Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019 for:

Exterior Claddings

from

Nerkoon Höyläämö Oy

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-08101
Publication date:	2023-03-31
Valid until:	2028-03-17

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

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR2019:14, Construction products, version 1.11. c-PCR-006 (to PCR 2019:2014): Wood and wood-based products for use in construction (EN 16485:2014), version 2019-12-20. UN CPC code(s): 031, 311, 312, 313, 314, 315, 316, 319
PCR review was conducted by: *The Technical Committee of the International EPD® System.* *Chair of the PCR review was Claudia A. Peña.* *The review panel may be contacted via info@environdec.com.*
Life Cycle Assessment (LCA)
LCA accountability: *Emma Salminen and Lassi Leinonen, Etteplan Finland Oy*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Hannu Karppi, Ramboll Finland Oy Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

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. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Nerkoon Höyläämö Oy
Contact: Joonas Jaskari
Description of the organisation: Nerkoon Höyläämö is an innovative expert in the timber industry that offers its clients a comprehensive system delivery with its guarantees and warranties. Our objective is to develop safe and long-lasting wood products for homes of the future as well as services that improve the quality and also the efficiency of construction. Our main focus is on production of high-quality and sustainable exterior claddings, which can be achieved with our wide range of machinery at our disposal throughout the whole process of manufactured timber.
Product-related or management system-related certifications: PEFC registered, Certificate of constancy of performance 0416-CPR-10969-03, EN 14915:2013
Name and location of production site(s): Nerkoon Höyläämö Oy, Linnankylä, Finland

Product information

Product name: Exterior Claddings as Natural, Painted or with Fire-Retardant
Product identification: Exterior Claddings as Natural, Painted or with Fire-Retardant
Product description: Exterior Claddings are intended for use in exterior of buildings for weather resistance and personification. Exterior Claddings are made of spruce and the products can be delivered as natural, painted or in some cases as painted with fire-retardants. Profiling of the wood and colour tones for painted and fire-retardant Exterior Claddings can be made according the customers wishes and there are also various options in surface structures of the exterior claddings to choose from. Paints that are used to paint both Painted Exterior Claddings and Fire-Retardant Exterior Claddings are water-based.

Natural Exterior Cladding

Parameter	Natural exterior cladding
Dimension [mm]	23 x 145
Wood density [kg/m^3]	450
Average moisture content [%]	15
Conversion factor, cubic meter per kilogram	0.00222
Conversion factor, meter per cubic meter	300

Painted Exterior Cladding

Parameter	Natural exterior cladding
Dimension [mm]	23 x 145
Wood density [kg/m^3]	446
Average moisture content [%]	14

Conversion factor, cubic meter per kilogram	0.00220
Conversion factor, meter per cubic meter	300

Fire-retardant Exterior Cladding

Parameter	Natural exterior cladding
Dimension [mm]	23 x 145
Wood density [kg/m^3]	446
Average moisture content [%]	14
Conversion factor, cubic meter per kilogram	0.00214
Conversion factor, meter per cubic meter	300

Fire-retardant(transparent) Exterior Cladding

Parameter	Natural exterior cladding
Dimension [mm]	23 x 145
Wood density [kg/m^3]	446
Average moisture content [%]	14
Conversion factor, cubic meter per kilogram	0.00219
Conversion factor, meter per cubic meter	300

UN CPC code: 312, 313
Geographical scope: A1: sawn spruce planks purchased from Finnish sawmills, wood material is from Finland. A3: manufacturing site is located in Finland. C1-4 (+D): Assumed to take place in Denmark.

