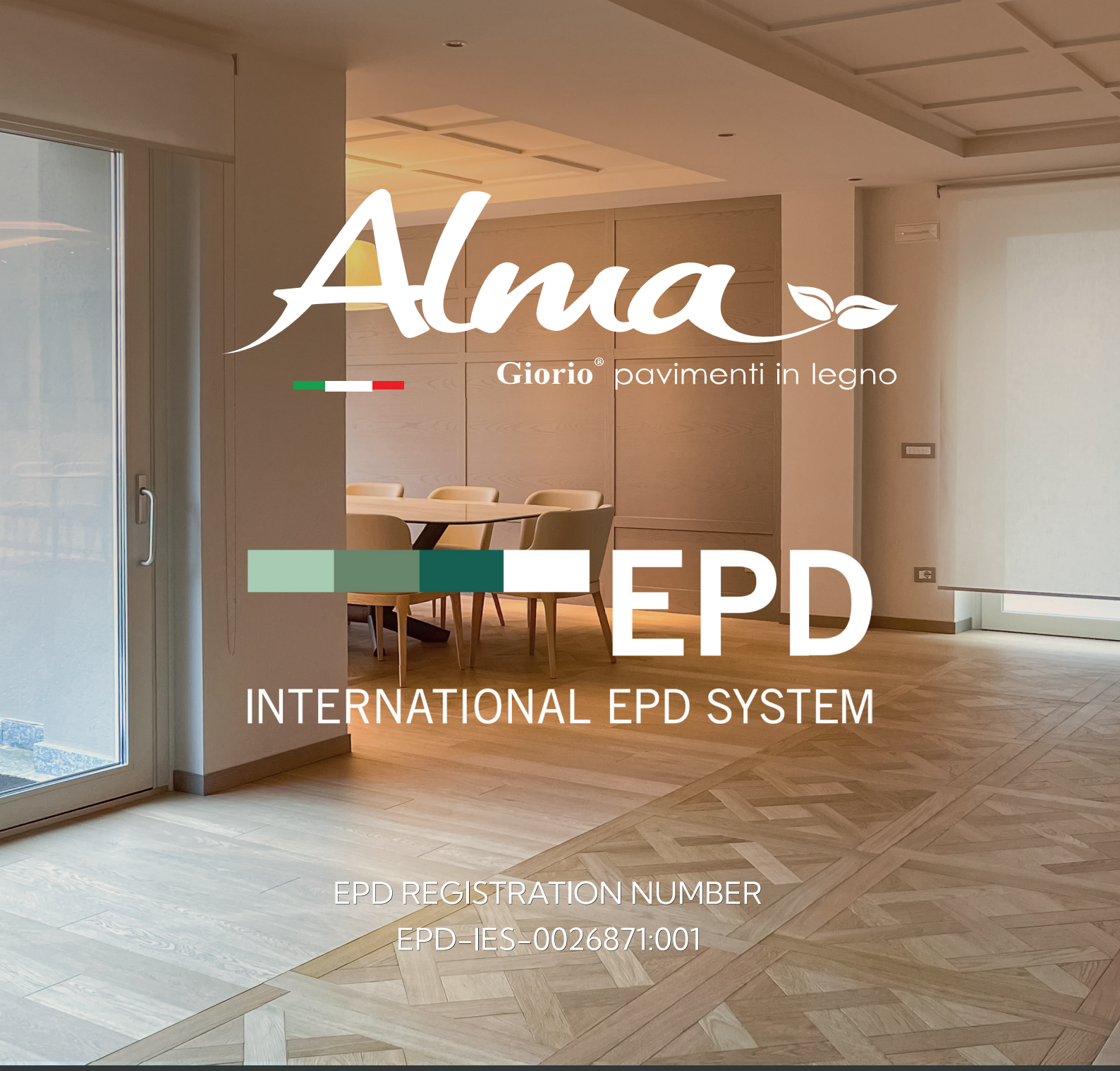


EPD

INTERNATIONAL EPD SYSTEM

EPD REGISTRATION NUMBER
EPD-IES-0026871:001

EPD OWNER
GIORIO Srl

PROGRAMME
THE INTERNATIONAL EPD SYSTEM, WWW.ENVIRONDEC.COM

PROGRAMME OPERATOR
EPD INTERNATIONAL AB

EPD REGISTRATION NUMBER
EPD-IES-0026871:001

VERSION DATE
2025-12-23

VALIDITY DATE
2030-12-23

EPD
INTERNATIONAL EPD SYSTEM

EPD of multiple products, based on a representative product.
The complete list of covered products is reported in the PRODUCT INFORMATION section.
An EPD may be updated or depublished if conditions change.
To find the latest version of the EPD and to confirm its validity, see www.environdec.com.
In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021.

General information

PROGRAMME INFORMATION

PROGRAMME: The International EPD System
ADDRESS: EPD INTERNATIONAL AB, box 21060, Se-100 31 Stockholm, Sweden
WEBSITE: www.environdec.com
EMAIL: support@environdec.com

PRODUCT CATEGORY RULES (PCR)

CEN STANDARD EN 15804 serves as the Core Product Category Rules (PCR)

PRODUCT CATEGORY RULES (PCR): PCR 2019:14 Construction Products (EN 15804+A2) (VERSION 2.0.1)

UN PC CODE 31219

c-PCR: C-PCR-005 (TO PCR 2019:14) wood and wood-based products for use in construction (EN 16485:2014) (version 1.0.0) CPC 31219

PCR REVIEW WAS CONDUCTED BY: The Technical Committee Of The International Epd System.
See www.environdec.com for a list of members. The review panel may be contacted via the secretariat www.environdec.com/contact.

c-PCR REVIEW WAS CONDUCTED BY: This PCR was developed within CEN standardisation, and adopted as a c-PCR by the International EPD® System. There was thus no additional open consultation period and no additional review in addition to those within standardisation.

THIRD-PARTY VERIFICATION

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☑ **Individual EPD verification without a pre-verified LCA/EPD tool**

Third-party verifier: Ugo Pretato
Accredited by: International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ YES ☑ NO

LCA ACCOUNTABILITY

COMPANY: Life Cycle Engineering
LCA PRACTITIONERS: Massimo De Pieri, Elisa Savio, Luca Squadrone
CONTACT: depieri@studiolce.it, savio@studiolce.it, squadrone@studiolce.i

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fuly aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical delcared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Information about the EPD owner

