Environmental Product Declaration

In accordance with
ISO 14025 and EN 15804:
2012+A2:2019 for:

Tech Panels

THE INTERNATIONAL EPD® SYSTEM
EPD INTERNATIONAL AB
EPD REGISTRATION NUMBER S-P-05441
ISSUED ON 2022-04-06
VALID TO 2027-04-05

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

ECO PLATFORM EPD VERIFIED

Optima

Introduction

Optima Products Limited (OPL) is a UK-based manufacturer of aluminium framed, glazed partition systems and doors. Based in Radstock, Bath, OPL has been designing and producing innovative and performance-driven aluminium and glass-based partition and door systems since the 1980s.

This EPD provides environmental performance indicators for OPL's TECH Panels. It is is a cradle-to-gate with options EPD in accordance with the requirements of EN 15804, covering modules A1-A5, C1-C4 and D defined in that standard.

The EPD is based on a life cycle assessment (LCA) study which used production data for the 12-month period 1st January to 31st December 2019 from OPL's manufacturing facility in Radstock, UK.

The EPD presents details of the LCA, a description of the product life cycle it covers, values for the environmental indicators specified by EN 15804:2012 + A2:2019 with a brief explanation of those results; indicators required by EN 15804:2012 + A1:2013 are also included to ensure acceptance by the widest possible base of users. The declared unit is 1m2 (including packaging).

Company Profile

OPL designs and produces aluminium framed glass partition systems and doors from its manufacturing base in Radstock. The manufacturing facility uses the latest design techniques to ensure high quality products which are rigorously tested both in-house and externally before going to market.

The OPL product range is sold and installed through the Optima contracting divisions in the UK, Dubai and Kuala Lumpur and through a worldwide network of selected contracting partners.

OPL puts quality at the heart of design and production management, and operates a quality management system accredited to ISO 9001: 2015 (bmtrada certificate 2367).

In keeping with OPL's determination to drive good environmental practice in the entire product cycle, OPL operates an environmental management system accredited to ISO 14001: 2015 (bmtrada certificate 1827). In addition, it is a requirement on all our principal supply chain partners that they also operate similar systems.

OPL believes in openness and transparency in the supply chain and manufacturing process and has published Health Product Declarations in accordance with HPD Standard version 1.0.

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Tech Panels EPD

EPD programme:	The International EPD® System
EPD programme operator:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden www.environdec.com
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PCR review conducted by:	The Technical Committee of the International EPD® System Chair: Claudia Peña; contact via: info@environdec.com
Independent verification of this EPD and data, according to ISO 14025/2006:	EPD process certification ☐ external EPD verification ☑
Third party verifier:	Ugo Pretato - Recognised Individual Verifier
Accredited or approved by:	The International EPD® System
LCA conducted by:	EuGeos Limited - UK - www.eugeos.co.uk
LCA software:	openLCA
Background database:	ecoinvent v3.6
System boundaries:	Cradle to gate with options (modules A4 & A5, C & D)
Time representativeness:	1st January to 31st December 2019

EPDs within the same product category but from different programmes may not be comparable.
EPDs of construction products may not be comparable if they do not comply with EN 15804.

Product Information

TECH PANELS

OPL's Tech Panel is an optional component of our partition systems, installed adjacent to door frames to allow installation of electrical switches and/or devices. All power and data cables required for such equipment can be embedded within the Tech Panel face.

Available finishes include powder coated or anodised aluminium, face-laminated timber and back painted glass. All of our Tech Panels feature an integrated shadow gap surround, giving the impression that the panel is floating within the frame. This EPD is for Tech Panel finished in powder coated aluminium.

Technical data

The technical characteristics of OPL's Tech Panels are summarised below.

Name	Value	Unit
Mass for a unit area*	36	kg/m^2
Acoustic Testing (EN ISO 10140-1 & 2)		
Tech Panel - 100mm overall depth with insulated cavity	42	$dB(R_w)$
Tech Panel - 100mm overall depth with uninsulated cavity	40	$dB(R_w)$

*Mass is provided for guidance only and is not part of the product specification

OPL's Tech Panels are classified CPC 4212 under the UN CPC classification system V2.1.

