

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH:
EN 15804+A2& EN 16485 & ISO 14025

Product name

Wood-based plywood panels:

Uncoated plywood, Plywood-X and Film-faced plywood



EPD holder:

SKLEJKA-EKO S.A.



Issued on 30.09.2026

Valid until 30.09.2031

1. GENERAL INFORMATION

EPD OWNER

Manufacturer / EPD Holder	Sklejka-Eko S.A.
Address	ul. Reymonta 35, 63-400 Ostrów Wielkopolski, Poland
Contact details	Phone: +48 (62) 735 53 10 e-mail: sekretariat@sklejkaeko.pl
Website	www.sklejkaeko.pl

PRODUCT IDENTIFICATION

Product name	Wood-based plywood panels: Uncoated plywood, Plywood-X and Film-faced plywood
Place(s) of production	Ostrów Wielkopolski, Poland

EPD INFORMATION

EPD Polska programme operator	Multicert Sp. z o.o. ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl, epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025.
Product category rules	The product category rules of the EPD Polska programme apply, with EN 15804+A2 as the core standard and EN 16485:2014 providing product category rules for wood and wood-based products for use in construction.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Izabela Sztamberek-Sochan, PhD
EPD number	EPD-P 03.09.2026
Registration	EPD Polska, www.epd.org.pl
Publishing date	30 September 2026
EPD valid until	30 September 2031
Reasons for performing LCA	B2B
Accountability	The EPD Holder is responsible for the information provided and the supporting evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life-cycle assessment data or supporting evidence.

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

2. COMPANY INFORMATION

HOLDER OF THE EPD

Sklejka-Eko S.A.

ul. Reymonta 35, 63-400 Ostrów Wielkopolski, Poland

SKLEJKA-EKO S.A. has been one of Poland's leading manufacturers of wood-based panels and materials since 1912. Based in Ostrów Wielkopolski, the company specialises in the production of top-quality specialist plywood.

Its comprehensive range includes both full-size products and processed panels made from softwood and hardwood. Hybrid plywood products include, amongst others, phenolic film-coated plywood – for formwork and anti-slip applications, plywood with aluminium foil and sheet, veneered plywood, as well as plywood coated with specialised materials for specific applications.

The company's products are widely used in key sectors of the economy, including:

- the furniture and interior design industry,
- construction (e.g. formwork plywood, structural plywood, wood-based flooring),
- road and rail transport (non-slip plywood, vehicle interiors),
- door and window joinery and packaging production.

50 per cent of the company's production is exported to foreign markets, primarily to discerning customers in Western Europe and Scandinavia, which confirms that the products meet the highest quality standards.

Plywood and hybrid plywood modified are manufactured in accordance with due diligence principles, which aim to minimise the risk of placing timber on the market that has been obtained in breach of the law.

Primarily, this timber is sourced from forests managed in accordance with the principles of sustainable development.

The products offered are covered by FSC (FSC SGSCH-COC-002336) and PEFC (SGSCH-PEFC-COC-070110) supply chain certification.

SKLEJKA-EKO S.A. consistently and diligently minimises its negative impact on the environment by:

- reducing energy and material consumption in production processes,
- increasing the proportion of products made from recycled materials,
- providing environmental education for staff,
- conducting production processes in accordance with stringent environmental standards,
- managing waste and developing products that utilise by-products.

SKLEJKA-EKO S.A. continuously improves and transforms its manufacturing processes in order to achieve compliance with the fundamental principles of sustainable development.

3.PRODUCT INFORMATION

PRODUCT DESCRIPTION

The products covered by this EPD are wood-based plywood panels. Uncoated plywood and film-faced plywood are built from cross-bonded veneers of pine, alder and birch, with adjacent layers laid at right angles; Plywood-X — a hybrid panel with a particleboard core and veneer facings (marketed as Sklejka-X) — comprises a particleboard core faced on both sides with wood veneer layers. Bonding uses weather- and boil-proof phenol-formaldehyde (PF) resin (EN 314 class 3, exterior), or urea-formaldehyde (UF) resin (EN 314 class 1) or melamine-urea-formaldehyde (MUF) resin (moisture-resistant, EN 314 class 1/2), depending on the grade. Three product types are declared, differing in construction and surface:

No.	Product group	Construction	Thickness range [mm]	Surface
1	Uncoated plywood	Plywood manufactured from cross-bonded pine, alder and birch veneers	4-100	Sanded / unsanded, uncoated
2	Plywood-X	Particleboard core with wood veneer layers bonded to both faces	13-42	Sanded / unsanded veneer face
3	Film-faced plywood	Plywood substrate overlaid with phenolic surface film	4-35	Phenolic film; smooth / anti-slip

Table 1. Product groups in the scope of the EPD.

The film-faced plywood group includes smooth formwork panels and textured anti-slip panels, represented by a combined production-weighted average.

The term uncoated plywood denotes the finished plywood supplied without a surface film; the same base plywood also serves as the substrate for the film-faced products.

REPRESENTATIVITY OF RESULTS

The declared unit is 1 m³ of finished panel at the factory gate. Separate results are reported for the following product groups, based on primary manufacturing data for the reference year 2025:

- Uncoated plywood: a production-weighted average of the uncoated plywood variants in the declared assortment.
- Plywood-X: a production-weighted average of the hybrid panels comprising a particleboard core and wood veneer facings.
- Film-faced plywood: a combined production-weighted average of smooth formwork and textured anti-slip variants.

Each average represents the material composition and manufacturing inputs of its respective product group. The applicable product ranges and masses per declared unit are presented in the product tables.

The overall roundwood species mix used in the assessment is pine 68,9%, alder 15,8% and birch 15,4% (minor differences from 100% due to rounding). This mix describes the roundwood input and does not represent the composition of the purchased particleboard core.

Product	Mass per DU [kg/m ³]
Uncoated plywood	≈674
Plywood-X	≈ 682
Film-faced plywood	≈ 689

Table 2. Representative products. Mass per declared unit at equilibrium moisture content of 9% (wet-basis)

PRODUCT APPLICATION

The declared plywood products are used in construction and industrial applications, including formwork, flooring and load-bearing panels, transport (vehicle and container floors), furniture and packaging. Film-faced plywood is designed for concrete formwork (smooth film) and for anti-slip surfaces (structured film) exposed to weather and repeated use. Products comply with the relevant harmonised standards and, where applicable, carry CE marking under Regulation (EU) No 305/2011.

PRODUCT STANDARDS

The products covered by this EPD comply with the following technical standards, as applicable to the product type:

EN 636+A1: Plywood - Specifications

EN 314-1: Plywood - Bonding quality - part 1: Test methods

EN 314-2: Plywood - Bonding quality - part 2: Requirements

EN 310: Wood-based panels - determination of modulus of elasticity in bending and bending strength.

EN 315: Plywood - Tolerances for dimensions

EN 635-2: Plywood: Classification by the surface appearance- part 2: Hardwood

EN 635-3: Plywood: Classification by the surface appearance- - part 3: Softwood

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

EN 717-1: Wood-based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method

EN 12460-3: Wood-based panels - determination of formaldehyde release - part 3: Formaldehyde release by the gas analysis method.

