



**Environmental  
Product  
Declaration**

According to EN15804+A2 (+indicators A1)



This declaration is for:  
**DuoPlank® 20 mm, DuoPlank® 15 mm and  
Lite 14mm**

Provided by:  
**Hakwood B.V.**

**HAKWOOD**



program operator  
**Stichting MRPI®**  
publisher  
**Stichting MRPI®**  
[www.mrpi.nl](http://www.mrpi.nl)

MRPI® registration  
**1.1.00639.2024**  
date of first issue  
**05-08-2024**  
date of this issue  
**05-08-2024**  
expiry date  
**05-08-2029**





**COMPANY INFORMATION**

# HAKWOOD

Hakwood B.V.  
Leemansstraat 2  
4251 LD Werkendam  
The Netherlands  
+ 31 183 – 504 266

**PRODUCT**

DuoPlank® 20 mm, DuoPlank® 15 mm and Lite 14mm

**DECLARED UNIT/FUNCTIONAL UNIT**

"The production and use of 1 square meter of 20 mm wood flooring for a lifespan of 50 years

**DESCRIPTION OF PRODUCT**

Engineered wood flooring for indoor use

**MRPI® REGISTRATION**

1.1.00639.2024

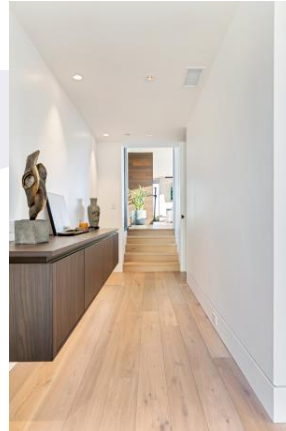
**DATE OF ISSUE**

05-08-2024

**EXPIRY DATE**

05-08-2029

**VISUAL PRODUCT**



**SCOPE OF DECLARATION**

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco Intelligence. The LCA study has been done by Lily Gao and Brienne Wiersema, Ecomatters B.V. The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPD's of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

**MORE INFORMATION**

<https://www.hakwood.com/en/>

**PROGRAM OPERATOR**

Stichting MRPI®  
Kingsfordweg 151  
1043 GR  
Amsterdam

Ing. L. L. Oosterveen MSc. MBA  
Managing Director MRPI

**DEMONSTRATION OF VERIFICATION**

CEN standard EN15804 serves as the core PCR(a)

Independent verification of the declaration and data according to

EN15804+A2 (+indicators A1)

internal: external: x

Third party verifier: Gert-Jan Vroege, Eco Intelligence

[a] PCR = Product Category Rules



### DETAILED PRODUCT DESCRIPTION

This EPD covers three wooden floorings produced at Hakwood. DuoPlank® 20 mm, DuoPlank® 15 mm and Lite 14mm. The representative product is DuoPlank® 20 mm, an engineered wooden flooring made from an oak and ash top layer, supplemented with birch plywood, glue, colouring agents and protective coatings. The floorings are produced at Hakwood's production site in Werkendam, the Netherlands.

The weight of one square meter of the product is 13,4 kg, and the packaging consists of plastic foils, PET straps, cardboard and wooden pallets. The reference life time is 50 years including maintenance every 10 years (sanding and painting). The products are sold in Europe, the US and Asia. Both the installation and removal of the floorings are done manually.

Product specification	DuoPlank 20mm	DuoPlank 15mm	Lite 14mm
Product weight [kg]	13,4	10,4	8,5
Packaging weight [kg]	0,03	0,03	0,03
Product service life	50	50	50
Area of application	Indoor	Indoor	Indoor
Geographic region produced	Netherlands	Netherlands	Netherlands

Component (> 1% )	(%)
6mm Oak or Ash top layer	Confidential
15mm Birch plywood	Confidential
Glue (Polyvinylacetate)	Confidential