Product Information

Manufacturing

OPL's Radstock manufacturing facility carries out the following manufacturing activities:

- Storage of raw materials, components and packaging
- Aluminium profile & sheet finishing and coating
- Panel assembly
- Packing of finished products

Packaging

Tech Panels are wrapped in bio-polymer protective film and shipped to the customer's site on pallets. The profile for the frame is normally packed in cardboard.

OPL uses only FSC certified wood products for deliveries to customers. All pallets are set aside at their destination and returned for re-use.

Installation

Tech Panels are installed within a frame that integrates into the framework of a partition system. The Tech Panel has only one finished face, therefore installation of a second panel or sheet of other material to finish the second side of the partition will normally be required.

Product use and maintenance

OPL's Tech Panels should be subjected to regular inspection and maintenance in accordance with the published OPL operation and maintenance schedule - see www.optimasystems.com for further details.

End-of-life

Tech Panels contain wood and aluminium. Aluminium should be separated for recycling if possible. In this EPD it is assumed that panels are disposed to landfill at the end of their lives, while the aluminium frame is recycled, being easily separable.

The European Waste Catalogue (EWC) codes below apply to the product or parts of it when removed from the building:

EWC 17 04 02 Aluminium
EWC code 17 02 01 Wood

Product Information

Content declaration

The material composition of OPL's Tech Panel characterised in this EPD is shown below.
The masses quoted are indicative; total mass is not part of the product specification.

Product components	Mass in declared unit, - kg	% of mass per declared unit	Post-consumer material, weight - %	Renewable material, weight - %
Aluminium	28.8	80	75	0
Wood	6.5	18	0	>90
Other polymers	0.7	2	0	0
Total:	36			

Packaging materials	Weight - kg	Weight - % (vs product)
Wood	0.4	1
Biopolymer	<0.1	<0.5
Cardboard	3	8
Total:	3.5	2.5

No substance on the "Candidate List of Substances of Very High Concern for authorisation" derived under REACH is present either above the limits for registration with the European Chemicals Agency or in excess of 0.1 weight-% of the product.

Residual risks and emergencies

There are no residual risks associated with the normal day to day use of OPL partition systems in the context for which they are designed and specified.

Further product information

Detailed product information and datasheets can be found on our website: www.optimasystems.com

Environmental Performance-Related Information

LCA Information

This section of the EPD records key features of the LCA on which it is based.

Scope

This cradle-to-gate with options EPD covers the production stage (modules A1 - A3), the construction stage (modules A4 & A5), the end-of-life stage (modules C1-C4) and module D - see below; as permitted by EN 15804 modules A1-A3 are declared in aggregated form.

Product stage			**Construction process stage**		**Use stage**							**End of life stage**				**Benefits & loads beyond the system boundaries**
Raw material supply	Transport	Manufacturing	Transport to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste disposal	Disposal	Reuse- recovery- recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared X included in LCA - ND: module not declared - NR: module not relevant																
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography																
GLO	GLO	GB	GB	GB	-	-	-	-	-	-	-	GB	GB	GB	GB	GLO
Specific data used																
>90	>90	>90	>90	>90	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products																
n/a	n/a	n/a	n/a	n/a	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites																
n/a	n/a	n/a	n/a	n/a	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Performance-Related Information

Declared unit
The declared unit is one square metre of panel, with frame.

System boundaries
This EPD covers the product stage, delivery to site, installation, and 'end-of-life' management. It therefore includes the following information modules:
- A1 - raw material extraction and processing, and the processing of secondary material input
- A2 - transport of raw materials and secondary material inputs to the manufacturer
- A3 - manufacturing of the construction product and packaging
- A4 - delivery of construction products to the building site
- A5 - assembly
- C1 - removal from the building
- C2 - transport to waste treatment facility
- C3 - waste treatment
- C4 - final disposal
- D - benefits associated with recycling in a different product system

Modules A1, A2 and A3 comprise the product stage and are declared as one aggregated module A1 – A3. This stage includes the extraction and manufacture of raw materials, intermediate products and energy, as well as waste processing up to the end-of-waste state (i.e. no longer considered a waste material) or disposal of final residues arising during the product stage.

Modules A4 & A5 are part of the "Construction Process stage".