LCA information

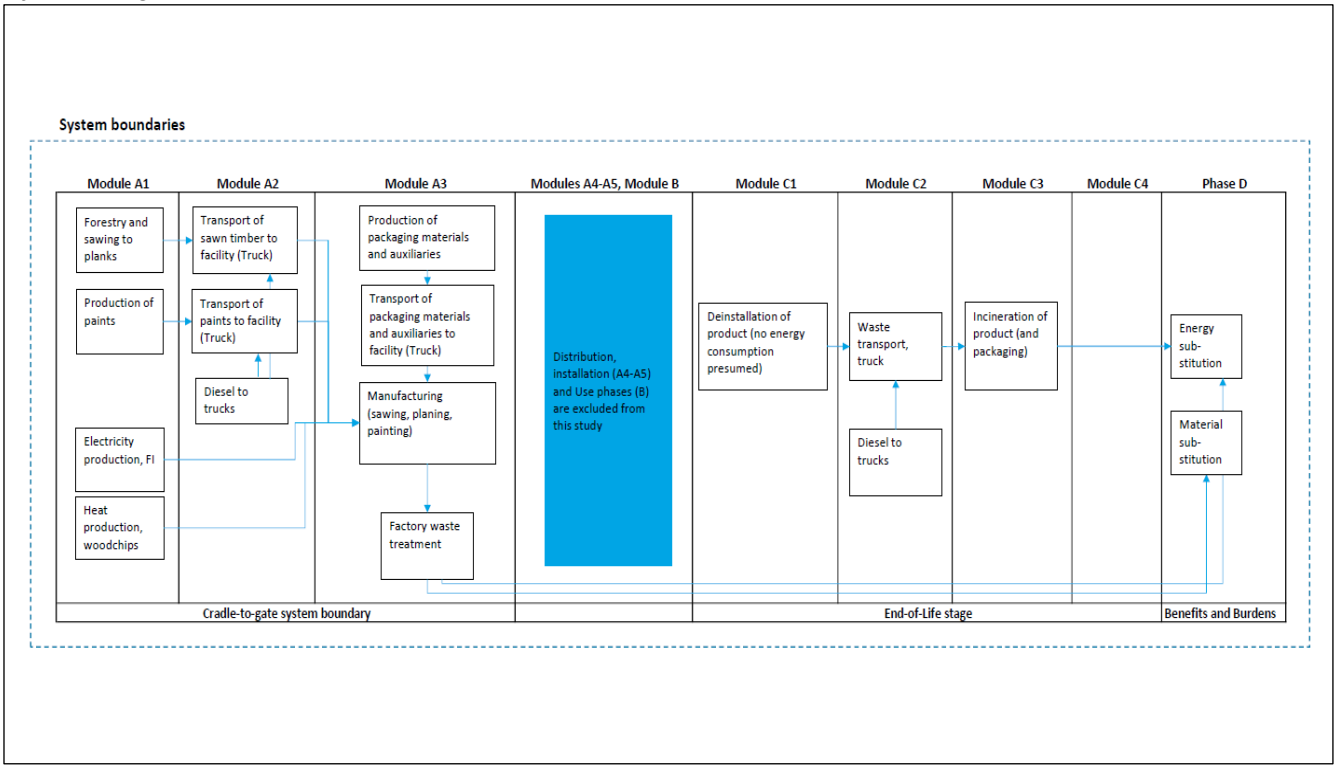
Declared unit: 1 m3 of natural, painted, fire-retardant or fire-retardant(transparent) exterior cladding from cradle to gate with modules C and D.
Reference service life: Not applicable for declared unit
Time representativeness: Primary data of raw material supply and manufacturing site operations (energy use, generation of waste streams etc.) is based on annual and/or product specific data for a 12-month period from 2021-11 to 2022-10. The time period represents well the average production of studied product. The main raw material (sawn plank) is modelled with recent industry average (Sahateollisuus ry, 2021) EPD of sawn timber (spruce and pine sawn plank) published in 2021.

Database(s) and LCA software used: GaBi 10.6 software; GaBi professional database 2022.2 and Ecoinvent 3.8 (cut-off system model)

Description of system boundaries:
Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

Transportation to user, construction and use stages are excluded since the actual operations possibly generating environmental impacts are depending on the customer in question and the use solution of the studied product.

System diagram:



More information: For information on Nerkoon Höyläämö visit: http://www.nerkoon.fi/en/.

Cut off rule applied: Mass and energy**:** The cut off rule is reflected in the inputs of the product system studied separately for each module. Flows accounting less than 1% of the overall input mass or energy flows may be excluded from the study if appropriate LCI data or even proxy data is not available. Additionally, the sum of excluded flows should not exceed 5% of the total inflows (by mass or energy).