THE EPD OWNER

EPD OWNER: GIORIO Srl

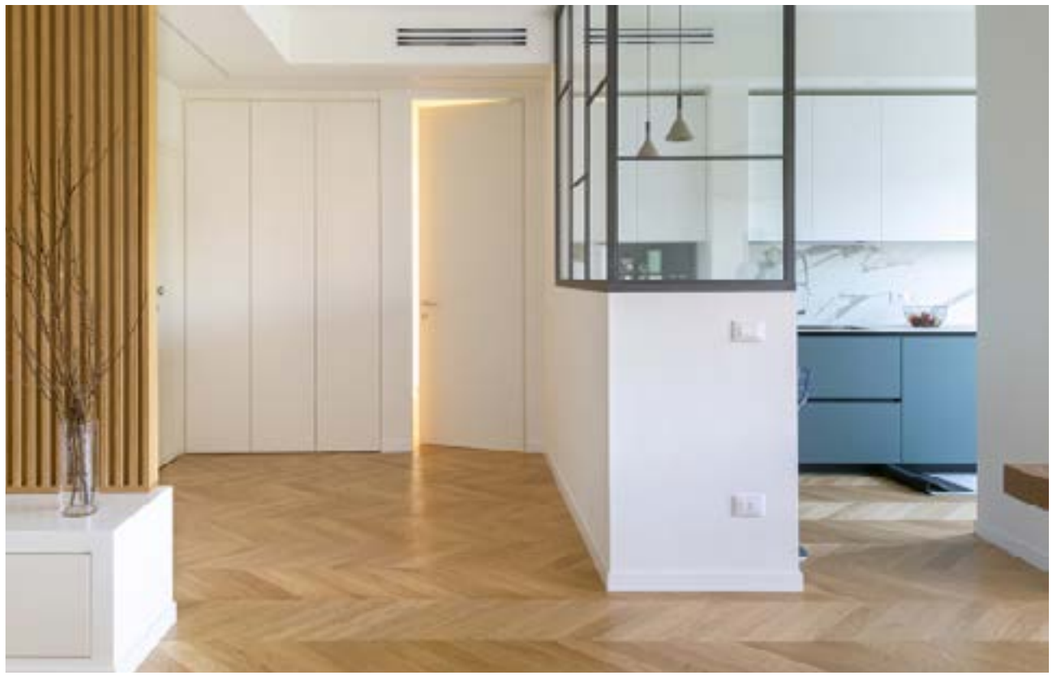
ADDRESS: Via San Martino Nisocco, 2 12046 Montà (CN) italy

CONTACT: Roberta Giorio, roberta.giorio@giorio.it

DESCRIPTION OF THE ORGANIZATION: Giorio Srl is an Italian company active in the fields of wooden flooring, sports flooring, interior design, architecture, furniture, and luxury finishes.

Founded in 1969 by Pierino Giorio, whose passion for wood led him to specialize in parquet production and installation, the company has evolved from a small artisan workshop into a structured industrial group that combines craftsmanship with innovation.

Over the years, Giorio has expanded its activities with the creation of Alma, a wooden flooring brand that quickly reached international markets, and Giorio Casa, dedicated to furniture and interior design. In 2015, the company entered the sports flooring sector with Adisportfloor, recognized for its high performance and quality. Today, Giorio Srl continues to focus on the manufacturing of high-quality wooden floors, engineered, classic patterned, and traditional solid wood, serving both national and international markets.

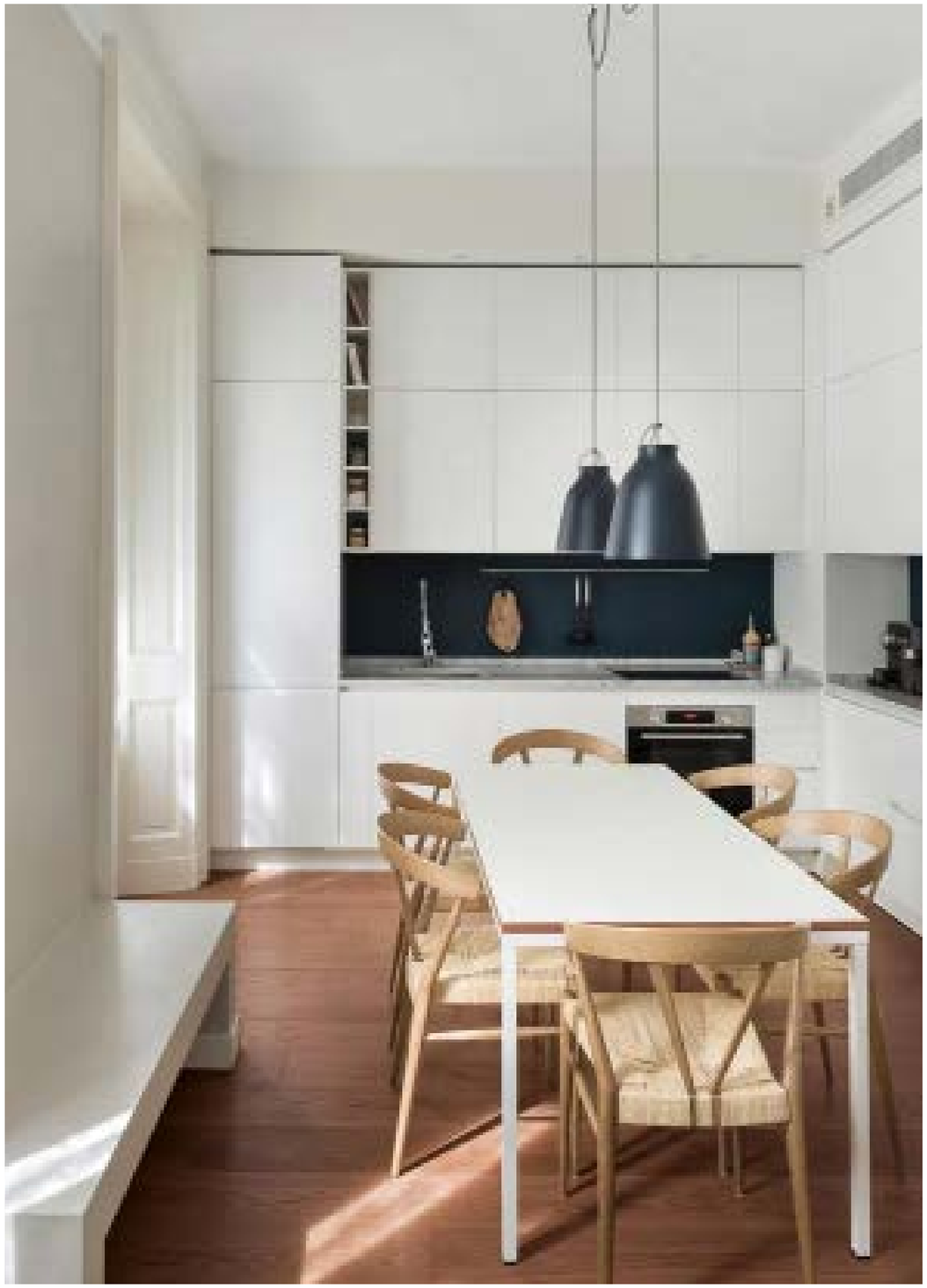


Product information

PRODUCTS COVERED BY THE EPD

This EPD covers the whole Alma collection. Results are expressed for the average product manufactured during 2024, defined as the average combination of base wood and lamella as defined by table below:

PRODUCTS COVERED BY THE EPD				
BASE WOOD	BASE WOOD THICKNESS [mm]	SURFACE WOOD LAMELLA	SURFACE WOOD LAMELLA THICKNESS [mm]	ANNUAL PRODUCTION [m^2]
Birch	15	European Oak	4	40 300
Birch	10	European Oak	3	9 800
Birch	14	European Oak	3	1 960
Birch	16	European Oak	5	4 000
Birch	17	European Oak	6	818 000
Birch	11	European Oak	4	3 440
Birch	15	American Oak	4	5 413
Birch	11	American Oak	4	1 262
Birch	10	American Oak	3	55 000
Birch	15	European Walnut	4	3 370
Birch	11	European Walnut	4	16 000
Birch	10	European Walnut	3	105 000
Birch	14	European Walnut	3	77 000
Birch	15	American Walnut	4	678 000
Birch	11	American Walnut	4	78 000
Birch	15	Asian Teak	4	80 000
Birch	14	Asian Teak	3	296 000
Birch	15	Larch	4	40 000



Product information

ALMA

Alma offers a wide range of parquet, with different essences, finishes, colours and surfaces.
An extended catalogue of products, between tradition and new proposals, in order to satisfy every client.