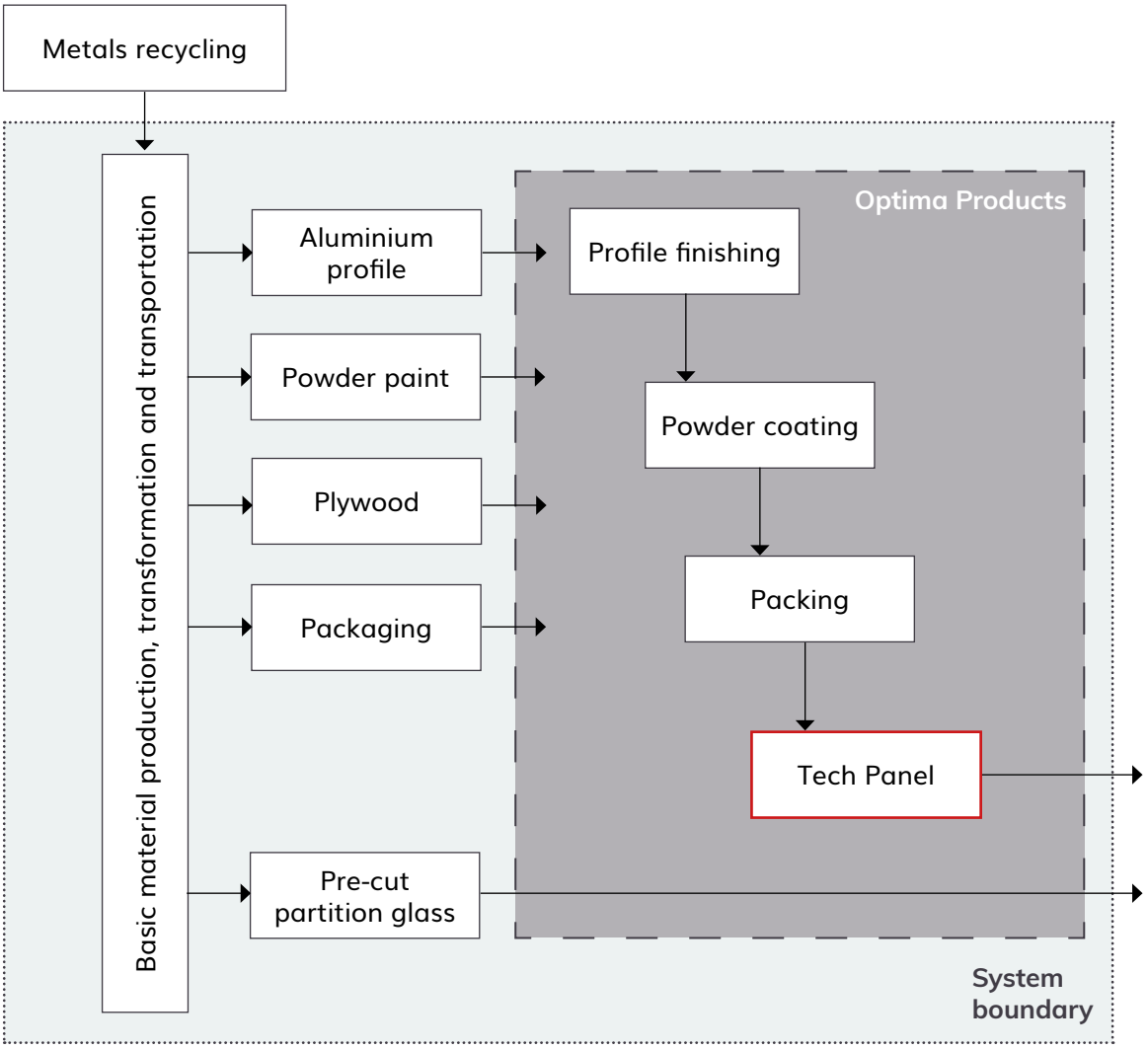
Module C1 - C4 cover the end-of-life stage.

Module D provides an estimate of the potential benefits that would accrue to a different product system were the partition constituents and recycled wastes identified in data for other life cycle modules actually recycled or recovered at current rates and using current technologies.