Allocation: During the manufacturing process, wooden residues are formed: wood shavings from sawing and planing. The wood shavings are considered co-products as they are sold for a small price, but as a conservative approach all burdens are allocated to the main products as the wood shavings value is low.

Description of life cycle stages

Module A1 includes the production of raw materials for the manufacturing of the exterior cladding products. Raw materials include spruce harvested in Finland, paints, and fire-retardants. Production plant has an onsite heat boiler. The energy production unit uses wood residues of studied facility as fuel.

Environmental impacts from internal wood combustion and from purchased electricity are included in module A1.

Module A2 comprises of transportation processes up to the production plant gate. All materials are transported to the studied facility by road.

Module A3 includes the emissions from forklifts at the production plant, production of packaging materials and treatment of solid wastes generated on manufacturing site. Packaging materials are purchased from Finnish suppliers. Climate change (total) impact of purchased electricity is 0.34 kg CO_2 eq./kWh (based on Finnish residual grid mix).

Modules C1-C4 describe the deconstruction of the exterior claddings, transportation to waste processing, waste processing and disposal. Module C1 is assumed to have no environmental impacts, as the products could be removed from use by hand. For C2 100 km transport to waste treatment is assumed. Energy recovery is assumed in a municipal waste incineration plant for all products in C3. EoL stage and credits are assumed to take place in Denmark and are modelled based on Danish data.

Module D describes the potential for reuse, recycling and recovery across the life cycle. Benefits from energy recovery are calculated with Danish electricity grid mix and heat from natural gas. Benefits from manufacturing facilities wastes are calculated in module D and assumed to be treated in Finland.

Modules A1–A3 are based on actual manufacturing data of studied exterior cladding products. Life cycle stages from module C1 onwards are always based on assumptions since there are multiple users of the product and user- and country-specific variations in operations exist in construction, use, deconstruction and EoL stages. Energy consumption in deconstruction (C1) is assumed to be minimal and not included in this study. The most likely EoL option for exterior cladding products in European context is energy recovery when a building is demolished.

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	FI	FI	FI	ND	ND	ND	ND	ND	ND	ND	ND	ND	DK	DK	DK	DK	DK
Specific data used	Natural 51% Painted 50% Fire-retardant 50% Transparent fire-retardant 50%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Natural ± 9* Painted ±7* Fire-retardant ±6* Transparent fire-retardant ±7*			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

*For products that are specified in additional environmental information. For these products the base results without any extrapolation are seen as representative.

Content information – Natural Exterior Cladding

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood, Spruce, 15 % moisture content	450	0%	100% renewable material
TOTAL	450	0%	100% renewable material
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
PET band	0.15	0.03%	
Polyethylene wrap	0.195	0.05%	
TOTAL	0.345	0.08%	

There are no SVHC substances in the product.

Content information – Painted Exterior Cladding

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood, Spruce, 14 % moisture content	446	0%	100% renewable material
Paint	7.65	0%	0% renewable material
TOTAL	453.65	0%	100% renewable material
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
PET band	0.15	0.03%	
Polyethylene wrap	0.195	0.04%	
TOTAL	0.345	0.08%	

There are no SVHC substances in the product.

Content information – Fire-retardant Exterior Cladding

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood, Spruce, 14 % moisture content	446	0%	100% renewable material
Paint and fire-retardant	20.03	0%	0% renewable material
TOTAL	466.13	0%	100% renewable material

Packaging materials	Weight, kg	Weight-% (versus the product)
PET band	0.15	0.03%
Polyethylene wrap	0.195	0.04%
TOTAL	0.345	0.07%

There are no SVHC substances in the product.

Content information – Fire-retardant(transparent) Exterior Cladding

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood, Spruce, 14 % moisture content	446	0%	100% renewable material
Paint and fire-retardant	10.55	0%	0% renewable material
TOTAL	456.65	0%	100% renewable material

Packaging materials	Weight, kg	Weight-% (versus the product)
PET band	0.15	0.03%
Polyethylene wrap	0.195	0.04%
TOTAL	0.345	0.08%

There are no SVHC substances in the product.