### SCOPE AND TYPE

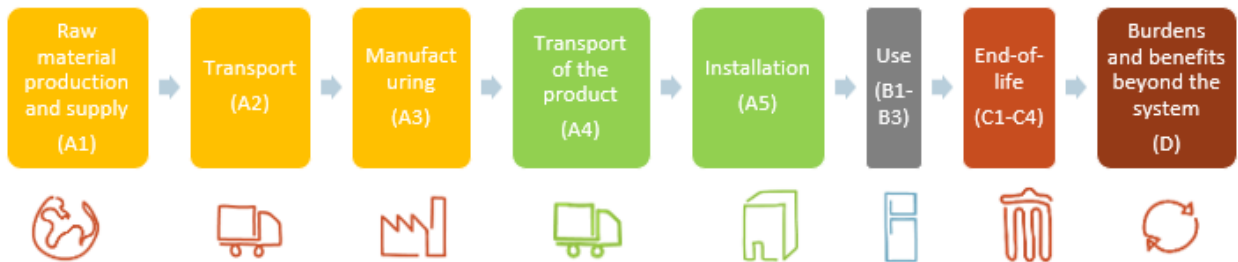
The system boundaries of this EPD are defined as Cradle-to-Grave and module D. All major steps per declared module, from the extraction of natural resources to the final disposal of the product, are included in the scope of the study. All impacts associated with mining activities, the upstream production of materials and energy, and downstream waste treatment, are included in the product system. The emissions and resource extraction derived from these processes are considered elementary exchanges between the product systems and the environment.

This EPD is representative for products produced in the Netherlands and the application market is Europe, Asia and the US. For the end-of-life, as a conservative assumption, the fate of the floorings is described within a global context.

The software Sphera LCA for Experts 10.8.0.14 is used to perform the LCA, using Ecoinvent 3.10 database in the model.

The validity of this EPD is in correspondence with the specifications of the LCA project report.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE	USER STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to 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	ND	ND	ND	ND	ND	X	X	X	X	X
X= Modules Assessed ND= Not Declared																



### REPRESENTATIVENESS

Each type of flooring contains the same material inputs, differing only in thicknesses of the wooden planks and the final weight of the product. The thickest plank variation has the highest material weight input and is therefore chosen as the reference product since it is the worst-case scenario. Thus, DuoPlank® 20 mm is the reference product. This EPD is representative for three wooden floorings.