Environmental Performance-Related Information

All upstream resource extraction and manufacturing processes are included in the system. All energy used in factories and offices at OPL's Radstock site is included; energy used in OPL's offices at locations other than Radstock is excluded. Maintenance of equipment is also excluded.

The product life cycle covered by this EPD is illustrated below.



SYSTEM BOUNDARIES (A1-A3) FOR TECH PANEL LCA

Environmental Performance-Related Information

Cut-off criteria

According to EN 15804 and the PCR, flows can be omitted (cut-off) from a core process in the LCA up to a maximum of 1% of the total mass of material inputs. The total of input flows omitted in this way for any single module must not exceed 5% of the total energy usage and mass inputs for that module. The following must be included in all cases, regardless of the proportion of mass or energy they represent:

- Inputs giving rise to significant environmental effects or energy use in their extraction, use or disposal
- Inputs or outputs classified as hazardous waste

The data collected from OPL encompassed all raw materials, packaging materials and process aids, as well as associated transport to the manufacturing site. Process energy and water use, and direct production waste are included within the data. There are no emissions to air or water apart from un-monitored combustion gases and trade effluent; these are quantified by virtue of mass balance (trade effluent) or by their inclusion in generic processes characterising inputs (gas combustion). Non-hazardous material inputs amounting, in combination, to <0.1% of all inputs during the data period were omitted from the LCA.

Data sources and data quality

Data used for this EPD were collected following guidance in ISO 14044:2006; the most current available data were used in accordance with EN 15804.

The manufacturer-specific data used in LCA calculations cover a period of 1 year from 1 January 2019 to 31 December 2019. They are therefore based on 1 year averaged data and have been updated within the 5 years prior to publication of the EPD. These data were checked to ensure that sufficient materials and water were included within the inputs to account for all outputs, including products and wastes. Their technological coverage reflects physical reality for the declared product.

Other (generic) data sets used for calculations have been updated within the last 10 years.

Inputs to and outputs from the system are accounted for over a 100-year time period; long-term emissions are therefore omitted from the LCIA.

Background data

Background (generic) data for raw material inputs and fuels were taken from the ecoinvent v3.6 database, augmented where necessary to ensure the data used are as representative as possible of the materials actually used by OPL. This fulfils the EN 15804 requirement that generic data used in the LCA have been updated within the last 10 years. Data quality has been reviewed for all processes that contribute significantly to the overall LCA.

Allocation

In the background data, the ecoinvent default allocation is applied to all processes except those in which secondary materials are used, where the “cut-off” allocation is applied. This ensures that secondary materials are free of upstream burdens that arise prior to their reaching the “end of waste” state, in accordance with Section 6.3.4.2 of EN 15804.

Manufacturing data for OPL Radstock facility have been sub-divided where possible to avoid allocation. Remaining inputs and outputs are allocated on the basis of physical relationships.

Environmental Performance-Related Information

Assumptions and estimates

The "primary energy used as material (PERM; PENRM)" indicators are calculated using - as characterisation factors - published values for constituent materials which can yield energy on combustion, where available, and from published calorific values where PERM or PENRM values are not available.

In this EPD, the following values are used:
- Renewable primary energy as material: wood - 16MJ/kg; cardboard - 14MJ/kg
- Non-renewable primary energy as material: 27 MJ/kg for all polymer content

"Primary energy as fuel" indicators (PENRE, PERE) are calculated as the total primary energy demand minus primary energy used as material.

Delivery of the product to users' sites, installation and transport to waste processing and final disposal are modelled using scenarios. The relevant parameters for the transport scenarios are shown in the table below.

Scenario parameters - transport		
Parameter	**A4 transport to site**	**C2 transport to waste treatment**
	Quantity and unit	
Vehicle type	lorry	
Vehicle load capacity	10t; n/a	
Fuel type and consumption	diesel, 0.1 l/km	
Volume capacity utilisation factor	1	
Capacity utilisation (including empty returns)	38%	33%
Distance to site	200 km	50 km
Bulk density of transported products	n/a (mixed materials, packed)	n/a (mixed materials)

Installation (Module A5) is modelled on the basis that it is analogous to installation of a small section of partition; electricity use for hand power tools of 0.08kWh per square metre is assumed. A second panel or other sheet material required to finish the second side of a partition containing a Tech Panel may be of various materials, therefore is omitted from the installation scenario and this EPD. Management of packaging waste is included in Module A5. Cardboard is assumed recycled, and pallets leaving the system in this module are included in the inventory as components for reuse; an output of biogenic CO_2 is included in this module so that biogenic C is approximately in balance across the life cycle. The same assumptions are applied for waste transport as in Module C2. Removal from the building (Module C1) is assumed to use the same energy as installation.