Results of the environmental performance indicators – Natural Exterior Cladding

Mandatory impact category indicators according to EN 15804 – Natural Exterior Cladding

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	4.66E+01	4.37E+00	2.97E+00	5.39E+01	0.00E+00	3.63E+00	1.25E+01	0.00E+00	-2.41E+02
GWP-biogenic	kg CO_2 eq.	-7.08E+02	1.68E-02	-1.02E-02	-7.08E+02	0.00E+00	1.40E-02	7.08E+02	0.00E+00	-4.11E-01
GWP-luluc	kg CO_2 eq.	4.13E-01	3.45E-02	3.04E-04	4.48E-01	0.00E+00	2.91E-02	1.55E-03	0.00E+00	-3.26E-02
GWP-total	kg CO_2 eq.	-6.61E+02	4.42E+00	2.96E+00	-6.54E+02	0.00E+00	3.67E+00	7.21E+02	0.00E+00	-2.41E+02
ODP	kg CFC 11 eq.	6.69E-06	6.32E-13	8.67E-08	6.78E-06	0.00E+00	4.24E-13	6.12E-11	0.00E+00	-2.58E-09
AP	mol H^+ eq.	5.04E-01	5.65E-03	1.05E-02	5.21E-01	0.00E+00	2.49E-02	1.15E-01	0.00E+00	-2.20E-01
EP-freshwater	kg P eq.	5.05E-03	1.83E-05	4.49E-05	5.12E-03	0.00E+00	1.54E-05	1.46E-05	0.00E+00	-4.98E-04
EP-marine	kg N eq.	2.05E-01	1.86E-03	3.65E-03	2.11E-01	0.00E+00	1.21E-02	3.77E-02	0.00E+00	-8.13E-02
EP-terrestrial	mol N eq.	2.23E+00	2.16E-02	3.99E-02	2.29E+00	0.00E+00	1.34E-01	5.49E-01	0.00E+00	-8.41E-01
POCP	kg NMVOC eq.	5.52E-01	4.86E-03	1.05E-02	5.68E-01	0.00E+00	2.34E-02	1.02E-01	0.00E+00	-2.12E-01
ADP-minerals &metals*	kg Sb eq.	7.73E-05	5.20E-07	1.79E-06	7.96E-05	0.00E+00	4.35E-07	1.49E-06	0.00E+00	-4.64E-05
ADP-fossil*	MJ	1.06E+03	6.78E+01	5.13E+01	1.18E+03	0.00E+00	5.67E+01	1.69E+02	0.00E+00	-3.60E+03
WDP*	m^3	1.72E+01	5.96E-02	5.37E-01	1.78E+01	0.00E+00	4.83E-02	8.45E+01	0.00E+00	-7.78E+00
Acronyms	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 Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

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

Additional mandatory and voluntary impact category indicators – Natural Exterior Cladding

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	4.70E+01	4.42E+00	2.98E+00	5.44E+01	0.00E+00	3.68E+00	1.26E+01	0.00E+00	-2.42E+02

Resource use indicators – Natural Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.22E+03	4.72E+00	2.07E+00	1.23E+03	0.00E+00	3.93E+00	3.92E+01	0.00E+00	0.00E+00
PERM	MJ	7.47E+03	0.00E+00	0.00E+00	7.47E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.20E+03
PERT	MJ	8.69E+03	4.72E+00	2.07E+00	8.70E+03	0.00E+00	3.93E+00	3.92E+01	0.00E+00	-2.20E+03
PENRE	MJ	1.07E+03	6.81E+01	5.13E+01	1.19E+03	0.00E+00	5.69E+01	1.69E+02	0.00E+00	-3.60E+03
PENRM	MJ.	0.00E+00	0.00E+00	1.24E+01	1.24E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.07E+03	6.81E+01	6.38E+01	1.20E+03	0.00E+00	5.69E+01	1.69E+02	0.00E+00	-3.60E+03
SM	kg	1.55E-01	0.00E+00	0.00E+00	1.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.14E+00	5.52E-03	1.34E-02	1.16E+00	0.00E+00	4.54E-03	1.99E+00	0.00E+00	-7.77E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

[1] The indicator 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.