1. DuoPlank® 20 mm
2. DuoPlank® 15 mm
3. Lite 14mm

**ENVIRONMENT IMPACT per functional unit or declared unit (core indicators A2)**

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	-1,69 E+01	2,27 E+00	1,35 E+01	-1,12 E+00	8,00 E-01	1,75 E-01	0,00 E+00	2,19 E+00	ND	ND	ND	ND	ND	0,00 E+00	1,44 E-01	0,00 E+00	2,81 E+01	-4,94 E+00
GWP-fossil	kg CO2 eq.	1,09 E+01	2,27 E+00	7,04 E+00	2,02 E+01	8,00 E-01	8,03 E-02	0,00 E+00	2,18 E+00	ND	ND	ND	ND	ND	0,00 E+00	1,44 E-01	0,00 E+00	2,06 E-01	-4,52 E+00
GWP-biogenic	kg CO2 eq.	-2,79 E+01	6,90 E-04	6,44 E+00	-2,14 E+01	-7,78 E-06	9,51 E-02	0,00 E+00	1,05 E-02	ND	ND	ND	ND	ND	0,00 E+00	7,42 E-05	0,00 E+00	2,79 E+01	-4,11 E-01
GWP-luluc	kg CO2 eq.	1,35 E-01	8,89 E-04	9,31 E-04	1,36 E-01	3,66 E-04	1,94 E-06	0,00 E+00	2,29 E-03	ND	ND	ND	ND	ND	0,00 E+00	4,92 E-05	0,00 E+00	5,26 E-05	-6,12 E-03
ODP	kg CFC11 eq.	2,43 E-07	4,22 E-08	1,58 E-07	4,44 E-07	1,32 E-08	6,44 E-11	0,00 E+00	3,21 E-08	ND	ND	ND	ND	ND	0,00 E+00	2,89 E-09	0,00 E+00	2,41 E-09	-2,87 E-08
AP	mol H+ eq.	8,45 E-02	2,30 E-02	1,53 E-02	1,23 E-01	1,58 E-02	3,45 E-05	0,00 E+00	1,99 E-02	ND	ND	ND	ND	ND	0,00 E+00	4,64 E-04	0,00 E+00	2,11 E-03	-2,20 E-02
EP-freshwater	kg PO4 eq.	4,82 E-03	1,33 E-04	1,91 E-03	6,87 E-03	3,60 E-05	7,61 E-07	0,00 E+00	8,74 E-04	ND	ND	ND	ND	ND	0,00 E+00	9,77 E-06	0,00 E+00	9,16 E-05	-1,99 E-03
EP-marine	kg N eq.	2,95 E-02	6,22 E-03	4,96 E-03	4,07 E-02	4,03 E-03	4,11 E-05	0,00 E+00	2,11 E-03	ND	ND	ND	ND	ND	0,00 E+00	1,59 E-04	0,00 E+00	1,35 E-03	-4,48 E-03
EP-terrestrial	mol N eq.	3,09 E-01	6,85 E-02	4,96 E-02	4,28 E-01	4,46 E-02	1,67 E-04	0,00 E+00	2,03 E-02	ND	ND	ND	ND	ND	0,00 E+00	1,71 E-03	0,00 E+00	1,07 E-02	-4,47 E-02
POCP	kg NMVOC eq.	9,97 E-02	2,20 E-02	1,55 E-02	1,37 E-01	1,27 E-02	4,67 E-05	0,00 E+00	8,32 E-03	ND	ND	ND	ND	ND	0,00 E+00	7,56 E-04	0,00 E+00	2,72 E-03	-1,33 E-02
ADP-minerals & metals	kg Sb eq.	6,59 E-05	5,09 E-06	3,40 E-06	7,44 E-05	1,28 E-06	1,01 E-08	0,00 E+00	1,78 E-05	ND	ND	ND	ND	ND	0,00 E+00	3,88 E-07	0,00 E+00	3,59 E-07	-4,14 E-06
ADP-fossil	MJ, net calorific value	2,16 E+02	3,16 E+01	1,03 E+02	3,51 E+02	1,04 E+01	5,16 E-02	0,00 E+00	3,79 E+01	ND	ND	ND	ND	ND	0,00 E+00	2,09 E+00	0,00 E+00	2,06 E+00	-7,08 E+01
WDP	m3 world eq. Deprived	1,51 E+01	1,79 E-01	5,59 E+00	2,09 E+01	4,69 E-02	-6,05 E-04	0,00 E+00	1,42 E+00	ND	ND	ND	ND	ND	0,00 E+00	1,34 E-02	0,00 E+00	5,11 E-03	-1,20 E+00

- GWP-total = Global Warming Potential total
- GWP-fossil = Global Warming Potential fossil fuels
- GWP-biogenic = Global Warming Potential biogenic
- GWP-luluc = Global Warming Potential land use and land use change
- ODP = Depletion potential of the stratospheric ozone layer
- AP = Acidification Potential, Accumulated Exceedence
- EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment
- EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment
- EP-terrestrial = Eutrophication Potential, Accumulated Exceedence
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- ADP-minerals&metals = Abiotic Depletion Potential for non-fossil resources [2]
- ADP-fossil = Abiotic Depletion for fossil resources potential [2]
- WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

Disclaimer [2]

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.