ESSENCE

European Oak

Glacial Oak

European Walnut

American Walnut

Asian Teak

Austrian Larch

THEORETICAL PRODUCT LIFESPAN: 60 years

UN CPC CPDE: 31219 - Wood, continuously shaped along any of its edges or faces (including strips and friezes for parquet flooring, not assembled, and beadings and mouldings) of other wood

PRODUCTION SITE: Via San Martino Nisocco, 2 12046 Montà - (CN) Italy

More information available at https://www.almafloor.it/

PRODUCTION PROCESS

The production of Alma's parquet begins with selected logs, which are cut perpendicularly to ensure uniform strength and prevent warping over time.

From these rough boards, thin lamellae are extracted and glued onto a plywood base in a "Sandwich" process for stability and durability. The wood then passes through grooving and profiling machines, which create precise cuts and tongue-and-groove joints to enhance elasticity and allow easy installation.

Finally, at Giorio's facility, the planks are brushed to open the pores, coated with protective varnish, and carefully inspected for quality before being packaged and ready for installation.

COLLECTIONS

- **Wide Planks** – wide single-boards that emphasise the wood's natural character.
- **Hungarian Herringbone 45°** – a dynamic herringbone layout at 45°, giving rhythm and movement to the space.
- **Italian Herringbone 90°** – a more geometric herringbone pattern at right angles, with a refined architectural appeal.
- **French Herringbone 30°** – an elegant chevron-style arrangement at 30° for visual sophistication.
- **Geometric** – composed of patterned formats and geometric shapes, merging craftsmanship with design.
- **Design** – contemporary solutions with creative formats and finishes, aligned to modern interior trends.
- **Inlays** – decorative parquet with custom inlay patterns and motifs for unique floor designs.
- **Outdoor** – wood-flooring solutions for exterior use, combining durability with natural wood aesthetics.
- **Stairs** – staircases and wood-clad steps coordinated with the flooring, for continuity across levels.
- **Tables** – custom wooden tables and furnishings designed to match the flooring collections.
- **Accessories** – supporting elements such as skirting boards, stair nosing and maintenance products to complete the installation.

Content declaration

Declared unit: 1 m² of wood flooring

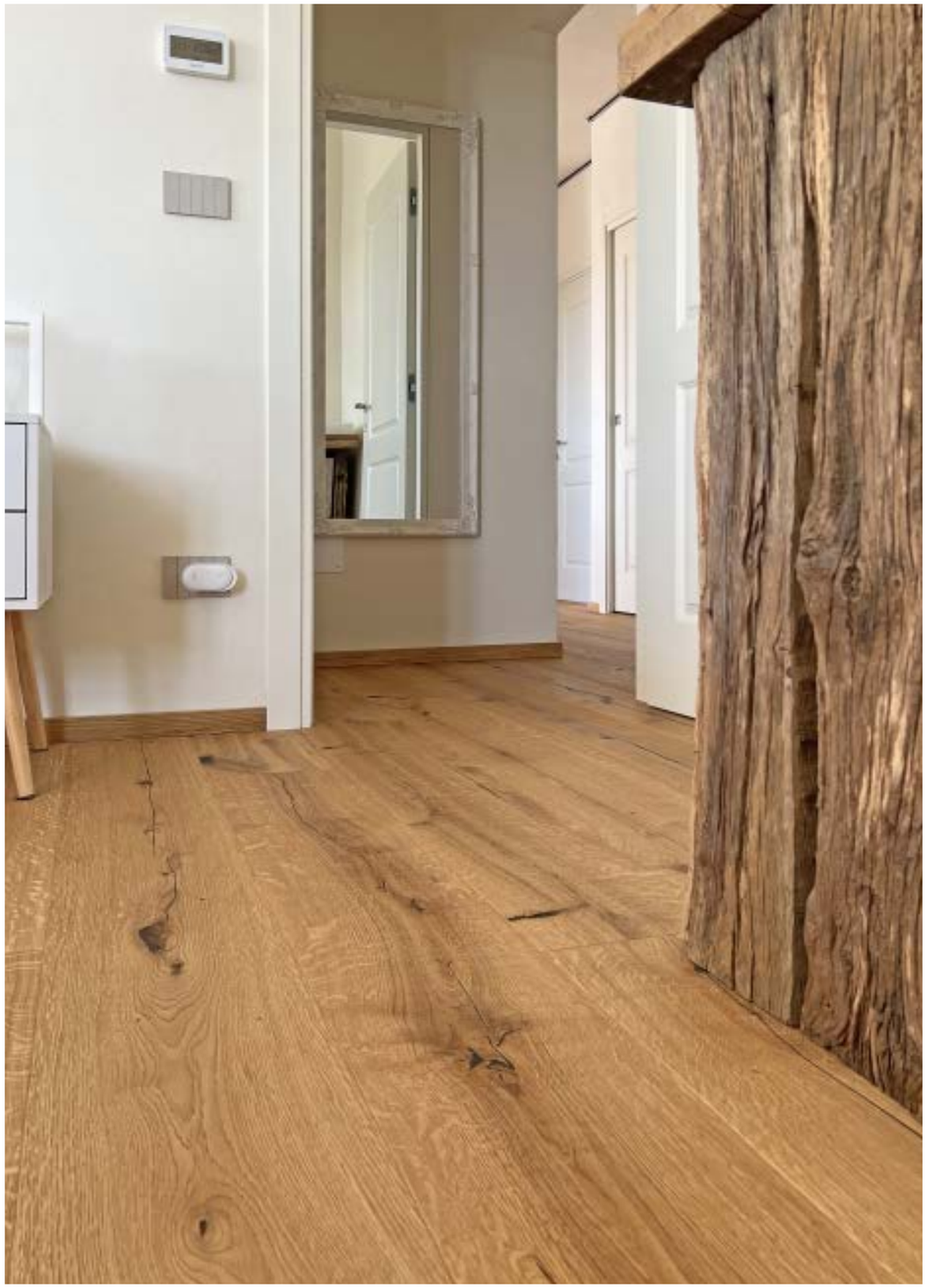
Content declaration is reported for the representative product and for the two outlier products, namely the thinnest and the thickest floors in the Alma collection. Packaging is not affected by product mass, while content declaration and biogenic material are:

PRODUCT CONTENT	MASS [kg]	MASS, RANGE [MIN–MAX] [kg]	POST-CONSUMER RECYCLED MATERIAL, MASS-% OF PRODUCT	PRE-CONSUMER RECYCLED MATERIAL, MASS-% OF PRODUCT	BIOGENIC MATERIAL, MASS-% OF PRODUCT	BIOGENIC MATERIAL, kg C/ PRODUCT OR DECLARED UNIT	BIOGENIC MATERIAL kgC/ DECLARED UNIT - RANGE [MIN-MAX]
WOOD	12.18	[8.08 ; 16.04]	0%	0%	100%	5	[3.3 ; 6.55]
ADHESIVE	<1%	<1%	0%	0%	0%	0	-
VARNISH	0.09	0.09	0%	0%	0%	0	-
TOTAL	12.27	[8.09 ; 16.13]	0%	0%	100%	5	[3.3 ; 6.55]

PACKAGING MATERIALS	MASS [kg]	MASS-% (VERSUS THE PRODUCT)	BIOGENIC MATERIAL, kg C/PRODUCT OR DECLARED UNIT
PLASTIC	0.02	0%	0.00
CARDBOARD	0.21	2%	<1
WOOD	0.08	1%	<1
TOTAL	0.31	3%	0.00

Testing for formaldehyde release was performed according to EN 717-1:2004, and testing for pentachlorophenol content was performed according to CEN/TR 14823:2003, both carried out by a notified laboratory (NANDO 1937) under the requirements of Regulation (EU) 305/2011 for construction products (CE marking). The results confirm compliance with the applicable regulatory limits.VOC emissions were tested according to EN 16516 and ISO 16000 series at Eurofins Product Testing Denmark.