EN 13986 - Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking

The particleboard used as the core of Plywood-X is specified as type P2, P4, P5 according to EN 312. This classification applies to the core material only.

PRODUCT RAW-MATERIAL COMPOSITION

The products consist predominantly of wood-based materials bonded with resin adhesives. Indicative composition is given by mass or as material inputs per declared unit. Finished-product masses refer to 9% moisture content (wet-basis), excluding packaging.

Product group	Indicative composition by mass
Uncoated plywood	Predominantly wood; dry PF/UF/MUF resin inputs $\approx 57,91 \text{ kg/m}^3$; rye-flour extender, hardener, PF filler and D4 adhesive $\approx 15,26 \text{ kg/m}^3$.
Plywood-X	Particleboard core $\approx 70,85\%$ by mass ($\approx 65,31\%$ by volume); veneer facings and bonding system form the remainder. Dry PF facing-resin input is approximately $14,35 \text{ kg/m}^3$.
Film-faced plywood	Base plywood $\approx 98\%$; phenolic surface film $\approx 2\%$

PACKAGING

The products are secured with polypropylene (PP) strapping only; no wooden pallets, paperboard or film are used. The packaging is fossil-based and contains no biogenic carbon (biogenic carbon in packaging = 0). The PP strapping is below 1% of product mass and is cut off per EN 15804+A2.

SUBSTANCES — REACH, VERY HIGH CONCERN

The products covered by this EPD do not contain any substances listed on the REACH Candidate List of Substances of Very High Concern (SVHC) at a concentration above 0,1% by mass (1 000 ppm). Free formaldehyde emission is controlled; measured free formaldehyde content after neutralisation is at background level (documented).

4. PRODUCT LIFE-CYCLE

This EPD covers three product groups manufactured by Sklejka-Eko S.A.: uncoated plywood, Plywood-X and film-faced plywood. The declared unit is 1 m³ of each finished product at the factory gate. The assessment follows a cradle-to-gate with options approach, covering modules A1–A3, C1–C4 and D. Figure 1 illustrates the shared manufacturing processes, the production route for each product group and the common end-of-life scenario. Product-specific inventories and results are reported separately.

Plywood — Manufacturing routes and system boundary

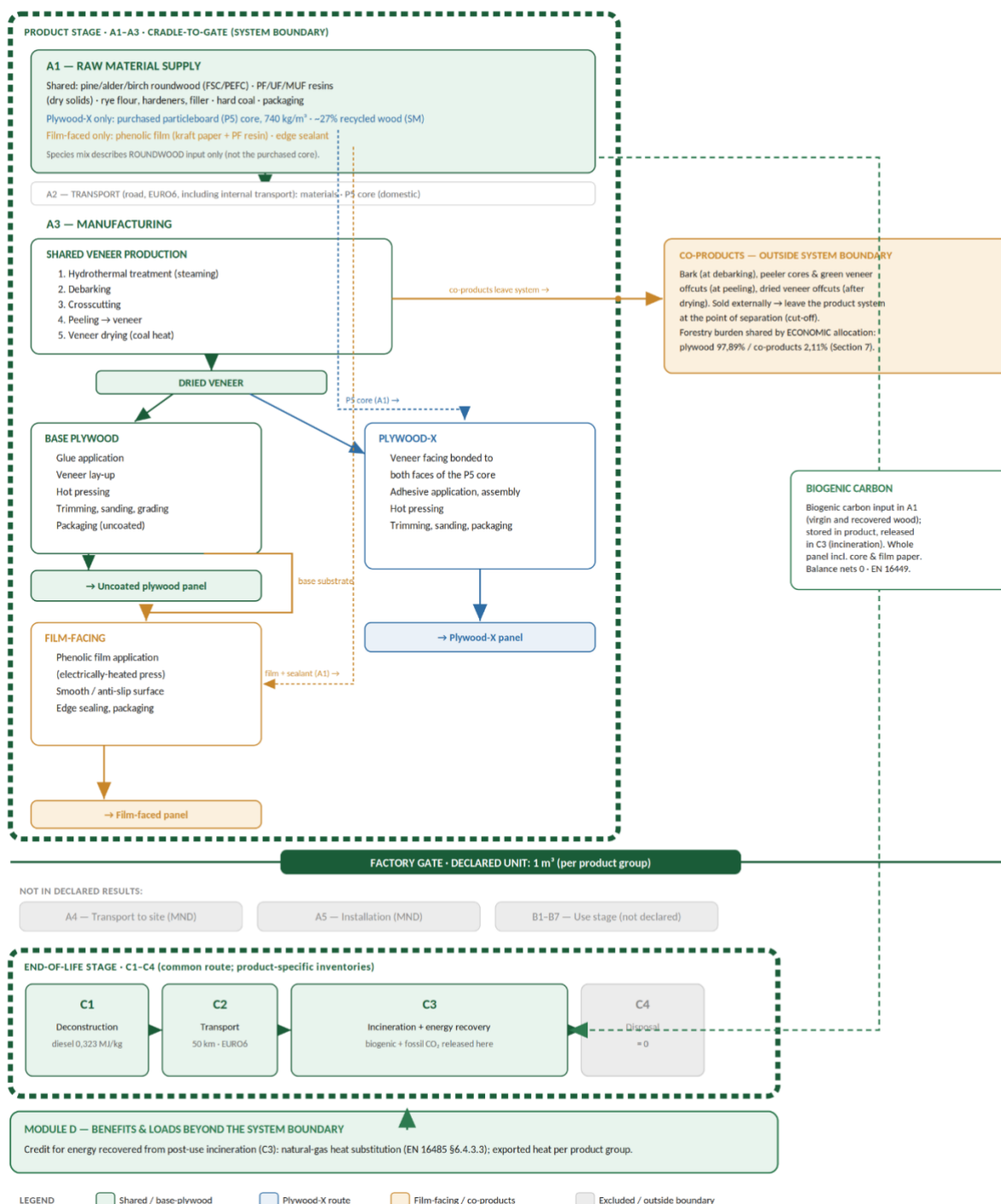


Figure 1. Manufacturing routes and life-cycle system boundaries for the three declared product groups.

RAW-MATERIAL SUPPLY (A1)

Module A1 includes the upstream production of the raw materials and auxiliary materials assigned to each declared product group. Energy supply and associated upstream processes are included in the datasets of the modules in which that energy is consumed.

Uncoated plywood

The principal inputs are pine, alder and birch roundwood for veneer production (from sustainably managed, FSC/PEFC-certified forests), bonding resins, rye-flour extender, hardeners and fillers. Adhesive inputs comprise PF, UF or MUF systems according to the product variant.

Plywood-X

The principal inputs are a purchased particleboard core and roundwood used to manufacture the veneer facings. Module A1 includes the upstream production of the particleboard core, together with the resins and auxiliary materials required to bond the veneer facings. Materials already included in the particleboard production dataset are not added again as separate foreground inputs.

Film-faced plywood

For film-faced plywood, the complete A1–A3 inventory of the plywood substrate is included as an input to the process reported as A1. Additional A1 inputs comprise kraft paper and PF resin for the phenolic surface film. The edge-sealant input is included with the coating operation in A3.