**ENVIRONMENT IMPACT per functional unit or declared unit (additional indicators A2)**

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1,73 E-06	1,46 E-07	7,91 E-08	1,95 E-06	3,71 E-08	4,08 E-10	0,00 E+00	1,11 E-07	ND	ND	ND	ND	ND	0,00 E+00	1,10 E-08	0,00 E+00	2,32 E-08	-1,90 E-07
IRP	kBq U235 eq.	1,95 E+00	3,31 E-02	5,69 E-02	2,04 E+00	8,00 E-03	5,82 E-05	0,00 E+00	2,77 E-01	ND	ND	ND	ND	ND	0,00 E+00	2,53 E-03	0,00 E+00	2,19 E-03	-6,13 E-01
ETP-fw	CTUe	8,97 E+01	7,01 E+00	1,35 E+01	1,10 E+02	2,07 E+00	6,81 E-02	0,00 E+00	1,55 E+01	ND	ND	ND	ND	ND	0,00 E+00	4,94 E-01	0,00 E+00	2,41 E+00	-1,16 E+01
HTP-c	CTUh	1,43 E-07	1,30 E-08	1,00 E-08	1,66 E-07	4,03 E-09	4,67 E-11	0,00 E+00	7,49 E-09	ND	ND	ND	ND	ND	0,00 E+00	8,92 E-10	0,00 E+00	3,67 E-09	-5,17 E-09
HTP-nc	CTUh	1,89 E-07	1,67 E-08	4,99 E-08	2,55 E-07	4,38 E-09	3,75 E-10	0,00 E+00	5,33 E-08	ND	ND	ND	ND	ND	0,00 E+00	1,25 E-09	0,00 E+00	2,57 E-08	-2,81 E-08
SQP	---	3,10 E+03	2,50 E+01	2,71 E+01	3,15 E+03	4,77 E+00	3,50 E-02	0,00 E+00	8,51 E+00	ND	ND	ND	ND	ND	0,00 E+00	2,09 E+00	0,00 E+00	8,84 E-01	-9,18 E+00

- PM = Potential incidence of disease due to PM emissions
- IRP = Potential Human exposure efficiency relative to U235 [1]
- ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
- HTP-c = Potential Comparative Toxic Unit for humans [2]
- HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
- SQP = Potential soil quality index [2]

Disclaimer [1]

- This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste.

Disclaimer [2]

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

**OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 / A2)**

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0,00 E+00	0,00 E+00	1,28 E-02	1,28 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NHWD	kg	0,00 E+00	0,00 E+00	4,77 E+00	4,77 E+00	0,00 E+00	1,21 E-01	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	1,34 E+01	0,00 E+00
RWD	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
CRU	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MFR	kg	0,00 E+00	0,00 E+00	1,95 E-01	1,95 E-01	0,00 E+00	7,16 E-03	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MER	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,02 E-01	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	1,27 E+01	0,00 E+00
EEE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,22 E-01	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	2,22 E+01	0,00 E+00
ETE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,42 E-01	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	4,46 E+01	0,00 E+00

- HWD = Hazardous Waste Disposed
- NHWD = Non Hazardous Waste Disposed
- RWD = Radioactive Waste Disposed
- CRU = Components for reuse
- MFR = Materials for recycling
- MER = Materials for energy recovery
- EEE = Exported Electrical Energy
- ETE = Exported Thermal Energy



## RESOURCE USE per functional unit or declared unit (A1 / A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6,29 E+02	4,44 E-01	5,76 E+00	6,35 E+02	1,14 E-01	1,01 E-03	0,00 E+00	3,53 E+00	ND	ND	ND	ND	ND	0,00 E+00	3,32 E-02	0,00 E+00	4,63 E-02	-7 E+00
PERM	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0 E+00
PERT	MJ	6,29 E+02	4,44 E-01	5,76 E+00	6,35 E+02	1,14 E-01	1,01 E-03	0,00 E+00	3,53 E+00	ND	ND	ND	ND	ND	0,00 E+00	3,32 E-02	0,00 E+00	4,63 E-02	-7 E+00
PENRE	MJ	2,16 E+02	3,16 E+01	1,03 E+02	3,51 E+02	1,04 E+01	5,16 E-02	0,00 E+00	3,79 E+01	ND	ND	ND	ND	ND	0,00 E+00	2,09 E+00	0,00 E+00	2,06 E+00	-7 E+01
PENRM	MJ	1,62 E-01	1,64 E-03	1,26 E-03	1,65 E-01	5,35 E-04	8,00 E-06	0,00 E+00	7,08 E-04	ND	ND	ND	ND	ND	0,00 E+00	1,09 E-04	0,00 E+00	1,72 E-04	-7 E-04
PENRT	MJ	2,16 E+02	3,16 E+01	1,03 E+02	3,51 E+02	1,04 E+01	5,16 E-02	0,00 E+00	3,79 E+01	ND	ND	ND	ND	ND	0,00 E+00	2,09 E+00	0,00 E+00	2,06 E+00	-7 E+01
SM	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0 E+00
RSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0 E+00
NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0 E+00
FW	m3	3,52 E-01	4,18 E-03	1,30 E-01	4,86 E-01	1,09 E-03	-1,41 E-05	0,00 E+00	3,30 E-02	ND	ND	ND	ND	ND	0,00 E+00	3,12 E-04	0,00 E+00	1,19 E-04	-3 E-02