The product achieved Indoor Air Comfort GOLD certification, complying with the most stringent international requirements. Based on the available test results and to the best of the manufacturer's knowledge, no other substances with hazardous or toxic properties are present in the product above the relevant regulatory thresholds.



LCA information

DECLARED UNIT: 1 m^2 of wood flooring.

CONVERSION FACTOR TO MASS: 12.27 kg/m^2

THICKNESS OF DECLARED UNIT: 14.42 mm

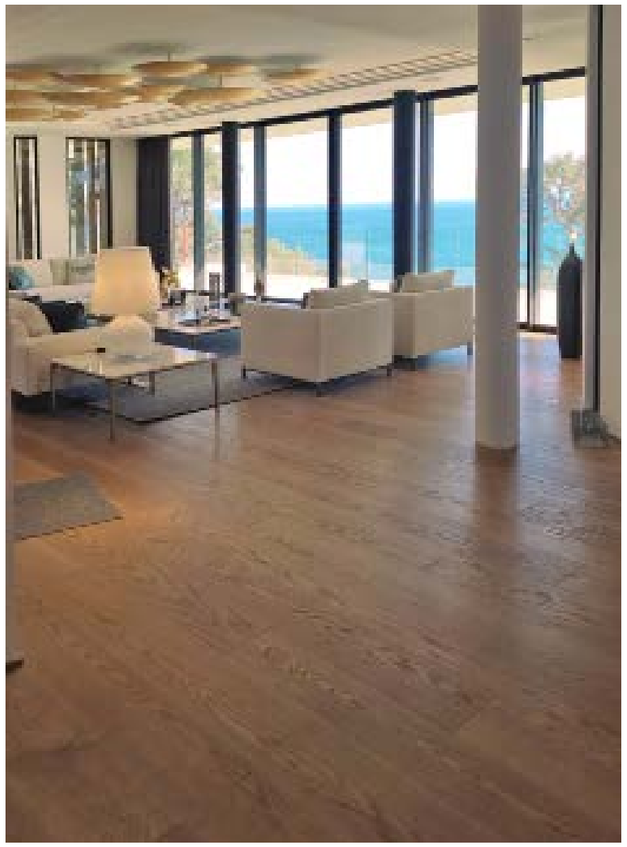
REFERENCE SERVICE LIFE OF THE BUILDING: 100 years

THEORETICAL PRODUCT LIFESPAN: 60 years

TYPE OF EPD: Cradle-to-gate with options

LCA SOFTWARE: Simapro v.10.2

SYSTEM BOUNDARIES FLOW DIAGRAM:



A1- RAW MATERIALS SUPPLY

- Forestry activity for wood harvest

A2 – RAW MATERIALS TRANSPORT

- Raw material transportation by truck

A3 – MANUFACTURING

- Pre processing of wood board and sandwich
- Flooring board finishing
- Consumption of solvents and varnishes
- Consumption of electricity, fuels and water
- Waste management, transport to disposal site included
- Packaging raw material and transport from supplier
- Raw material production and transport for production scraps

A4 – PROFILES TRANSPORT TO CUSTOMER

- Final product transportation to installation site

A5-CONSTRUCTION/ INSTALLATION

- Manual assembling of the insulating coat
- Production of the additional material necessary for installation
- Raw material production and transport for installation scraps
- Waste management, transport to disposal site included

B1-B7-USE STAGE

- Emission to air due to finishing
- Production of consumables for the mantainance of the product
- Product replacement after 60 years
- For replacement board impact the module from A1 to A5 is replicated
- Waste management of the replacement board, transport to disposal site included

C1 – DECONSTRUCTION/ DEMOLITION

- Fuel consumption for deconstruction/demolition activities according to the reference PCR

C2 – WASTE TRANSPORT

- Waste transport by truck, according to the reference PCR

C3 – WASTE PROCESSING

- Electricity and fuel consumption for sorting and pre-treatment activities, according to the reference PCR
- Wood to recycling: 38%
- Wood to energy recovery: 29%
- Incineration impact

C4 – DISPOSAL

- Diesel consumption for pre-treatment according to the relevant PCR
- Wood to landfill: 33%

D – BEYOND SYSTEM BOUNDARIES

- The net potential benefit generated by waste incineration considers the avoided production of electricity from the national grid and heat from a domestic boiler.
- The net potential benefit generated by wood recycling considers the avoided production of wood chips.

LCA information

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	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
MODULE	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MODULES DECLARED	✓	✓	✓	✓	✓	✓	✓	ND	✓	ND	ND	ND	✓	✓	✓	✓	✓
GEOGRAPHY	GLO	GLO	ITA HU	GLO	GLO	GLO	GLO	ND	GLO	ND	ND	ND	GLO	GLO	GLO	GLO	GLO
PRIMARY DATA USED	47%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
VARIATION – PRODUCTS	-22% / 18%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
VARIATION – SITES	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

✓ = module included in the analysis **ND** = module not included in the analysis **GLO = Globe** **ITA** = Italy **HU**= Hungary

LCA information

ELECTRICITY USED IN MODULE A3

Approximately 72% of the electricity used in the production process comes from the HU power grid, while the remaining 28% is supplied by the IT power grid. The GWP-GHG for electricity is equal to 0.48 kg CO_2e/kWh.

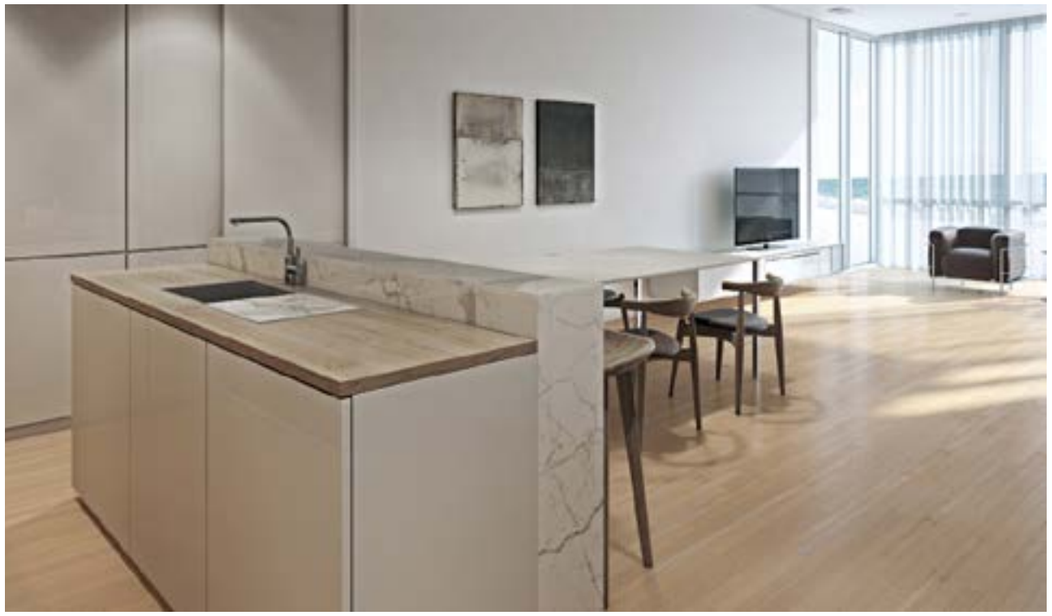
ALLOCATION PROCEDURES

Theallocationprocedurefollowsaphysicalallocationprinciplebasedonsquaremeters(m²).Forboththesuppliers' plants(ModuleA3)andGiorio'splant(ModuleA3),theallocationofenergyandmaterialconsumptionisbasedonthe total square meters of product manufactured over the year.