The upstream supply of hard coal is included in the coal-fired heat dataset used in A3. Small auxiliary inputs excluded from the foreground inventory are addressed under the cut-off criteria in Section 6.

TRANSPORT OF RAW MATERIALS (A2)

Module A2 covers transport of the modelled raw materials and auxiliary materials from suppliers to the Sklejka-Eko production facility, together with internal transport by diesel- and LPG-powered forklifts. Road deliveries are represented by heavy-duty EURO 6 trucks; distances are based on representative supplier locations.

Product group	Transport included
Uncoated plywood	Roundwood, bonding resins and chemical inputs; internal forklift transport
Plywood-X	Roundwood for facings, purchased particleboard core, veneering adhesive and internal forklift transport
Film-faced plywood	Substrate transport inherited in A1; additional phenolic-film delivery from Finland (~1 500 km) in A2

Transport of shared inputs is assigned consistently with the allocation procedures in Section 6. Internal handling is included in A2 for the base-plywood and Plywood-X inventories. For film-faced plywood, the A2 burdens of the substrate are already included in the inherited substrate inventory reported in A1; the separate A2 result represents delivery of the surface film.

MANUFACTURING (A3)

Module A3 includes the manufacturing operations and associated energy, water, emissions and waste-treatment processes assigned to each product group. Internal transport is reported in A2. For film-faced plywood, the separate A3 result covers the additional coating operations; manufacture of the substrate is included in its inherited inventory reported in A1.

Shared veneer production

Roundwood is subjected to hydrothermal treatment, debarking, crosscutting and peeling; the resulting veneer sheets are dried and prepared for further processing. These operations supply veneers both for the plywood products and for the facings of Plywood-X.

Uncoated plywood

Prepared veneers are glued, laid up and hot-pressed into plywood panels, which are then trimmed, sanded, graded and packaged.

Plywood-X

The purchased particleboard core is faced on both sides with veneers produced at Sklejka-Eko. Manufacturing includes adhesive application, assembly, pressing and final trimming, sanding and packaging. Upstream manufacture of the particleboard core is included in Module A1.

Film-faced plywood

The plywood substrate follows the base-plywood production route; additional operations comprise application of the phenolic surface film in an electrically-heated press, production of the specified smooth or textured surface, and edge sealing.

Energy and production residues

Process heat for hydrothermal treatment, veneer drying and hot pressing is supplied by the on-site hard-coal heat plant; electricity is supplied from the Polish grid. Product-specific assignments of shared and dedicated energy are described in Section 6. Wood-processing co-products arise at different stages - bark during debarking, peeler cores and green veneer offcuts during peeling, and dried veneer offcuts after drying - and are sold externally. Boiler ash and other production wastes are managed within Module A3.

TRANSPORT TO CONSTRUCTION SITE AND INSTALLATION (A4, A5)

Modules A4 and A5 are not declared (MND). Transport to site and installation conditions depend on project-specific arrangements outside the manufacturer's control.

USE STAGE (B1-B7)

Modules B1-B7 are not declared. No use-stage inputs or outputs - energy, water, maintenance, repair or replacement - are declared, because the use-stage performance of the panels depends on the specific building application and installation, which are outside the manufacturer's control. No reference service life is declared within the chosen scope.

END-OF-LIFE STAGE (C1-C4)

A common end-of-life route is assumed for all three product groups: separate collection followed by incineration with energy recovery. The calculations use the mass and material composition of each finished product.

Module C1 covers mechanical dismantling, modelled as 0,323 MJ of diesel energy per kg of panel. Module C2 covers transport over 50 km to a waste-treatment facility by a >32 t EURO 6 truck. Module C3 covers the modelled waste treatment and incineration with energy recovery: for uncoated plywood this represents the wood veneers, cured adhesives and other constituents; for Plywood-X, the complete panel including the particleboard core and veneer facings; and for film-faced plywood, the substrate and surface-film constituents.

Biogenic and fossil carbon emissions are calculated consistently with the constituent materials and the waste-treatment datasets. No separate disposal route is assigned to the panels in the selected scenario (Module C4 = 0); treatment of residues from incineration is included within the modelled treatment system.

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

Module D reports the potential benefits and loads associated with energy exported from the post-use treatment of each product group. Recovered heat is assumed to substitute heat generated from natural gas, following EN 16485:2014 clause 6.4.3.3 (a conservative choice). The amount of exported heat is determined separately for uncoated plywood, Plywood-X and film-faced plywood from their respective material inventories and energy-recovery parameters. Process heat used internally during manufacturing is accounted for in Modules A1-A3 and is not credited in Module D.

5.LIFE-CYCLE ASSESSMENT

LCA INFORMATION

Period for data	2025
Database / software	ecoinvent v3.9.1 / openLCA
Geographical scope	Poland, Europe

DECLARED UNIT

Declared unit	1 m ³ of plywood at the factory gate
Mass per declared unit	Product-specific — see Table 2

BIOGENIC CARBON CONTENT

The declared biogenic carbon content represents the total biogenic carbon physically contained in the finished product at the factory gate. For wood constituents, carbon content is calculated from the oven-dry wood mass using a carbon fraction of 0,50 in accordance with EN 16449:2014.

For Plywood-X, the declared content includes both the veneer facings and the wood fraction of the particleboard core. For film-faced plywood, it includes the base plywood and the kraft-paper carrier of the surface film. The carbon content of the paper carrier is determined separately from its dry mass and applicable carbon fraction; the PF-resin fraction is treated as fossil.

The physical carbon content is reported independently of whether a constituent is represented by foreground inventory data or a background dataset. Biogenic carbon in packaging is reported separately in Table 3.

No.	Product	Biogenic C in product [kg C/m ³]	Biogenic C in packaging [kg C/m ³]
1	Uncoated plywood	278	0
2	Plywood-X	≈ 286 (incl. core)	0
3	Film-faced plywood	≈ 281 (base + film kraft paper)	0

Table 3. Biogenic carbon content (total carbon physically stored in the product). 1 kg C = 44/12 ≈ 3,667 kg CO₂. This carbon is temporarily stored during service life and released at end of life through incineration (Module C3). The kraft-paper carrier of the phenolic film contributes biogenic carbon to film-faced plywood; the PF-resin fraction of the film is fossil.

SYSTEM BOUNDARY

The declared scope is cradle-to-gate with modules C1–C4 and D, in accordance with EN 15804+A2. The declaration covers the product stage (A1–A3), the end-of-life stage (C1–C4) and module D (benefits and loads beyond the system boundary). Modules A4 and A5 are not declared (MND). Modules B1–B7 are not declared: no use-stage inputs or outputs are declared and no reference service life is defined within the chosen scope.

A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	X	X	X	X	X

Table 4. Declared modules. X — module declared; MND — module not declared.