- PERE = Use of renewable energy excluding renewable primary energy resources
- PERM = Use of renewable energy resources used as raw materials
- PERT = Total use of renewable primary energy resources
- PENRE = Use of non-renewable primary energy resources excluding non-renewable 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 materials
- RSF = Use of renewable secondary fuels
- NRSF = Use of non-renewable secondary fuels
- FW = Use of net fresh water

## BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 / A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	Kg C	7,20 E+00	0,00 E+00	0,00 E+00	7,20 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
BCCpa	kg C	0,00 E+00	0,00 E+00	3,00 E-02	3,00 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

- BBCpr = Biogenic carbon content in product
- BCCpa = Biogenic carbon content in packaging

## CALCULATION RULES

### Cut off criteria

No cut-offs were intentionally applied to inputs and outputs within the system boundaries of the models. All known energy and material flows within the system boundaries are considered.

### Data quality and data collection period

Specific data was collected from Hakwood through a questionnaire, including inquiries about flooring characteristics and packaging, logistics data (e.g. transport), production information and end-of-life. The data collection period for specific data was the year 2023.

Data gaps (i.e. transport data, end-of-life scenarios) were covered with data generic values for transport as described in Annex II of the PEF methodology published by the European Commission (2021). Further data gaps (i.e. end-of-life scenarios) were covered by fixed values for end-of life processing scenarios, developed by Nationale Milieu Database (NMD) version 2024, and EuroStat (2021). Generic data (i.e. upstream acquisition and production of raw materials, energy generation, transport, waste treatment processes) was selected from Ecoinvent 3.10 database. In the case of missing data, a relevant proxy was searched and adjusted to the corresponding unit process.

#### Allocation procedure

To allocate the emissions and inputs to the manufactured products, the decision-hierarchy in ISO 14044 is used (ISO 2006). It is not possible to sub-divide the site data into a more detailed level or find physical causalities between inputs and outputs. Therefore, allocation is applied based on mass considering an annual production of wooden flooring. Due to the production process of the flooring, the energy and utility requirements are not expected to change per 1 square meter of floor plank produced.

### SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

#### A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the DuoPlank® 20 mm manufacturing process.

#### A2. Transport of raw materials to manufacturer

This module includes the transport distance of the raw materials to the manufacturing facility via road and sea. Distances and modes of transport were modelled with primary data. Transport of packaging materials (wood, cardboard, and plastic) was also included, using default values retrieved from the Annex II of the PEF methodology which are stated as:

Transport of packaging materials	Distance
Distance by truck [km]	230
Distance by train [km]	280
Distance by ship [km]	360

#### A3. Manufacturing

This life cycle stage describes the manufacturing process of the Hakwood DuoPlank wood flooring, including the production of packaging materials. Use of electricity, natural gas for heat, fuels and auxiliary materials are taken into account as well.

Data regarding the flooring production was provided for the manufacturing site where the DuoPlank® 20 mm is produced. The transportation distances and transportation modes for raw materials, packaging materials and to customer were provided by Hakwood. Primary data and site-specific data were retrieved. For electricity sources (Dutch residual mix) the Ecoinvent 3.10 dataset was used.