Waste indicators – Natural Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2.85E-02	4.96E-10	2.40E-01	2.68E-01	0.00E+00	3.01E-10	1.63E-08	0.00E+00	-4.38E-07
Non-hazardous waste disposed	kg	9.75E-02	1.12E-02	2.44E-01	3.52E-01	0.00E+00	9.27E-03	4.56E+02	0.00E+00	-3.93E+00
Radioactive waste disposed	kg	7.49E-02	1.32E-04	4.62E-04	7.55E-02	0.00E+00	1.06E-04	9.99E-03	0.00E+00	-8.69E-02

Output flow indicators – Natural Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.04E-01	2.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.87E-02	1.87E-02	0.00E+00	0.00E+00	4.50E+02	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	2.46E-02	2.46E-02	0.00E+00	0.00E+00	1.18E+03	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	4.61E-02	4.61E-02	0.00E+00	0.00E+00	2.12E+03	0.00E+00	0.00E+00

Information on biogenic carbon content – Natural Exterior Cladding

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	196
Biogenic carbon content in packaging	kg C	0

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

Results of the environmental performance indicators – Painted Exterior Cladding

Mandatory impact category indicators according to EN 15804 – Painted Exterior Cladding

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	8.70E+01	4.58E+00	2.97E+00	9.45E+01	0.00E+00	3.66E+00	3.08E+01	0.00E+00	-2.41E+02
GWP-biogenic	kg CO_2 eq.	-7.02E+02	1.76E-02	-1.02E-02	-7.02E+02	0.00E+00	1.41E-02	7.02E+02	0.00E+00	-4.10E-01
GWP-luluc	kg CO_2 eq.	4.21E-01	3.62E-02	3.04E-04	4.58E-01	0.00E+00	2.93E-02	1.59E-03	0.00E+00	-3.26E-02
GWP-total	kg CO_2 eq.	-6.14E+02	4.64E+00	2.96E+00	-6.07E+02	0.00E+00	3.70E+00	7.32E+02	0.00E+00	-2.42E+02
ODP	kg CFC 11 eq.	1.06E-05	6.57E-13	8.67E-08	1.07E-05	0.00E+00	4.27E-13	1.68E-08	0.00E+00	-2.58E-09
AP	mol H^+ eq.	7.42E-01	7.20E-03	1.05E-02	7.60E-01	0.00E+00	2.51E-02	1.16E-01	0.00E+00	-2.20E-01
EP-freshwater	kg P eq.	1.19E-02	1.93E-05	4.49E-05	1.19E-02	0.00E+00	1.55E-05	3.93E-05	0.00E+00	-4.97E-04
EP-marine	kg N eq.	2.55E-01	2.61E-03	3.65E-03	2.61E-01	0.00E+00	1.22E-02	3.81E-02	0.00E+00	-8.13E-02
EP-terrestrial	mol N eq.	2.65E+00	3.00E-02	3.99E-02	2.72E+00	0.00E+00	1.35E-01	5.52E-01	0.00E+00	-8.41E-01
POCP	kg NMVOC eq.	6.92E-01	6.32E-03	1.05E-02	7.09E-01	0.00E+00	2.36E-02	1.03E-01	0.00E+00	-2.12E-01
ADP-minerals &metals*	kg Sb eq.	1.85E-04	5.47E-07	1.79E-06	1.87E-04	0.00E+00	4.39E-07	1.97E-06	0.00E+00	-4.63E-05
ADP-fossil*	MJ	1.84E+03	7.12E+01	5.13E+01	1.97E+03	0.00E+00	5.71E+01	1.69E+02	0.00E+00	-3.60E+03
WDP*	m^3	7.12E+02	6.25E-02	5.37E-01	7.13E+02	0.00E+00	4.87E-02	8.38E+01	0.00E+00	-7.77E+00
Acronyms	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 Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

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

Additional mandatory and voluntary impact category indicators – Painted Exterior Cladding

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	8.74E+01	4.64E+00	2.98E+00	9.50E+01	0.00E+00	3.70E+00	3.08E+01	0.00E+00	-2.42E+02