6 LCA RESULTS

6.1 UNCOATED PLYWOOD

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
GWP-Total	kg CO2 eq.	-8,28E+02	5,84E+01	7,14E+02	-5,59E+01	MND	MND	2,16E+01	3,38E+00	1,17E+03	0,00E+00	-4,55E+02
GWP-fossil	kg CO2 eq.	1,90E+02	5,84E+01	7,14E+02	9,62E+02	MND	MND	2,16E+01	3,38E+00	1,49E+02	0,00E+00	-4,55E+02
GWP-biogenic	kg CO2 eq.	-1,02E+03	5,10E-02	-5,95E-01	-1,02E+03	MND	MND	4,96E-03	2,69E-03	1,02E+03	0,00E+00	-2,98E-01
GWP-luluc	kg CO2 eq.	7,31E-01	2,55E-02	1,14E-01	8,70E-01	MND	MND	2,43E-03	1,65E-03	2,83E-03	0,00E+00	-6,88E-02
ODP	kg CFC-11 eq.	3,84E-06	1,29E-06	1,08E-06	6,21E-06	MND	MND	3,44E-07	7,66E-08	1,85E-07	0,00E+00	-1,99E-05
AP	mol H+ eq.	8,63E-01	1,36E-01	5,83E+00	6,83E+00	MND	MND	2,00E-01	8,36E-03	1,07E+00	0,00E+00	-3,72E-01
EP-freshwater	kg P eq.	5,14E-02	4,12E-03	4,40E-01	4,95E-01	MND	MND	6,60E-04	2,50E-04	4,73E-03	0,00E+00	-1,62E-02
EP-marine	kg N eq.	2,49E-01	3,76E-02	7,45E-01	1,03E+00	MND	MND	9,28E-02	2,28E-03	5,62E-01	0,00E+00	-1,14E-01
EP-terrestrial	mol N eq.	2,09E+00	3,89E-01	7,41E+00	9,89E+00	MND	MND	1,01E+00	2,34E-02	6,07E+00	0,00E+00	-1,23E+00
POCP	kg NMVOC eq.	1,01E+00	2,20E-01	2,17E+00	3,39E+00	MND	MND	2,99E-01	1,36E-02	1,44E+00	0,00E+00	-7,91E-01
ADPE (disc.2)	kg Sb eq.	8,20E-04	1,00E-04	7,82E-05	9,98E-04	MND	MND	4,19E-06	6,53E-06	1,34E-05	0,00E+00	-1,90E-04
ADPF (disc.2)	MJ	4,66E+03	8,78E+02	6,62E+03	1,22E+04	MND	MND	2,85E+02	5,16E+01	9,29E+01	0,00E+00	-6,78E+03
WDP (disc.2)	m3 World eq.	1,58E+02	4,12E+00	3,92E+01	2,01E+02	MND	MND	7,05E-01	2,65E-01	4,65E+01	0,00E+00	-1,57E+01
GWP-IOBC/GHG	kg CO2 eq.	1,91E+02	5,84E+01	7,14E+02	9,63E+02	MND	MND	2,16E+01	3,38E+00	1,49E+02	0,00E+00	-4,55E+02
GWP-total – Climate change, total; GWP-fossil – Climate change, fossil fuels; GWP-biogenic – Climate change, biogenic; GWP-luluc – Climate change, land use and land use change; ODP – Ozone layer depletion; AP – Acidification; EP-freshwater – Eutrophication, freshwater; EP-marine – Eutrophication, marine; EP-terrestrial – Eutrophication, terrestrial; POCP – Photochemical ozone formation; ADPE – Abiotic depletion, minerals and metals; ADPF – Abiotic depletion, fossil fuels; WDP – Water use (deprivation potential); NCV – net calorific value. GWP-IOBC/GHG – Global warming potential except emissions and uptake of biogenic carbon.												
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.												

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PM	Disease Incidence	8,14E-06	3,80E-06	6,18E-05	7,38E-05	MND	MND	5,53E-06	2,54E-07	3,29E-06	0,00E+00	-2,12E-06
IRP (disc.1)	kBq U235 eq.	1,19E+01	1,03E+00	1,34E+01	2,64E+01	MND	MND	1,34E-01	6,46E-02	1,09E-01	0,00E+00	-6,79E+00
ETP-fw (disc.2)	CTUe	2,40E+03	3,57E+02	1,43E+03	4,18E+03	MND	MND	1,35E+02	2,46E+01	7,93E+01	0,00E+00	-3,38E+02
HTP-c (disc.2)	CTUh	1,13E-06	2,28E-08	1,21E-07	1,28E-06	MND	MND	6,58E-09	1,47E-09	2,89E-08	0,00E+00	-1,04E-07
HTP-nc (disc.2)	CTUh	1,62E-06	4,73E-07	5,48E-06	7,57E-06	MND	MND	4,14E-08	3,16E-08	1,37E-06	0,00E+00	-8,34E-07
SQP (disc.2)	Dimensionless	1,16E+05	7,37E+02	9,76E+02	1,17E+05	MND	MND	1,91E+01	5,20E+01	2,77E+01	0,00E+00	-1,57E+02
PM – Particulate matter emissions (potential incidence of disease); IRP – Ionising radiation, human health; ETP-fw – Ecotoxicity, freshwater; HTP-c – Human toxicity, cancer effects; HTP-nc – Human toxicity, non-cancer effects; SQP – Land use related impacts, soil quality.												
This impact category deals mainly with the eventual impact of low dose ionising 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 disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some construction materials is also not measured by this indicator.												
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.												

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	1,17E+04	1,25E+01	2,19E+02	1,19E+04	MND	MND	1,61E+00	7,50E-01	2,27E+00	0,00E+00	-6,47E+01
PERM	MJ	6,21E+03	0,00E+00	0,00E+00	6,21E+03	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,79E+04	1,25E+01	2,19E+02	1,81E+04	MND	MND	1,61E+00	7,50E-01	2,27E+00	0,00E+00	-6,47E+01
PENRE	MJ	4,49E+03	8,78E+02	6,62E+03	1,20E+04	MND	MND	2,85E+02	5,16E+01	9,29E+01	0,00E+00	-6,78E+03
PENRM	MJ	5,35E+01	0,00E+00	0,00E+00	5,35E+01	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,54E+03	8,78E+02	6,62E+03	1,20E+04	MND	MND	2,85E+02	5,16E+01	9,29E+01	0,00E+00	-6,78E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	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	MND	MND	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	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	4,68E+00	1,40E-01	4,47E+00	9,29E+00	MND	MND	2,52E-02	9,06E-03	2,25E-01	0,00E+00	-5,10E-01

PERE – Use of renewable primary energy as energy carriers; PERM – Use of renewable primary energy resources as raw materials; PERT – Total renewable primary energy (PERE+PERM); PENRE – Use of non-renewable primary energy as energy carriers; PENRM – Use of non-renewable primary energy as raw materials; PENRT – Total non-renewable primary energy (PENRE+PENRM); SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non-renewable secondary fuels; FW – Net use of fresh water; NCV – net calorific value.

OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	5,92E+03	0,00E+00	0,00E+00

CRU – Components for re-use; MFR – Materials for recycling; MER – Materials for energy recovery; EEE – Exported electrical energy; EET – Exported thermal energy.

WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
HWD	kg	8,92E-03	5,15E-03	2,81E-03	1,69E-02	MND	MND	1,91E-03	3,20E-04	4,60E-04	0,00E+00	-2,85E-02
NHWD	kg	2,15E+00	1,92E-02	4,64E-02	2,21E+00	MND	MND	5,32E-03	1,21E-03	8,66E+00	0,00E+00	-1,06E-01
RWD	kg	3,03E-03	2,50E-04	3,28E-03	6,56E-03	MND	MND	3,10E-05	1,56E-05	2,70E-05	0,00E+00	-1,73E-03

HWD – Hazardous waste disposed; NHWD – Non-hazardous waste disposed; RWD – Radioactive waste disposed.