The construction site data includes lighting, heating, offices, etc. The manufacture of production equipment and infrastructure is not included in the system boundary. Manufacturing waste as well as the waste of raw material packaging is included in this module. In absence of primary data, treatment scenarios were used in accordance with fixed values for end-of life processing scenarios, developed by Nationale Milieu Database (NMD) version 2024, and Eurostat (2021)

#### A4. Transport to customer

All floorings are transported from the production facility to customers within Europe or outside of Europe. On average, the transport characteristics for this life cycle stage are the following:

Waste type	Landfill	Incineration	Recycling	Source
Wood	5%	95%		NMD
Scrap iron	5%	5%	90%	NMD
Plastic	20%	80%		NMD
Cardboard		11%	89%	EuroStat

#### A5. Installation process

This module includes the environmental aspects and impacts associated with the laying the floorings into the building. The installation is done manually, hence no energy consumption is required. Although, the product packaging is discarded and the treatment of the packaging waste is included. The waste scenarios are based on Nationale Milieu Database (version 2024), as well as Eurostat (2021).





### B1. Use and B2. Maintenance

Module B1 refers to the usage of the product. In this case, no impacts related to the use of the floorings are considered. Module B2 includes the maintenance, which consist of sanding and painting every 10 years. Low voltage electricity is used to model the sanding, and raw material paint for the painting. No further inputs or outputs are related to the use stage, as there are no emissions from the products.

### C1. Deconstruction and demolition

This module includes the disassembly or demolition of the floorings at the end-of-life. The removal of the floorboards from the building is done manually, and therefore, no inputs or outputs are included in this stage.

### C2. Transport of waste

This module includes one-way transportation distance of the incineration and landfill site. Transportation distances to the disposal facility were retrieved Annex II of the PEF methodology.

### C3. Waste processing and C4. Disposal

The end-of-life stage is encompassed in these modules. The end-of-life scenario of the wooden planks is based on the latest version of the fixed values for end-of life processing scenarios, developed by Nationale Milieu Database (version 2024). Due to the release of biogenic carbon as a result of incinerating the floorings at the end-of-life, the result in module C4 was adjusted based on the biogenic uptake in module A1.

### D. Reuse, recovery, recycling potential

Module D provides the information on potential burdens and benefits from recycling and energy recovery of the wooden planks and product packaging.

Waste type	Incineration	Landfill
Contaminated (coated, glued) wood EOL	95%	5%

### DECLARATION OF SVHC

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the threshold with the European Chemicals Agency.

### REFERENCES

EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, of 2019

European Commission. (2021). Annex II: Product Environmental Footprint Method. In Environmental Footprint Guidance Document. Retrieved

from: [https://environment.ec.europa.eu/document/download/680503dc-5a19-4f6a-bb92-84d9bfc8f312\\_en?filename=Annexes%201%20to%202.pdf](https://environment.ec.europa.eu/document/download/680503dc-5a19-4f6a-bb92-84d9bfc8f312_en?filename=Annexes%201%20to%202.pdf)

Eurostat. (2021). Packaging waste by waste management operations. Retrieved from: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging\\_waste\\_statistics#Waste\\_generation\\_by\\_packaging\\_material](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Waste_generation_by_packaging_material)

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

Kok L., 2024. Personal communication with Lesley Kok, R&D manager at Hakwood, the Netherlands (2024).

National Environmental Database. (2024). Forfaitaire waarden voor verwerking-scenario's einde leven behorende bij: Bepalingsmethode Milieuprestatie Bouwwerken. Retrieved from: <https://milieudatabase.nl/nl/actueel/nieuws/update-verwerkingsscenarios-mei-2024/>



Thinkstep GaBi Software-System and Database for Life Cycle Engineering. Copyright 1992-2017 ThinkStep AG.

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., & Weidema, B. (2016). The Ecoinvent database version 3 (part I): overview and methodology. *International Journal of Life Cycle Assessment*, 21(9), 1218–1230. <https://doi.org/10.1007/s11367-016-1087-8>



**REMARKS**

There are no further remarks.