In the end-of-life modules, it is assumed that Tech Panels are landfilled (module A4) without intermediate treatment (module C3).

Environmental Performance-Related Information

Module D quantifies the benefits and loads associated with recycling materials and exporting energy from waste management activities, were the recycled materials and recovered energy to be used in another product system. The benefits reported in Module D are calculated for net flows of secondary materials across the system boundary (materials to be recycled leaving the system minus recycled materials used in manufacture, and other modules declared in the EPD. Net output quantities of materials used in the Module D calculation are shown in the table below, with the associated "quality factors" and the virgin materials assumed to be displaced.

Scenario parameters - Module D					
Output to recycling/ recovery	**Assumed fate**	**Displaced input flow**	**Quality factor**	**Net output Quantity**	**Units**
Aluminium	90% recycled	primary aluminium ingot	1	5.1	kg
Carboard (A1-A5)	recycled	core board	1	3	kg

Environmental indicators

This EPD contains environmental information about OPL's partition systems in the form of quantitative indicator values for a number of parameters, which encompass calculated environmental impact potentials, resource and energy use, waste generation and material and energy outputs from the product system that may be reused, recycled or recovered into other, unspecified product life cycles. These parameters are listed below along with the abbreviations used for them in the tables of indicator values that follow.

Parameter	Abbreviation	Units
Potential environmental impacts		
Climate change – GWP fossil	GWP-fossil	kg CO_2 eq
Climate change – GWP biogenic	GWP-biogenic	kg CO_2 eq
Climate change – GWP land transformation	GWP-luluc	kg CO_2 eq
Climate change – GWP total	GWP-total	kg CO_2 eq
Climate change - GWP fossil & land transformation [1]	GWP-GHG	kg CO_2 eq
Acidification potential	AP	mol H^+ eq
Eutrophication – freshwater	EP-freshwater	kg P eq & kg PO_4^{3-} eq
Eutrophication – marine	EP-marine	kg N eq
Eutrophication – terrestrial	EP-terrestrial	mol N eq
Photochemical ozone formation	POFP	kg NMVOC eq
Ozone depletion	ODP	kg CFC-11 eq
Depletion of abiotic resources – minerals & metals [2]	ADPMM	kg Sb eq
Depletion of abiotic resources – fossil fuels [2]	ADPFF	MJ, ncv
Water (user) deprivation potential [2]	WDP	m^3 world-eq deprived

Environmental Performance-Related Information

Parameter	Abbreviation	Units
Resource use		
Renewable primary energy as energy carrier	PERE	MJ
Renewable primary energy resources as material utilisation	PERM	MJ
Total renewable primary energy use (sum of the two parameters above)	PERT	MJ
Non-renewable primary energy as energy carrier	PENRE	MJ
Non-renewable primary energy resources as material utilisation	PENRM	MJ
Total non-renewable primary energy use (sum of the two parameters above)	PENRT	MJ
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ
Use of non-renewable secondary fuels	NRSF	MJ
Net use of fresh water	FW	m^3
Wastes		
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	TRWD	kg
Output flows		
Components for re-use	CRU	kg
Materials for recycling	MFR	kg
Materials for energy recovery	MER	kg
Exported energy - electrical	EEE	MJ
Exported energy - thermal	EET	MJ

1 - GWP-GHG includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

2 - The results of this environmental impact indicator shall be used with care because either the uncertainties associated with the results are high or there is limited experience with the indicator

LCA Results

TECH PANELS
Environmental indicator results for OPL Tech Panel are shown in the 4 following tables for the declared unit of one square metre; modules A1 - A3 are shown on an aggregated basis.