6.2 PLYWOOD-X

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
GWP-Total	kg CO2 eq.	-8,12E+02	4,09E+01	2,23E+02	-5,48E+02	MND	MND	2,19E+01	3,42E+00	1,10E+03	0,00E+00	-5,19E+02
GWP-fossil	kg CO2 eq.	2,34E+02	4,09E+01	2,24E+02	4,99E+02	MND	MND	2,19E+01	3,42E+00	5,14E+01	0,00E+00	-5,19E+02
GWP-biogenic	kg CO2 eq.	-1,05E+03	3,56E-02	-2,19E-01	-1,05E+03	MND	MND	5,02E-03	2,72E-03	1,05E+03	0,00E+00	-3,40E-01
GWP-luluc	kg CO2 eq.	7,10E-01	1,80E-02	3,48E-02	7,63E-01	MND	MND	2,46E-03	1,67E-03	2,91E-03	0,00E+00	-7,85E-02
ODP	kg CFC-11 eq.	6,30E-06	9,06E-07	3,21E-07	7,53E-06	MND	MND	3,48E-07	7,75E-08	1,90E-07	0,00E+00	-2,28E-05
AP	mol H+ eq.	1,39E+00	9,58E-02	1,83E+00	3,31E+00	MND	MND	2,03E-01	8,45E-03	1,16E-01	0,00E+00	-4,25E-01
EP-freshwater	kg P eq.	8,10E-02	2,89E-03	1,35E-01	2,19E-01	MND	MND	6,70E-04	2,50E-04	4,86E-03	0,00E+00	-1,85E-02
EP-marine	kg N eq.	3,86E-01	2,64E-02	2,33E-01	6,45E-01	MND	MND	9,39E-02	2,30E-03	6,16E-02	0,00E+00	-1,31E-01
EP-terrestrial	mol N eq.	4,30E+00	2,73E-01	2,33E+00	6,90E+00	MND	MND	1,02E+00	2,36E-02	5,92E-01	0,00E+00	-1,40E+00
POCP	kg NMVOC eq.	1,81E+00	1,54E-01	6,73E-01	2,64E+00	MND	MND	3,02E-01	1,38E-02	1,51E-01	0,00E+00	-9,03E-01
ADPE (disc.2)	kg Sb eq.	9,10E-04	7,33E-05	2,34E-05	1,01E-03	MND	MND	4,24E-06	6,61E-06	1,38E-05	0,00E+00	-2,20E-04
ADPF (disc.2)	MJ	4,93E+03	6,16E+02	2,06E+03	7,61E+03	MND	MND	2,88E+02	5,22E+01	9,51E+01	0,00E+00	-7,73E+03
WDP (disc.2)	m3 World eq.	1,91E+02	2,90E+00	1,15E+01	2,06E+02	MND	MND	7,13E-01	2,68E-01	4,78E+01	0,00E+00	-1,80E+01
GWP-IOBC/GHG	kg CO2 eq.	2,36E+02	4,09E+01	2,24E+02	5,00E+02	MND	MND	2,19E+01	3,42E+00	5,14E+01	0,00E+00	-5,19E+02
GWP-total – Climate change, total; GWP-fossil – Climate change, fossil fuels; GWP-biogenic – Climate change, biogenic; GWP-luluc – Climate change, land use and land use change; ODP – Ozone layer depletion; AP – Acidification; EP-freshwater – Eutrophication, freshwater; EP-marine – Eutrophication, marine; EP-terrestrial – Eutrophication, terrestrial; POCP – Photochemical ozone formation; ADPE – Abiotic depletion, minerals and metals; ADPF – Abiotic depletion, fossil fuels; WDP – Water use (deprivation potential); NCV – net calorific value. GWP-IOBC/GHG – Global warming potential except emissions and uptake of biogenic carbon.												
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.												

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PM	Disease Incidence	2,15E-05	2,69E-06	1,97E-05	4,40E-05	MND	MND	5,59E-06	2,57E-07	1,25E-06	0,00E+00	-2,42E-06
IRP (disc.1)	kBq U235 eq.	2,64E+01	7,22E-01	4,12E+00	3,12E+01	MND	MND	1,36E-01	6,54E-02	1,12E-01	0,00E+00	-7,76E+00
ETP-fw (disc.2)	CTUe	2,09E+03	2,53E+02	4,42E+02	2,78E+03	MND	MND	1,37E+02	2,49E+01	8,14E+01	0,00E+00	-3,86E+02
HTP-c (disc.2)	CTUh	2,28E-06	1,61E-08	3,71E-08	2,34E-06	MND	MND	6,66E-09	1,49E-09	2,97E-08	0,00E+00	-1,19E-07
HTP-nc (disc.2)	CTUh	2,43E-06	3,34E-07	1,70E-06	4,46E-06	MND	MND	4,18E-08	3,19E-08	1,40E-06	0,00E+00	-9,52E-07
SQP (disc.2)	Dimensionless	9,37E+04	5,22E+02	3,00E+02	9,45E+04	MND	MND	1,93E+01	5,26E+01	2,65E+01	0,00E+00	-1,79E+02
PM – Particulate matter emissions (potential incidence of disease); IRP – Ionising radiation, human health; ETP-fw – Ecotoxicity, freshwater; HTP-c – Human toxicity, cancer effects; HTP-nc – Human toxicity, non-cancer effects; SQP – Land use related impacts, soil quality.												
This impact category deals mainly with the eventual impact of low dose ionising 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 disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some construction materials is also not measured by this indicator.												
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.												

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	7,83E+03	8,76E+00	6,49E+01	7,91E+03	MND	MND	1,63E+00	7,58E-01	2,33E+00	0,00E+00	-7,39E+01
PERM	MJ	5,40E+03	0,00E+00	0,00E+00	5,40E+03	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,32E+04	8,76E+00	6,49E+01	1,33E+04	MND	MND	1,63E+00	7,58E-01	2,33E+00	0,00E+00	-7,39E+01
PENRE	MJ	3,94E+03	6,16E+02	2,06E+03	6,61E+03	MND	MND	2,88E+02	5,22E+01	9,51E+01	0,00E+00	-7,73E+03
PENRM	MJ	8,68E+02	0,00E+00	0,00E+00	8,68E+02	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,80E+03	6,16E+02	2,06E+03	7,48E+03	MND	MND	2,88E+02	5,22E+01	9,51E+01	0,00E+00	-7,73E+03
SM	kg	1,18E+02	0,00E+00	0,00E+00	1,18E+02	MND	MND	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	MND	MND	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	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,89E+00	9,90E-02	1,19E+00	8,17E+00	MND	MND	2,55E-02	9,17E-03	2,31E-01	0,00E+00	-5,83E-01

PERE – Use of renewable primary energy as energy carriers; PERM – Use of renewable primary energy resources as raw materials; PERT – Total renewable primary energy (PERE+PERM); PENRE – Use of non-renewable primary energy as energy carriers; PENRM – Use of non-renewable primary energy as raw materials; PENRT – Total non-renewable primary energy (PENRE+PENRM); SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non-renewable secondary fuels; FW – Net use of fresh water; NCV – net calorific value.

OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	6,76E+03	0,00E+00	0,00E+00

CRU – Components for re-use; MFR – Materials for recycling; MER – Materials for energy recovery; EEE – Exported electrical energy; EET – Exported thermal energy.

WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
HWD	kg	1,44E-02	3,62E-03	8,60E-04	1,88E-02	MND	MND	1,93E-03	3,20E-04	4,70E-04	0,00E+00	-3,26E-02
NHWD	kg	1,99E+00	1,35E-02	1,40E-02	2,02E+00	MND	MND	5,39E-03	1,23E-03	9,16E-03	0,00E+00	-1,21E-01
RWD	kg	6,88E-03	1,70E-04	1,01E-03	8,06E-03	MND	MND	3,14E-05	1,58E-05	2,77E-05	0,00E+00	-1,97E-03

HWD – Hazardous waste disposed; NHWD – Non-hazardous waste disposed; RWD – Radioactive waste disposed.

6.3 FILM-FACED PLYWOOD

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
GWP-Total	kg CO2 eq.	-4,09E+01	2,17E+00	1,91E+02	1,53E+02	MND	MND	2,21E+01	3,45E+00	1,20E+03	0,00E+00	-4,72E+02
GWP-fossil	kg CO2 eq.	9,89E+02	2,16E+00	1,90E+02	1,18E+03	MND	MND	2,21E+01	3,45E+00	1,68E+02	0,00E+00	-4,72E+02
GWP-biogenic	kg CO2 eq.	-1,03E+03	1,73E-03	9,24E-01	-1,03E+03	MND	MND	5,07E-03	2,75E-03	1,03E+03	0,00E+00	-3,09E-01
GWP-luluc	kg CO2 eq.	9,09E-01	1,06E-03	3,13E-01	1,22E+00	MND	MND	2,49E-03	1,68E-03	2,91E-03	0,00E+00	-7,14E-02
ODP	kg CFC-11 eq.	6,68E-06	4,91E-08	8,87E-07	7,62E-06	MND	MND	3,51E-07	7,83E-08	1,96E-07	0,00E+00	-2,07E-05
AP	mol H+ eq.	6,96E+00	5,35E-03	1,37E+00	8,34E+00	MND	MND	2,05E-01	8,54E-03	1,07E+00	0,00E+00	-3,86E-01
EP-freshwater	kg P eq.	5,15E-01	1,60E-04	2,28E-01	7,43E-01	MND	MND	6,80E-04	2,50E-04	4,76E-03	0,00E+00	-1,68E-02
EP-marine	kg N eq.	1,06E+00	1,46E-03	1,97E-01	1,26E+00	MND	MND	9,49E-02	2,33E-03	5,63E-01	0,00E+00	-1,19E-01
EP-terrestrial	mol N eq.	1,02E+01	1,50E-02	1,72E+00	1,19E+01	MND	MND	1,03E+00	2,39E-02	6,08E+00	0,00E+00	-1,28E+00
POCP	kg NMVOC eq.	3,52E+00	8,74E-03	4,96E-01	4,03E+00	MND	MND	3,05E-01	1,39E-02	1,44E+00	0,00E+00	-8,20E-01
ADPE (disc.2)	kg Sb eq.	1,10E-03	4,18E-06	6,05E-05	1,16E-03	MND	MND	4,28E-06	6,67E-06	1,38E-05	0,00E+00	-2,00E-04
ADPF (disc.2)	MJ	1,28E+04	3,31E+01	2,18E+03	1,51E+04	MND	MND	2,91E+02	5,28E+01	9,47E+01	0,00E+00	-7,03E+03
WDP (disc.2)	m3 World eq.	2,19E+02	1,70E-01	4,16E+01	2,61E+02	MND	MND	7,20E-01	2,71E-01	4,70E+01	0,00E+00	-1,63E+01
GWP-IOBC/GHG	kg CO2 eq.	9,91E+02	2,16E+00	1,91E+02	1,18E+03	MND	MND	2,21E+01	3,45E+00	1,68E+02	0,00E+00	-4,72E+02
GWP-total – Climate change, total; GWP-fossil – Climate change, fossil fuels; GWP-biogenic – Climate change, biogenic; GWP-luluc – Climate change, land use and land use change; ODP – Ozone layer depletion; AP – Acidification; EP-freshwater – Eutrophication, freshwater; EP-marine – Eutrophication, marine; EP-terrestrial – Eutrophication, terrestrial; POCP – Photochemical ozone formation; ADPE – Abiotic depletion, minerals and metals; ADPF – Abiotic depletion, fossil fuels; WDP – Water use (deprivation potential); NCV – net calorific value. GWP-IOBC/GHG – Global warming potential except emissions and uptake of biogenic carbon.												
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.												

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PM	Disease Incidence	7,49E-05	1,63E-07	2,26E-06	7,74E-05	MND	MND	5,65E-06	2,60E-07	3,30E-06	0,00E+00	-2,20E-06
IRP (disc.1)	kBq U235 eq.	2,92E+01	4,14E-02	6,27E+00	3,56E+01	MND	MND	1,37E-01	6,60E-02	1,13E-01	0,00E+00	-7,05E+00
ETP-fw (disc.2)	CTUe	4,54E+03	1,57E+01	5,82E+02	5,13E+03	MND	MND	1,38E+02	2,51E+01	9,34E+01	0,00E+00	-3,51E+02
HTP-c (disc.2)	CTUh	1,38E-06	9,44E-10	5,82E-08	1,44E-06	MND	MND	6,73E-09	1,51E-09	2,96E-08	0,00E+00	-1,08E-07
HTP-nc (disc.2)	CTUh	7,79E-06	2,02E-08	2,13E-06	9,93E-06	MND	MND	4,23E-08	3,23E-08	1,39E-06	0,00E+00	-8,66E-07
SQP (disc.2)	Dimensionless	1,19E+05	3,33E+01	4,75E+02	1,19E+05	MND	MND	1,95E+01	5,31E+01	2,82E+01	0,00E+00	-1,62E+02
PM – Particulate matter emissions (potential incidence of disease); IRP – Ionising radiation, human health; ETP-fw – Ecotoxicity, freshwater; HTP-c – Human toxicity, cancer effects; HTP-nc – Human toxicity, non-cancer effects; SQP – Land use related impacts, soil quality.												
This impact category deals mainly with the eventual impact of low dose ionising 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 disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some construction materials is also not measured by this indicator.												
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.												