The production facilities are primarily dedicated to the manufacturing of wooden flooring boards. For the remaining life cycle modules, specific and detailed data were used, expressed either per square meter (m²) or per kilogram (kg), depending on the available information.

CUT-OFF RULES:

All available primary data were incorporated into the model. Where primary data were not available, suitable secondary data were used to ensure the inclusion of all relevant flows, in accordance with the cut-off criteria defined by EN 15804. This approach guarantees that at least 99% of total mass and energy inflows per unit process, and 95% per life-cycle stage (A1–A3, A4–A5, C1–C4, aggregated modules B1–B5 and B6–B7, and Module D), are covered. No data were excluded to conceal information, and proxy data were applied where necessary to achieve 100% completeness of the life cycle inventory.



LCA information

DATA QUALITY ASSESSMENT

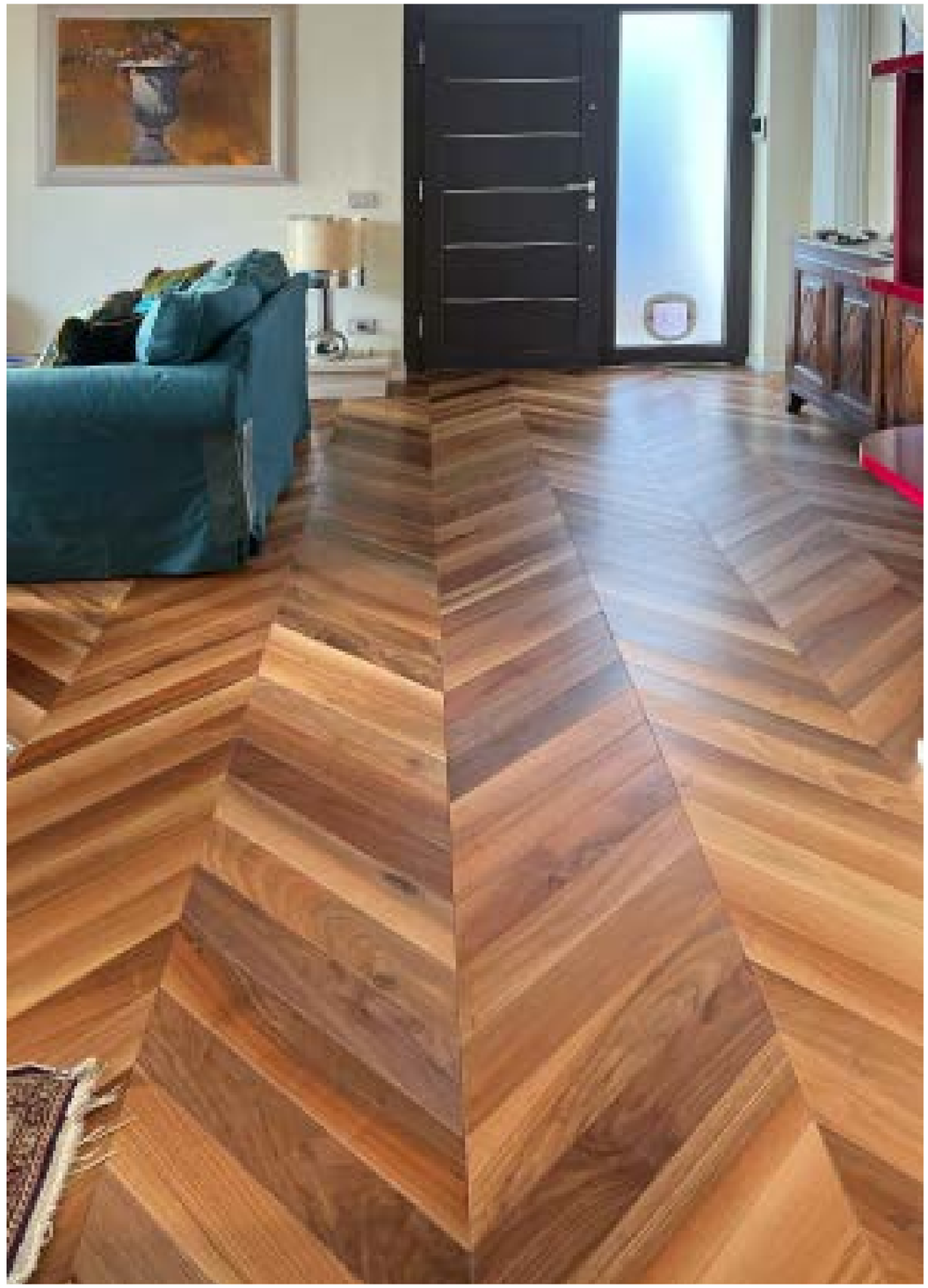
The data quality assessment was carried out based on the PCR 2019:14 v2.0.1 and the EN 15941 standard "Data quality for environmental assessment of products and construction works". The analysis was carried out for all environmental impact indicators, considering all the information used to model the life cycle of the products under study, until reaching 80% coverage of the impacts. The parameters analysed include accuracy, completeness, and the degree of technological, geographical, and temporal coverage of all used datasets.

Data on raw material consumption, processes, and transport to and from the factory come from primary sources, as they were obtained directly from the company. The degrees of geographical, temporal, and technological coverage were evaluated using the assessment table from the EN 15804:2012+A2:2019 standard. In order to globally assess the quality of the data selected for the modelling phase, a numerical score from 1 to 5 was assigned to each dataset evaluation, where 1 represents "very poor" and 5 represents "very good". By calculating the average score for each evaluation, the mean score obtained for each evaluation parameter was obtained.The evaluation of the three aspects is shown in the table below.

Overall, the data quality was assessed as "Good", based on the information collected and the datasets used.In the tables below, in addition to the average score for each coverage criterion, a table is provided listing all processes contributing more than 10% to the GWP-GHG indicator for modules A1-A3, indicating the data source and the share of primary data for the indicator. The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

GEOGRAPHICAL REPRESENTATIVENESS SCORE	TECHNOLOGICAL REPRESENTATIVENESS SCORE	TEMPORAL REPRESENTATIVENESS SCORE
4	4	3

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA, OF GWP-GHG RESULTS FOR A1-A3
GENERATION OF ELECTRICITY USED IN MANUFACTURING OF THE SANDWICH	Collected Data	EPD Owner	2024	Primary Data	17%
TRANSPORT OF MATERIAL ALONG THE WHOLE SUPPLY CHAIN	Collected Data	EPD Owner	2024	Primary Data	30%



LCA information

MODELLING OF INFRASTRUCTURES

Power plants for the generation of electricity and heat, both present in module A3, were included in the LCA model as relevant infrastructures.

A1-A3
MANUFACTURING

This assembly of modules include the following activities: forestry operations to obtain the raw wood, transport of material along the whole supply chain up to the Italian manufacturing site (100% performed by truck), wood sandwich preparation (Hungary) and finishing (Italy).

A4
DISTRIBUTION

Delivery scenario is developed based on sales data for 2024 related to Alma product series. Representative distance adopted in the LCA model is computed as weighted average based on amounts shipped to each destination. Transport is performed by truck and ship.

A5
INSTALLATION

Assembly is modelled with primary data provided by Giorio as technical guidelines for floor installers. The scenario adopted in this EPD is the aritmetic average of two alternative options: the former uses silanic glue (1,22 kg/m^2), the latter adopts vynilic glue coupled with a nylon film (0,192 kg/m^2).