Resource use indicators – Painted Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.27E+03	4.95E+00	2.07E+00	1.28E+03	0.00E+00	3.96E+00	3.88E+01	0.00E+00	-2.20E+03
PERM	MJ	7.99E+03	0.00E+00	0.00E+00	7.99E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.26E+03	4.95E+00	2.07E+00	9.27E+03	0.00E+00	3.96E+00	3.88E+01	0.00E+00	-2.20E+03
PENRE	MJ	1.66E+03	7.15E+01	5.13E+01	1.78E+03	0.00E+00	5.74E+01	1.69E+02	0.00E+00	-3.60E+03
PENRM	MJ.	1.75E+02	0.00E+00	1.24E+01	1.87E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.83E+03	7.15E+01	6.38E+01	1.97E+03	0.00E+00	5.74E+01	1.69E+02	0.00E+00	-3.60E+03
SM	kg	1.55E-01	0.00E+00	0.00E+00	1.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.74E+01	5.79E-03	1.34E-02	1.74E+01	0.00E+00	4.57E-03	1.97E+00	0.00E+00	-7.76E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

[2] The indicator 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.

Waste indicators – Painted Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2.85E-02	5.14E-10	2.40E-01	2.68E-01	0.00E+00	3.04E-10	1.62E-08	0.00E+00	-4.38E-07
Non-hazardous waste disposed	kg	1.69E-01	1.18E-02	2.44E-01	4.24E-01	0.00E+00	9.35E-03	4.60E+02	0.00E+00	-3.93E+00
Radioactive waste disposed	kg	1.27E-01	1.38E-04	4.62E-04	1.27E-01	0.00E+00	1.06E-04	9.90E-03	0.00E+00	-8.67E-02

Output flow indicators – Painted Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.04E-01	2.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.87E-02	1.87E-02	0.00E+00	0.00E+00	4.54E+02	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	2.46E-02	2.46E-02	0.00E+00	0.00E+00	1.18E+03	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	4.61E-02	4.61E-02	0.00E+00	0.00E+00	2.12E+03	0.00E+00	0.00E+00

Information on biogenic carbon content – Painted Exterior Cladding

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	196
Biogenic carbon content in packaging	kg C	0

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

Results of the environmental performance indicators – Fire-retardant Exterior Cladding

Mandatory impact category indicators according to EN 15804 – Fire-retardant Exterior Cladding

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.35E+02	4.87E+00	2.97E+00	1.43E+02	0.00E+00	3.76E+00	6.03E+01	0.00E+00	-2.45E+02
GWP-biogenic	kg CO_2 eq.	-7.02E+02	1.87E-02	-1.02E-02	-7.02E+02	0.00E+00	1.45E-02	7.02E+02	0.00E+00	-4.16E-01
GWP-luluc	kg CO_2 eq.	4.60E-01	3.85E-02	3.04E-04	4.99E-01	0.00E+00	3.01E-02	1.67E-03	0.00E+00	-3.30E-02
GWP-total	kg CO_2 eq.	-5.67E+02	4.93E+00	2.96E+00	-5.59E+02	0.00E+00	3.81E+00	7.62E+02	0.00E+00	-2.46E+02
ODP	kg CFC 11 eq.	1.66E-05	6.91E-13	8.67E-08	1.66E-05	0.00E+00	4.39E-13	4.36E-08	0.00E+00	-2.60E-09
AP	mol H^+ eq.	1.31E+00	9.20E-03	1.05E-02	1.33E+00	0.00E+00	2.58E-02	1.18E-01	0.00E+00	-2.23E-01
EP-freshwater	kg P eq.	3.41E-02	2.05E-05	4.49E-05	3.42E-02	0.00E+00	1.60E-05	7.92E-05	0.00E+00	-5.04E-04
EP-marine	kg N eq.	2.79E-01	3.59E-03	3.65E-03	2.86E-01	0.00E+00	1.25E-02	3.93E-02	0.00E+00	-8.26E-02
EP-terrestrial	mol N eq.	2.99E+00	4.08E-02	3.99E-02	3.07E+00	0.00E+00	1.39E-01	5.65E-01	0.00E+00	-8.55E-01
POCP	kg NMVOC eq.	8.56E-01	8.20E-03	1.05E-02	8.74E-01	0.00E+00	2.42E-02	1.07E-01	0.00E+00	-2.16E-01
ADP-minerals &metals*	kg Sb eq.	4.57E-04	5.81E-07	1.79E-06	4.60E-04	0.00E+00	4.51E-07	2.77E-06	0.00E+00	-4.69E-05
ADP-fossil*	MJ	2.50E+03	7.57E+01	5.13E+01	2.62E+03	0.00E+00	5.87E+01	1.72E+02	0.00E+00	-3.67E+03
WDP*	m^3	2.54E+03	6.63E-02	5.37E-01	2.54E+03	0.00E+00	5.00E-02	8.39E+01	0.00E+00	-7.88E+00
Acronyms	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 Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