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	1,22E+04	4,80E-01	2,03E+02	1,24E+04	MND	MND	1,65E+00	7,66E-01	2,34E+00	0,00E+00	-6,72E+01
PERM	MJ	6,21E+03	0,00E+00	0,00E+00	6,21E+03	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,84E+04	4,80E-01	2,03E+02	1,86E+04	MND	MND	1,65E+00	7,66E-01	2,34E+00	0,00E+00	-6,72E+01
PENRE	MJ	1,27E+04	3,31E+01	2,18E+03	1,49E+04	MND	MND	2,91E+02	5,28E+01	9,48E+01	0,00E+00	-7,03E+03
PENRM	MJ	5,35E+01	0,00E+00	0,00E+00	5,35E+01	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,27E+04	3,31E+01	2,18E+03	1,49E+04	MND	MND	2,91E+02	5,28E+01	9,48E+01	0,00E+00	-7,03E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	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	MND	MND	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	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	9,75E+00	5,81E-03	5,83E+00	1,56E+01	MND	MND	2,58E-02	9,26E-03	2,40E-01	0,00E+00	-5,30E-01

PERE – Use of renewable primary energy as energy carriers; PERM – Use of renewable primary energy resources as raw materials; PERT – Total renewable primary energy (PERE+PERM); PENRE – Use of non-renewable primary energy as energy carriers; PENRM – Use of non-renewable primary energy as raw materials; PENRT – Total non-renewable primary energy (PENRE+PENRM); SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non-renewable secondary fuels; FW – Net use of fresh water; NCV – net calorific value.

OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	0,00E+00	0,00E+00	6,15E+03	0,00E+00	0,00E+00

CRU – Components for re-use; MFR – Materials for recycling; MER – Materials for energy recovery; EEE – Exported electrical energy; EET – Exported thermal energy.

WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4-A5	B1-B7	C1	C2	C3	C4	D
HWD	kg	1,86E-02	2,00E-04	1,32E-03	2,01E-02	MND	MND	1,95E-03	3,30E-04	4,70E-04	0,00E+00	-2,96E-02
NHWD	kg	2,28E+00	7,80E-04	4,37E-02	2,33E+00	MND	MND	5,44E-03	1,24E-03	8,66E+00	0,00E+00	-1,10E-01
RWD	kg	7,28E-03	1,00E-05	1,54E-03	8,83E-03	MND	MND	3,17E-05	1,60E-05	2,80E-05	0,00E+00	-1,79E-03

HWD – Hazardous waste disposed; NHWD – Non-hazardous waste disposed; RWD – Radioactive waste disposed.

7. LCA METHODOLOGY

MODELLING FRAMEWORK AND SOFTWARE

The life-cycle assessment was carried out with openLCA using the ecoinvent v3.9.1 background database using the EN 15804+A2 (EF 3.1) impact assessment method. Foreground data are primary production data collected at the Sklejka-Eko facility for the reference year 2025. The inventory is built per declared unit (1 m³) for each declared product and is reconciled against the annual production data (see Data Quality).

DECLARED PRODUCTS AND MODEL ARCHITECTURE

Separate LCA models were developed for the three product groups using shared manufacturing processes where applicable. Uncoated plywood is modelled from roundwood supply to the finished panel. Plywood-X combines the upstream production of a purchased particleboard core with the manufacture and bonding of veneer facings at the Sklejka-Eko facility.

Film-faced plywood includes one complete A1–A3 inventory of the base plywood and the additional inputs for surface film, transport, lamination electricity and edge sealant. In the reported model, the complete substrate inventory is carried in A1 of film-faced plywood. Its A2 and A3 columns contain only the additional film transport and coating operations, respectively. The substrate burdens are counted once. Annual inventory reconciliation distinguishes uncoated plywood sold as a finished product from base plywood transferred to film facing.

ESTIMATES AND ASSUMPTIONS

Module A1 — material modelling.

Common adhesive modelling

Adhesive quantities reported as aqueous solutions are converted to dry resin solids for the finished-product material balance.

Uncoated plywood

The inventory includes roundwood, product-specific adhesive systems and auxiliary materials. Roundwood is represented by a 69% softwood (pine) and 31% hardwood (birch) forestry mix. Birch is used as a proxy for the combined alder and birch fraction. The model uses rye grain as a proxy for rye-flour extender, ammonium sulfate for hardener, kaolin for PF filler and polyvinyl acetate for D4 adhesive. The wood retained in the finished panel is determined from the veneer material balance.

Plywood-X

The particleboard core is represented by a modified market process based on a generic uncoated-particleboard background dataset, at an input of 0,6531 m³ per m³ of Plywood-X. A core density of 740 kg/m³ is used in the material and transport inventory. Veneer facings and their PF adhesive are modelled separately.

Film-faced plywood

The additional phenolic film input is approximately 14,4 kg/m³, calculated from coated surface area and film grammage. It is represented by 55% kraft paper and 45% resin by mass.

Module A2 - transport.

Road transport is modelled with a >32 t EURO 6 lorry dataset. Representative distances are 271 km for roundwood, 315 km for resins and veneering adhesive, 67 km for the purchased particleboard core and approximately 1 500 km for phenolic film. Roundwood transport follows the economic allocation of the roundwood. Internal forklift transport is included in A2 based on mass of used diesel and LPG.

Module A3 - energy.

Process heat is supplied by the on-site hard-coal plant. In 2025, approximately 86% of total plant electricity consumption was attributable to base-plywood production, 2% to Plywood-X production, and 11% to film-coating lamination (percentages may not sum to 100% due to rounding). Hard-coal consumption is allocated by dried-veneer volume: approximately 97% to base-plywood production and 3% to Plywood-X. Coal inputs are converted to heat using the conversion factor of the selected dataset. The heat dataset includes combustion emissions and boiler-ash outputs; these are not added again as separate foreground flows. Process water for base-plywood production is represented by tap water. Veneer-drying NMVOC emissions and wood-machining particulate emissions are included separately.

Electricity used at the Sklejka-Eko S.A. plant in Ostrów Wielkopolski (Module A3) was modelled with the ecoinvent 3.9.1 Polish electricity mix. For the climate-change indicators (GWP-fossil, GWP-biogenic, GWP-luluc), the ecoinvent electricity contribution was replaced by a Poland-specific, location-based, full life-cycle emission factor of 0,599 kg CO₂e/kWh (poLCA-EN-PL-2024 v9.1, MET-001:2026). The factor is derived from the Polish national electricity emission data published by KOBiZE, which represent direct (combustion) emissions only; these are extended with upstream life-cycle contributions to obtain a full life-cycle factor. All other indicators retain the unmodified ecoinvent Polish electricity dataset.

Modules C1-C4 and D - end of life.

Deconstruction (C1) is modelled as diesel energy for mechanical dismantling at 0,323 MJ per kg of product.

Transport to waste treatment (C2) is 50 km using a >32 t EURO 6 lorry.

C3 represents 100% incineration with energy recovery under the selected recovery scenario (R1 > 0,6). Waste-wood and, for film-faced plywood, waste-paperboard treatment datasets are scaled to the biogenic carbon to be released. Product-specific foreground additions represent fossil carbon from the cured resins and other modelled combustion emissions and residues. Direct fossil CO₂ additions are 130 kg/m³ for Uncoated plywood, 40,52 kg/m³ for Plywood-X and 148,293 kg/m³ for film-faced plywood; these are inventory flows, not total GWP-fossil results.

Module C4 is zero.

Module D credits exported thermal energy of 5 925, 6 763 and 6 148 MJ/m³, respectively, against natural-gas heat substitution. Only post-use energy recovery is credited.

The same end-of-life route is applied to all product groups; the product-specific quantities and properties used in the calculations are summarised below.