Environmental Impacts (EN 15804 + A2)	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq	5.53E+01	1.67E+00	1.94E-01	3.46E-02	1.54E+00	5.04E-01	3.70E-01	-3.07E+01
GWP-biogenic	kg CO_2 eq	-2.93E+01	-6.40E-04	2.13E+00	-3.58E-05	-5.90E-04	-3.62E-02	5.58E-01	3.13E+00
GWP-luluc	kg CO_2 eq	6.77E-02	7.30E-04	1.00E-04	2.20E-06	6.70E-04	6.10E-04	2.70E-04	-1.61E-01
GWP-total	kg CO_2 eq	2.61E+01	1.67E+00	2.33E+00	3.46E-02	1.54E+00	4.68E-01	9.29E-01	-2.77E+01
GWP-GHG	kg CO_2 eq	5.56E+01	1.67E+00	1.41E+00	3.46E-02	1.54E+00	5.06E-01	9.24E-01	-3.10E+01
AP	mol H^+ eq	2.82E-01	3.96E-03	1.20E-03	8.40E-05	3.65E-03	4.34E-03	1.52E-03	-1.83E-01
EP-freshwater	kg P eq	3.48E-03	1.62E-05	3.27E-06	1.11E-06	1.49E-05	3.88E-05	9.26E-06	-1.59E-03
	kg PO_4^{3-} eq	1.07E-02	4.96E-05	1.00E-05	3.41E-06	4.58E-05	1.19E-04	2.84E-05	-4.87E-03
EP-marine	kg N eq	4.30E-02	5.20E-04	6.00E-04	1.76E-05	4.80E-04	3.40E-04	5.50E-04	-3.29E-02
EP-terrestrial	mol N eq	4.71E-01	5.75E-03	4.00E-03	1.90E-04	5.31E-03	4.42E-03	3.07E-03	-3.46E-01
POFP	kg NMVOC eq	1.63E-01	2.76E-03	1.53E-03	5.14E-05	2.55E-03	1.63E-03	1.17E-03	-8.77E-02
ODP	kg CFC-11 eq	1.63E-05	3.69E-07	3.34E-08	3.50E-09	3.41E-07	6.77E-08	4.80E-08	-1.49E-06
ADPMM	kg Sb eq	9.70E-04	6.01E-05	2.88E-06	2.69E-08	5.55E-05	3.03E-05	2.50E-06	-1.53E-02
ADPFF	MJ, ncv	8.57E+02	2.46E+01	2.78E+00	6.07E-01	2.27E+01	6.72E+00	5.27E+00	-3.87E+02
WDP	m^3 world-eq dprv	1.05E+04	2.98E+01	2.08E+00	4.87E-01	2.75E+01	4.11E+01	4.33E+00	-2.73E+03
Resource use									
PERE	MJ	4.19E+02	4.24E-01	5.58E-02	3.78E-03	3.92E-01	1.23E+00	2.12E-01	-7.64E+01
PERM	MJ	1.10E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.29E+02	4.24E-01	5.58E-02	3.78E-03	3.92E-01	1.23E+00	2.12E-01	-7.64E+01
PENRE	MJ	9.97E+02	2.52E+01	3.15E+00	9.59E-01	2.33E+01	7.79E+00	5.51E+00	-4.08E+02
PENRM	MJ	2.14E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.02E+03	2.52E+01	3.15E+00	9.59E-01	2.33E+01	7.79E+00	5.51E+00	-4.08E+02
SM	kg	6.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	9.09E-01	1.53E-02	1.20E-03	4.49E-05	1.41E-02	3.17E-02	3.47E-03	-3.37E-01
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
FW	m^3	7.92E-01	2.13E-03	3.50E-04	1.30E-04	1.96E-03	3.25E-03	2.85E-03	-4.11E-01
Waste									
HWD	kg	6.32E+00	2.94E-02	7.07E-03	1.68E-03	2.71E-02	3.99E-02	8.56E-02	-5.73E+00
NHWD	kg	9.27E+01	1.63E+00	7.78E-01	4.78E-02	1.51E+00	2.40E+00	1.36E+01	-5.23E+01
TRWD	kg	3.76E-03	1.70E-04	2.04E-05	7.33E-06	1.60E-04	4.08E-05	2.30E-05	-7.10E-04
Output flows									
CRU	kg	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	1.72E+00	9.99E-03	3.00E+00	2.79E-05	9.23E-03	2.34E+01	1.50E-03	-1.44E+00
MER	kg	1.07E-02	1.70E-04	1.34E-05	6.41E-07	1.60E-04	3.50E-04	3.68E-05	-2.01E-02
EEE	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
EET	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

LCA Results

Additional Environmental Information
ENVIRONMENTAL IMPACTS (EN 15804+A1:2013)
TECH PANELS
For information, indicator values calculated using the methods prescribed in the earlier version of EN 15804 (EN 15804+A1:2013) are provided in the table below for the declared unit of 1m^2; modules A1 - A3 are shown on an aggregated basis.