B1
USE

During use phase of wooden floow minor quantities of air emissions of chemical compounds embedded in the product are accounted.
These quantities are way below regulatory limits as demonstrated by lab tests performed by Giorio but are included in the LCA model scaled to the product RSL and referred to declared unit.

B2
MAINTENANCE

Maintenance of the wooden floor implies two input: water and detergents for ordinary cleaning and electricity for extraordinary maintenance, performed by electric sanding machine. Unit activity data are scaled to the declared RSL (100 years) and referred to declared unit. In this module 100 l/m^2 of water and detergents and 1,67 kWh/m^2 are considered along the RSL.

B4
REPLACEMENT

Replacement of a certain fraction of wooden floor must be considered as Giorio guarantees 60 years lifetime for its collections.

Therefore, to meet the considered 100 years RSL, an additional input of material is considered in this module. 0,67 m^2 of additional wooden floor need to be accounted as extra-production to extend product lifetime to the considered 100 years.

C1
DECONSTRUCTION

The demolition process is not directly managed by Giorio; therefore, no primary data is available regarding the material flows required for dismantling the profiles. As a result, a default value provided by PCR 2019:14 v2.0.1 was used, which indicates a diesel consumption of 0.0011 kWh per kg of dismantled material. The module includes both the production of diesel and the direct emissions resulting from its combustion.

C2
WASTE TRANSPORT

Module C2 includes the transportation of waste to treatment facilities. Since this phase is outside Giorio's direct control, both the transport distances and the transport modes were defined according to PCR 2019:14 v2.0.1, which specifies a default distance of 80 km for waste sent to landfill or recycling and 130 km for waste sent to incineration with energy recovery. The life cycle inventory for transport is based on the dataset Transport, freight, lorry 16–32 metric ton, EURO5 {RoW}.

LCA information

DOWNSTREAM STAGES AND MODULE D

c3
WASTE TREATMENT

A representative end-of-life scenario was derived from PEF Guidance (Annex C, 2020). The standard specifies that 38% of the product undergoes recycling, while the remaining portion is divided between landfill and energy recovery, in line with the Eurostat scenario for municipal waste. According to PCR 2019:14, default energy consumption values are assigned to the sorting phase: 0.0068 kWh/kg of diesel and 0.0022 kWh/kg of electricity. Of the total product 29% wt goes to incineration with energy recovery, generating thermal and electrical energy. The impact of the incineration process falls within the system boundary of this study.

c4
DISPOSAL

As a result, 33% of the product mass is destined for disposal, assumed to occur in landfill. The environmental impacts of these treatments are fully allocated to the system under study.

D
BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY

The additional Module D enables the assessment of potential benefits resulting from recycling and energy recovery operations carried out at the product's end of life, as described in Module C3. These potential benefits are evaluated by comparing the end-of-life treatments with the processes they replace. The net potential benefit generated by wood recycling (recycling efficiency = 90%) considers the avoided production of wood chips.

On the other hand, energy generated through waste incineration provides an alternative to conventional fossil fuel combustion in power or combined heat and power (CHP) plants. By knowing the polymer feedstock energy and the quantity of wood (kg/m^2), it is possible to evaluate the energy produced per square meter of product. The relevant values are derived from the dataset Waste building wood, chrome preserved {GLO}| treatment of waste building wood, chrome preserved, municipal incineration | Cut-off, U from Ecoinvent 3.11, which considers efficiency factors of 1.74 MJ/kg for electricity production and 3.5 MJ/kg for thermal energy. To calculate the associated impacts, these results are linked to electricity and heat production datasets from Ecoinvent 3.11 .

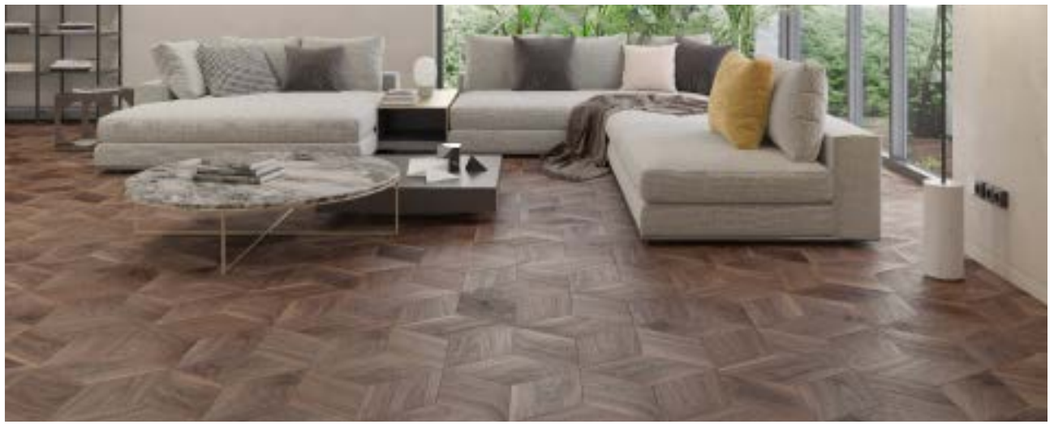
ENVIRONMENTAL IMPACT ASSESSMENT

The environmental impact was assessed using a dedicated method developed by LCE, in accordance with the EN 15804 standard and third-party verified. The method is based on EF 3.1 package.

ENVIRONMENTAL IMPACT VARIATIONS COMPARED TO REFERENCE PRODUCT

The results variation of the two products for the sum of modules from A1 to C4 (as stated within the PCR 2029:14) is shown in the table below:

IMPACT CATEGORY	UNIT	ALMA 1m^2 10+3 (mm)	ALMA 1m^2 17+6 (mm)
Climate change - Total	kg CO_2 eq	-8%	7%
Climate change - Fossil	kg CO_2 eq	-6%	5%
Climate change - Biogenic	kg CO_2 eq	-53%	90%
Climate change - LU&LU change	kg CO_2 eq	0%	0%
Climate change - GWP GHG	kg CO_2 eq	-5%	5%
Acidification	mol H+ eq	-9%	9%
Eutrophication, freshwater	kg P eq	-4%	3%
Eutrophication, marine	kg N eq	-7%	7%
Eutrophication, terrestrial	mol N eq	-12%	10%
Photochemical ozone formation	kg NMVOC eq	-6%	6%
Ozone depletion ODP	kg CFC11 eq	-4%	4%
ADP for minerals and metals	kg Sb eq	-1%	1%
ADP for fossil resources	MJ	-4%	4%
Water use	m^3 DEPRIV.	-4%	3%