Parameter	Unit	Uncoated	Plywood-X	Film-faced
Mass per declared unit	kg/m ³	674	≈ 682	≈ 689
Moisture content (wet-basis)	%	9	9	9
Biogenic C in complete product	kg C/m ³	278	286	281
Share sent to energy recovery	%	100	100	100
Dismantling energy (C1)	MJ diesel/kg	0,323	0,323	0,323
Transport distance (C2)	km	50	50	50
Exported thermal energy	MJ/m ³	5 925	6 763	6 148
Substituted heat source	—	Nat. gas	Nat. gas	Nat. gas

Table 7. Product-specific energy-recovery parameters underlying the declared end-of-life scenario and Module D (natural-gas heat substitution).

BIOGENIC CARBON MODELLING

Biogenic carbon in wood is calculated from oven-dry wood mass using a carbon fraction of 0,50 and the conversion 44/12 from C to CO₂, in accordance with EN 16449:2014. Oven-dry species densities are 490 kg/m³ for pine and alder and 610 kg/m³ for birch, giving a weighted value of approximately 508,5 kg/m³. The finished-product balance corresponds to 278 kg C/m³ for Uncoated plywood, equivalent to 1 018 kg CO₂/m³. Background biogenic-carbon contributions are reconciled through foreground corrections to avoid counting the same stored carbon twice.

For Plywood-X, the carbon inventory includes both the veneer facings and the particleboard core, corresponding to approximately 286 kg C/m³ or 1 047 kg CO₂/m³. The background contribution of the core and the foreground correction are reconciled at the level of the complete product. Material-energy indicators are adjusted consistently with the modelled material inventory; the renewable and non-renewable primary-energy totals are reconciled with their energy-carrier and raw-material components.

Module C3 accounts for the end-of-life release of biogenic carbon from the complete panel, including both the veneer facings and the particleboard core. The carbon inventory is checked across the declared modules for consistency between material inputs, carbon retained in the finished product and carbon released or transferred from the system.

The phenolic film comprises a kraft-paper carrier and fossil PF resin. Its paper adds 13 kg of biogenic CO₂ equivalent per m³ to the substrate balance, giving approximately 281 kg C/m³ in the complete film-faced product. Paper-related biogenic carbon is included in A1 and released through the paper-treatment process in C3; the resin carbon is treated as fossil.

ALLOCATION

The assessment distinguishes allocation between the declared panels and externally-sold wood-processing co-products from the assignment of manufacturing inputs among the three declared product groups. Biogenic carbon and the material energy content of wood follow the physical material flows (oven-dry mass) in either case, as inherent material properties per EN 16485:2014.

Allocation between panels and wood-processing co-products

Roundwood supply and its transport are allocated by economic value between the panel products and externally-sold peeler cores, chips, bark and veneer offcuts. Because these co-products differ in economic value from the panels by more than 25%, EN 16485 requires economic allocation. Based on reference-year sales values, the panel products receive 97,89% of these burdens and the co-products 2,11%.

Under the current modelling assumption, energy used in shared operations before co-product separation is retained within the panel product system because separate process measurements are unavailable. This assumption is distinguished from the direct assignment of operations that occur after co-product separation; its justification and the assessment of its influence are documented in the LCA project report. Dried veneer offcuts arise after drying; their treatment under the very-low-contribution provision of EN 16485:2014 clause 6.4.3.2 (Note 1) is documented separately.

Assignment among the declared product groups

Input or process	Assignment approach
Roundwood supply and transport	Economic allocation: 91,78% to the base-plywood stream, 6,10% to Plywood-X
Shared process heat	Split between base-plywood and Plywood-X by dried-veneer volume
Electricity	Dedicated meters + remaining shared inventory (see Module A3 — energy)
Bonding resins and auxiliaries	Assigned to the product group consuming each material
Purchased particleboard core	Assigned to Plywood-X
Surface film, edge sealant, dedicated lamination inputs	Assigned to film-faced plywood

Film-faced plywood carries the assigned burdens of its plywood substrate in addition to the coating-specific inputs. The base-plywood inventory is reconciled between uncoated panels sold as finished products and panels transferred to film facing.

CUT-OFF CRITERIA

The study covers all mandatory modules and processes required by EN 15804+A2. All major raw-material and energy inputs are included. No single neglected unit process exceeds 1% of total mass or energy, and the total of all neglected input and output flows does not exceed 5% of total energy use or mass. Capital goods, production infrastructure, and administrative and personnel-related activities are excluded from the system boundary.

DATA QUALITY AND MODEL RECONCILIATION

The LCA is based on high-quality primary data collected by Sklejka-Eko S.A. for the reference year 2025, covering wood input and panel geometry, resin and auxiliary consumption, metered energy, transport and production waste, complemented by ecoinvent v3.9.1 background datasets and the national KOBiZE electricity factor. Time, geographical and technological representativeness are judged good.

The product inventories were reconciled with annual material and energy consumption to check the completeness and consistency of the inventory. The reconciliation accounts for the allocation of roundwood inputs to externally sold co-products and distinguishes finished uncoated plywood from base plywood transferred to film facing. Detailed reconciliation calculations are documented in the LCA project report.

8. REFERENCES

EN 15804:2012+A2:2019/AC:2021 — Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products.

EN 16485:2014 — Round and sawn timber — Environmental Product Declarations — Product category rules for wood and wood-based products for use in construction.

EN 16449:2014 — Wood and wood-based products — Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.

EN 636 — Plywood — Specifications.

EN 314-2 — Plywood — Bonding quality — Part 2: Requirements.

EN 13986 — Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking.

EN 312 — Particleboards — Specifications.

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

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

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

ecoinvent Association (2022). ecoinvent database v3.9.1, system model: Allocation, cut-off by classification. Zürich, Switzerland.

Marciniak J. — Plywood manufacturing technology at SKLEJKA-EKO S.A. Ostrów Wielkopolski (in Polish), 2nd ed., Ostrów Wielkopolski, 2024. Internal company manual (unpublished).

EPD Polska (2026). poLCA-EN-PL-2024 v9.1 — Poland-specific, location-based, full life-cycle electricity emission factor for climate-change indicators.

Multicert Sp. z o.o. (current version). General Programme Instructions of the EPD Polska Programme. Warsaw, Poland.

9. EPD Polska Certificate

CERTIFICATE

TYPE III EPD DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

Reg. No. EPD-P 03.09.2026



This document confirms that the Environmental Product Declaration developed by **Sklejka-Eko S.A.** for wood-based plywood panels:

Uncoated plywood, Plywood-X and Film-faced plywood - manufactured in accordance with the applicable product standards, including **EN 636+A1** and **EN 13986**

meets the requirements of standards **EN 15804:2012+A2:2019**, **EN 16485:2014** and **ISO 14025**, and that the data contained therein has been prepared correctly.

The Declaration was published on September 30, 2026 and is valid until September 30, 2031 or until it is deregistered or its publication on the website www.epd.org.pl is discontinued.

Authenticity of this certificate can be confirmed in the public register at www.epd.org.pl



Izabela Sztamberek-Sochan, Ph.D.
EPD Polska Verifier



Grzegorz Suwara
CEO Multicert Sp. z o.o.

Warsaw, September 30, 2026