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

Additional mandatory and voluntary impact category indicators – Fire-retardant Exterior Cladding

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[3]	kg CO_2 eq.	1.35E+02	4.93E+00	2.98E+00	1.43E+02	0.00E+00	3.81E+00	6.03E+01	0.00E+00	-2.46E+02

Resource use indicators – Fire-retardant Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.33E+03	5.26E+00	2.07E+00	1.34E+03	0.00E+00	4.07E+00	3.89E+01	0.00E+00	-2.23E+03
PERM	MJ	7.99E+03	0.00E+00	0.00E+00	7.99E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.32E+03	5.26E+00	2.07E+00	9.33E+03	0.00E+00	4.07E+00	3.89E+01	0.00E+00	-2.23E+03
PENRE	MJ	2.36E+03	7.60E+01	5.13E+01	2.48E+03	0.00E+00	5.90E+01	1.72E+02	0.00E+00	-3.67E+03
PENRM	MJ.	4.16E+02	0.00E+00	0.00E+00	4.16E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.77E+03	7.60E+01	5.13E+01	2.90E+03	0.00E+00	5.90E+01	1.72E+02	0.00E+00	-3.67E+03
SM	kg	1.55E-01	0.00E+00	0.00E+00	1.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	5.97E+01	6.15E-03	1.34E-02	5.97E+01	0.00E+00	4.70E-03	1.97E+00	0.00E+00	-7.86E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

[3] The indicator 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.

Waste indicators – Fire-retardant Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2.85E-02	5.38E-10	2.40E-01	2.68E-01	0.00E+00	3.12E-10	1.62E-08	0.00E+00	-4.45E-07
Non-hazardous waste disposed	kg	2.49E-01	1.25E-02	2.27E-01	4.89E-01	0.00E+00	9.61E-03	4.72E+02	0.00E+00	-3.98E+00
Radioactive waste disposed	kg	1.30E-01	1.47E-04	4.62E-04	1.31E-01	0.00E+00	1.09E-04	9.90E-03	0.00E+00	-8.79E-02

Output flow indicators – Fire-retardant Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.04E-01	2.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.87E-02	1.87E-02	0.00E+00	0.00E+00	4.66E+02	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	2.46E-02	2.46E-02	0.00E+00	0.00E+00	1.19E+03	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	4.61E-02	4.61E-02	0.00E+00	0.00E+00	2.16E+03	0.00E+00	0.00E+00

Information on biogenic carbon content – Fire-retardant Exterior Cladding

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	196
Biogenic carbon content in packaging	kg C	0

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

Results of the environmental performance indicators – Fire-retardant(transparent) Exterior Cladding

Mandatory impact category indicators according to EN 15804 – Fire-retardant(transparent) Exterior Cladding