Environmental Impacts (EN 15804 + A1)		Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Global warming potential	GWP	kg CO_2 eq	5.41E+01	1.65E+00	1.02E+00	3.41E-02	1.53E+00	4.96E-01	7.14E-01	-2.96E+01
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq	1.59E-05	2.95E-07	2.77E-08	3.97E-09	2.72E-07	5.82E-08	3.87E-08	-1.39E-06
Acidification potential of land and water	AP	kg SO_2 eq	2.45E-01	3.43E-03	1.15E-03	7.11E-05	3.17E-03	3.90E-03	1.63E-03	-1.61E-01
Eutrophication potential	EP	kg PO_4^{3-} eq	2.75E-02	3.40E-04	3.00E-04	9.58E-06	3.10E-04	2.70E-04	2.70E-04	-1.78E-02
Formation potential of tropospheric ozone photochemical oxidants	POCP	kg ethene eq	3.09E-02	2.10E-04	2.80E-04	3.24E-06	1.90E-04	1.90E-04	2.00E-04	-9.47E-03
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	9.70E-04	6.01E-05	2.88E-06	2.69E-08	5.55E-05	3.03E-05	2.50E-06	-1.53E-02
Abiotic depletion potential for fossil resources	ADPF	MJ	8.57E+02	2.46E+01	2.78E+00	6.07E-01	2.27E+01	6.72E+00	5.27E+00	-3.87E+02

Biogenic carbon
Carbon dioxide (CO_2) is absorbed from the atmosphere by trees, so any wood-based product contains some carbon from this source. This carbon is considered as a negative emission in some carbon accounting systems. The biogenic carbon in the product and its packaging in this EPD is shown below (per declared unit).

Biogenic carbon content per declared unit	Unit	Quantity
Biogenic carbon content in product	kg C	3.5
Biogenic carbon content in packaging	kg C	1.5

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Interpretation

The overall GWPtotal (carbon footprint) includes a large negative contribution from plywood, representing CO_2 absorbed into growing trees and a large positive contribution from production of aluminium.

The positive GWP biogenic for Module A5 reflects the biogenic C content of pallets which leave the system here as components for re-use. Across the whole A1 to C4 system net GWPbiogenic is negative, because only around half of the carbon contained in the wood is assumed to be emitted (either to air or water) from the landfill even on an infinite timeframe; the remainder is assumed to remain in situ (e.g. as soil carbon).

The Water Deprivation Potential and GWPluluc indicators are strongly influenced by data relating to aluminium production. However, there are weaknesses in the relevant background data, therefore the indicator values obtained are considered unreliable. GWPluluc makes only a small contribution to GWPtotal for these products.

For ODP, releases of Halon 1301, Halon 1211 and CFC-114 in generic inventory data for upstream processes account for almost 95% of the indicator values obtained. Some information sources of these generic data predate Montreal Protocol deadlines for replacement of these substances in all but essential uses. ODP indicator values should therefore be treated with caution.

PENRE and ADPFF, although reported in the same units, are calculated by different methods. PENRE includes nuclear energy and energy in wood extracted from primary forests, whereas ADPFF does not. The fossil fuel-derived component of PENRE is identical to the ADPFF indicator value.

References

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Glossary
The International EPD® System: a programme for Type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. (www.environdec.com)

Life cycle assessment (LCA): LCA studies the environmental aspects and quantifies the potential impacts (positive or negative) of a product (or service) throughout its entire life. ISO standards ISO 14040 and ISO 14044 set out conventions for conducting LCA.

REACH Regulation: REACH is the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals. It entered into force in 2007, replacing the former legislative framework for chemicals in the EU.

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