Environmental performance

Environmental Impact Assessment is performed with EF 3.1 characterization factors according to reference PCR.
The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B4	C1	C2	C3	C4	D
GWP. t	kg CO_2 eq	1,54E+01	6,61E-01	3,49E+00	2,48E-07	9,98E+01	2,12E+01	4,73E-03	1,88E-01	1,35E+01	8,37E-01	5,88E+00
GWP. f	kg CO_2 eq	2,22E+01	6,61E-01	3,07E+00	2,48E-07	9,95E+01	1,58E+01	4,73E-03	1,88E-01	6,76E-02	4,12E-02	-1,79E+00
GWP. b	kg CO_2 eq	-6,87E+00	1,75E-04	4,16E-01	0,00E+00	4,63E-02	5,45E+00	1,29E-06	5,76E-05	1,35E+01	7,96E-01	7,67E+00
GWP. luluc	kg CO_2 eq	3,02E-02	1,47E-05	1,71E-03	0,00E+00	7,90E+00	2,10E-02	1,95E-07	9,55E-06	2,62E-05	1,95E-05	-3,26E-03
GWP. GHG	kg CO_2 eq	2,23E+01	6,61E-01	3,13E+00	2,48E-07	1,08E+02	1,60E+01	4,73E-03	1,88E-01	6,77E-02	2,69E-01	-1,80E+00
ODP	kg CFC-11 eq	8,06E-07	1,29E-08	1,23E-07	0,00E+00	4,56E-06	5,80E-07	7,20E-11	2,22E-09	9,11E-10	1,09E-09	-5,32E-08
AP	mol H+ eq	1,56E-01	8,40E-03	1,32E-02	0,00E+00	3,97E-01	1,12E-01	4,37E-05	5,29E-04	7,45E-04	3,01E-04	-5,46E-03
EPf	kg P eq	5,89E-04	4,48E-07	5,76E-05	0,00E+00	3,35E-03	3,68E-04	4,46E-09	1,31E-06	9,69E-07	5,72E-07	-6,51E-05
EPm	kg N eq	4,94E-02	2,23E-03	3,10E-03	0,00E+00	1,83E-01	3,20E-02	2,06E-05	1,83E-04	3,56E-04	1,55E-04	-1,32E-03
EPt	mol N eq	5,05E-01	2,47E-02	3,31E-02	0,00E+00	9,96E-01	3,52E-01	2,26E-04	2,02E-03	3,81E-03	1,32E-03	-1,46E-02
POCP	kg NMVOC eq	1,81E-01	7,18E-03	1,56E-01	7,19E-07	4,88E-01	2,13E-01	6,74E-05	7,53E-04	9,93E-04	5,40E-04	-5,42E-03
ADPe*	kg Sb eq	7,05E-06	1,29E-08	7,38E-06	0,00E+00	2,95E-05	9,55E-06	1,66E-10	1,53E-08	1,53E-08	8,69E-09	-7,63E-08
ADPf*	MJ	3,90E+02	8,47E+00	6,74E+01	0,00E+00	2,39E+03	2,68E+02	6,19E-02	2,45E+00	7,53E-01	9,51E-01	-3,27E+01
WDP*	m^3 depriv.	9,94E+00	2,83E-03	1,13E+00	0,00E+00	6,51E+01	6,61E+00	4,62E-05	3,26E-03	1,90E-02	0,00E+00	-3,17E-01

*The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.

GWP, t: Global Warming Potential - total
GWP,f: Global Warming Potential - fossil
GWP,b: Global Warming Potential - biogenic
GWP,luluc: Global Warming Potential – land use and land use change

GWP,GHG: Global Warming Potential - irreversible
ODP: Ozone Depletion
AP: Acidification
EPf: Eutrophication - freshwater

EPm: Eutrophication - marine
EPt: Eutrophication - terrestrial
POCP: Photochemical Ozone Creation Potential
ADPe: Abiotic Depletion Potential - non-fossil

ADPf: Abiotic Depletion Potential - fossil
WDP: Water Deprivation Potential

Environmental performance

RESOURCE USE INDICATORS ACCORDING TO EN 15804

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B4	C1	C2	C3	C4	D
PERE	MJ	1,19E+01	1,91E-02	1,71E+01	0,00E+00	3,14E+02	1,39E+02	1,33E-04	4,87E-03	1,83E+02	7,56E-03	-2,56E+01
PERM	MJ	4,38E+02	0,00E+00	-2,71E+00	0,00E+00	0,00E+00	1,68E+02	0,00E+00	0,00E+00	-1,83E+02	0,00E+00	0,00E+00
PERT	MJ	4,50E+02	1,91E-02	1,44E+01	0,00E+00	3,14E+02	3,07E+02	1,33E-04	4,87E-03	3,61E-02	7,56E-03	-2,56E+01
PENRE	MJ	3,88E+02	8,47E+00	6,85E+01	0,00E+00	2,39E+03	2,67E+02	6,19E-02	2,45E+00	7,53E-01	9,51E-01	-3,27E+01
PENRM	MJ	2,53E+00	0,00E+00	-1,10E+00	0,00E+00	0,00E+00	9,57E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,90E+02	8,47E+00	6,74E+01	0,00E+00	2,39E+03	2,68E+02	6,19E-02	2,45E+00	7,53E-01	9,51E-01	-3,27E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,53E-01	1,61E-04	2,89E-02	0,00E+00	2,32E+00	1,70E-01	1,86E-06	1,08E-04	6,67E-04	0,00E+00	-1,30E-02

Method B reported in Annex 3 of the PCR is adopted for calculation of energy use indicators.

PERE: Renewable Primary Energy excluding Primary Energy used as raw material
PERM: Renewable Primary Energy used as raw material
PERT: Total use of Renewable Primary Energy

PENRE: Non-renewable Primary Energy excluding Primary Energy used as raw material
PENRM: Non-renewable Primary Energy used as raw material
PENRT: Total use of Non-renewable Primary Energy

SM: Use of secondary raw materials
RSF: Use of renewable secondary fuels
NRSF: Use of non-renewable secondary fuels
FW: Net use of fresh water
HWD: Hazardous waste disposed

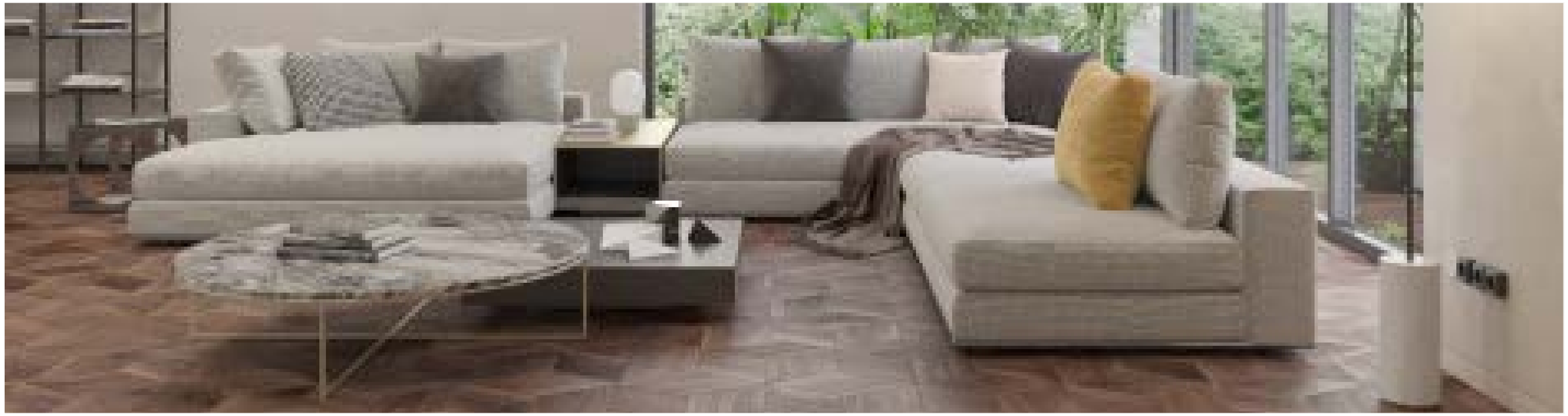
NHWD: Non-hazardous waste disposed
RWD: Radioactive waste disposed
CRU: Components for re-use
MFR: Materials for recycling
MER: Materials for energy

recovery
EE: Exported energy

Environmental performance

WASTE AND OUTPUT FLOWS INDICATORS ACCORDING TO EN 15804

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B4	C1	C2	C3	C4	D
HWD	kg	5,00E-01	2,63E-04	5,65E-02	0,00E+00	3,34E+00	3,55E-01	3,51E-06	2,01E-03	2,39E-02	3,98E-04	-1,93E-02
NHWD	kg	8,96E+00	9,88E-03	1,64E+00	0,00E+00	4,63E+01	1,80E+01	6,08E-05	3,14E-03	3,55E+00	1,49E+01	-1,65E-01
RWD	kg	9,15E-04	4,54E-07	3,55E-05	0,00E+00	1,12E-03	3,32E-04	2,89E-09	1,07E-07	1,10E-06	1,33E-07	-1,00E-04
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,26E+00	0,00E+00	3,65E-01	0,00E+00	0,00E+00	3,48E+00	0,00E+00	0,00E+00	4,63E+00	0,00E+00	4,66E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE	MJ	0,00E+00	0,00E+00	9,90E-01	0,00E+00	0,00E+00	1,30E+01	0,00E+00	0,00E+00	1,83E+01	0,00E+00	0,00E+00



Additional environmental information

In accordance with the reference PCR, if the declared end-of-life scenarios correspond to a mix of end-of-life options, it is necessary to also report the results for the corresponding 100% scenarios. The results for modules C1–C4 related to environmental impact indicators are shown in the three tables below.

100% LANDFILL SCENARIO

IMPACT CATEGORY	UNIT	C1	C2	C3	C4
Climate change – Total	kg CO_2 eq	4,73E-03	1,59E-01	0,00E+00	2,50E+00
Climate change – Fossil	kg CO_2 eq	4,73E-03	1,59E-01	0,00E+00	1,24E-01
Climate change – Biogenic	kg CO_2 eq	1,29E-06	4,89E-05	0,00E+00	2,38E+00
Climate change – LU&LU change	kg CO_2 eq	1,95E-07	8,11E-06	0,00E+00	5,82E-05
Climate change – GWP GHG	kg CO_2 eq	4,73E-03	1,59E-01	0,00E+00	8,04E-01
Acidification	mol H+ eq	4,37E-05	4,49E-04	0,00E+00	9,08E-04
Eutrophication, freshwater	kg P eq	4,46E-09	1,11E-06	0,00E+00	1,71E-06
Eutrophication, marine	kg N eq	2,06E-05	1,55E-04	0,00E+00	4,68E-04
Eutrophication, terrestrial	mol N eq	2,26E-04	1,71E-03	0,00E+00	3,99E-03
Photochemical ozone formation	kg NMVOC eq	6,74E-05	6,39E-04	0,00E+00	1,63E-03
Ozone depletion ODP	kg CFC11 eq	7,20E-11	1,88E-09	0,00E+00	3,26E-09
ADP for minerals and metals	kg Sb eq	1,66E-10	1,30E-08	0,00E+00	2,60E-08
ADP for fossil resources	MJ	6,19E-02	2,08E+00	0,00E+00	2,85E+00
Water use	m^3 depriv.	4,62E-05	2,76E-03	0,00E+00	0,00E+00

100% RECYCLING SCENARIO

IMPACT CATEGORY	UNIT	C1	C2	C3	C4
Climate change – Total	kg CO_2 eq	4,73E-03	1,59E-01	2,02E+01	0,00E+00
Climate change – Fossil	kg CO_2 eq	4,73E-03	1,59E-01	4,38E-02	0,00E+00
Climate change – Biogenic	kg CO_2 eq	1,29E-06	4,89E-05	2,02E+01	0,00E+00
Climate change – LU&LU change	kg CO_2 eq	1,95E-07	8,11E-06	3,16E-05	0,00E+00
Climate change – GWP GHG	kg CO_2 eq	4,73E-03	1,59E-01	4,38E-02	0,00E+00
Acidification	mol H+ eq	4,37E-05	4,49E-04	3,57E-04	0,00E+00
Eutrophication, freshwater	kg P eq	4,46E-09	1,11E-06	9,93E-07	0,00E+00
Eutrophication, marine	kg N eq	2,06E-05	1,55E-04	1,52E-04	0,00E+00
Eutrophication, terrestrial	mol N eq	2,26E-04	1,71E-03	1,66E-03	0,00E+00
Photochemical ozone formation	kg NMVOC eq	6,74E-05	6,39E-04	4,97E-04	0,00E+00
Ozone depletion ODP	kg CFC11 eq	7,20E-11	1,88E-09	6,45E-10	0,00E+00
ADP for minerals and metals	kg Sb eq	1,66E-10	1,30E-08	1,79E-09	0,00E+00
ADP for fossil resources	MJ	6,19E-02	2,08E+00	6,63E-01	0,00E+00
Water use	m^3 depriv.	4,62E-05	2,76E-03	2,43E-03	0,00E+00

100% ENERGY RECOVERY SCENARIO

IMPACT CATEGORY	UNIT	C1	C2	C3	C4
Climate change – Total	kg CO_2 eq	4,73E-03	2,59E-01	2,05E+01	0,00E+00
Climate change – Fossil	kg CO_2 eq	4,73E-03	2,59E-01	1,80E-01	0,00E+00
Climate change – Biogenic	kg CO_2 eq	1,29E-06	7,95E-05	2,03E+01	0,00E+00
Climate change – LU&LU change	kg CO_2 eq	1,95E-07	1,32E-05	4,97E-05	0,00E+00
Climate change – GWP GHG	kg CO_2 eq	4,73E-03	2,59E-01	1,80E-01	0,00E+00
Acidification	mol H+ eq	4,37E-05	7,30E-04	2,15E-03	0,00E+00
Eutrophication, freshwater	kg P eq	4,46E-09	1,80E-06	2,07E-06	0,00E+00
Eutrophication, marine	kg N eq	2,06E-05	2,53E-04	1,05E-03	0,00E+00
Eutrophication, terrestrial	mol N eq	2,26E-04	2,78E-03	1,12E-02	0,00E+00
Photochemical ozone formation	kg NMVOC eq	6,74E-05	1,04E-03	2,83E-03	0,00E+00
Ozone depletion ODP	kg CFC11 eq	7,20E-11	3,06E-09	2,35E-09	0,00E+00
ADP for minerals and metals	kg Sb eq	1,66E-10	2,11E-08	5,12E-08	0,00E+00
ADP for fossil resources	MJ	6,19E-02	3,38E+00	1,77E+00	0,00E+00
Water use	m^3 depriv.	4,62E-05	4,49E-03	6,34E-02	0,00E+00

Abbreviations [1/2]

MANDATORY ABBREVIATIONS	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared

Abbreviations [2/2]

STAGES / MODULES	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential

OTHER RELEVANT TERMS	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2eq.	Kilograms of Carbon Dioxide Equivalent

References

- General Programme Instructions of the International EPD® System. Version 5.0.1.
- Product Category Rules PCR 2019:14 Construction products, version 2.0.1. Published on 2025.04.07 valid until: 2030.04.07, based on the European standard UNI-EN 15804:2012+A2:2020.
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- UNI-EN ISO 14040:2006 – Environmental management – Life Cycle Assessment – Principles and framework.
- UNI-EN ISO 14044:2006 – Environmental management – Life Cycle Assessment – Requirements.
- UNI-EN ISO 14025:2006- Labels and environmental declarations.
- EN 15804:2012+A2: Sustainability in construction. Product environmental statements. Commodity category rules for construction products.
- UNI-EN 16485:2014 - Product category rules for wood and wood-based products for use in construction
- Life Cycle Assessment applied to wooden floor , Giorio S.r.l., 2025
- UNI EN 15941:2024 «Construction Sustainability – Data Quality for the Environmental Assessment of Products and Construction Works – Data Selection and Use

Version History

Original version of the EPD: 2025 11 7

Revision 1: 2025 12 17 Update based on comments from onsite audit

Revision 2: 2025 12 23 Minor editorial amendments

Alma

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