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.23E+02	4.84E+00	2.97E+00	1.31E+02	0.00E+00	3.69E+00	3.73E+01	0.00E+00	-2.42E+02
GWP-biogenic	kg CO_2 eq.	-7.02E+02	1.86E-02	-1.02E-02	-7.02E+02	0.00E+00	1.42E-02	7.02E+02	0.00E+00	-4.12E-01
GWP-luluc	kg CO_2 eq.	5.79E-01	3.83E-02	3.04E-04	6.17E-01	0.00E+00	2.95E-02	1.61E-03	0.00E+00	-3.27E-02
GWP-total	kg CO_2 eq.	-5.78E+02	4.90E+00	2.96E+00	-5.70E+02	0.00E+00	3.73E+00	7.39E+02	0.00E+00	-2.43E+02
ODP	kg CFC 11 eq.	1.23E-05	6.88E-13	8.67E-08	1.24E-05	0.00E+00	4.30E-13	2.31E-08	0.00E+00	-2.58E-09
AP	mol H^+ eq.	1.04E+00	9.02E-03	1.05E-02	1.06E+00	0.00E+00	2.52E-02	1.16E-01	0.00E+00	-2.21E-01
EP-freshwater	kg P eq.	8.95E-03	2.04E-05	4.49E-05	9.01E-03	0.00E+00	1.57E-05	4.86E-05	0.00E+00	-4.99E-04
EP-marine	kg N eq.	3.11E-01	3.50E-03	3.65E-03	3.18E-01	0.00E+00	1.23E-02	3.84E-02	0.00E+00	-8.16E-02
EP-terrestrial	mol N eq.	3.34E+00	3.98E-02	3.99E-02	3.42E+00	0.00E+00	1.36E-01	5.55E-01	0.00E+00	-8.44E-01
POCP	kg NMVOC eq.	8.06E-01	8.03E-03	1.05E-02	8.24E-01	0.00E+00	2.37E-02	1.04E-01	0.00E+00	-2.13E-01
ADP-minerals &metals*	kg Sb eq.	3.51E-03	5.78E-07	1.79E-06	3.51E-03	0.00E+00	4.42E-07	2.16E-06	0.00E+00	-4.64E-05
ADP-fossil*	MJ	1.99E+03	7.53E+01	5.13E+01	2.11E+03	0.00E+00	5.75E+01	1.70E+02	0.00E+00	-3.62E+03
WDP*	m^3	6.97E+01	6.60E-02	5.37E-01	7.03E+01	0.00E+00	4.90E-02	8.38E+01	0.00E+00	-7.80E+00
Acronyms	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 Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

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

Additional mandatory and voluntary impact category indicators – Fire-retardant(transparent) Exterior Cladding

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[4]	kg CO_2 eq.	1.24E+02	4.90E+00	2.98E+00	1.32E+02	0.00E+00	3.73E+00	3.74E+01	0.00E+00	-2.43E+02

Resource use indicators – Fire-retardant(transparent) Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.48E+03	5.24E+00	2.07E+00	1.49E+03	0.00E+00	3.99E+00	3.88E+01	0.00E+00	-2.20E+03
PERM	MJ	7.99E+03	0.00E+00	0.00E+00	7.99E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.48E+03	5.24E+00	2.07E+00	9.49E+03	0.00E+00	3.99E+00	3.88E+01	0.00E+00	-2.20E+03
PENRE	MJ	1.96E+03	7.56E+01	5.13E+01	2.08E+03	0.00E+00	5.78E+01	1.70E+02	0.00E+00	-3.62E+03
PENRM	MJ.	3.95E+02	0.00E+00	0.00E+00	3.95E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.35E+03	7.56E+01	5.13E+01	2.48E+03	0.00E+00	5.78E+01	1.70E+02	0.00E+00	-3.62E+03
SM	kg	2.54E-01	0.00E+00	0.00E+00	2.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.20E+00	6.11E-03	1.34E-02	1.22E+00	0.00E+00	4.61E-03	1.97E+00	0.00E+00	-7.78E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

[4] The indicator 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.

Waste indicators – Fire-retardant(transparent) Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2.01E+01	5.36E-10	2.40E-01	2.03E+01	0.00E+00	3.06E-10	1.62E-08	0.00E+00	-4.39E-07
Non-hazardous waste disposed	kg	4.94E+01	1.25E-02	2.27E-01	4.97E+01	0.00E+00	9.41E-03	4.63E+02	0.00E+00	-3.94E+00
Radioactive waste disposed	kg	1.26E-01	1.46E-04	4.62E-04	1.27E-01	0.00E+00	1.07E-04	9.90E-03	0.00E+00	-8.70E-02

Output flow indicators – Fire-retardant(transparent) Exterior Cladding

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.04E-01	2.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.87E-02	1.87E-02	0.00E+00	0.00E+00	4.57E+02	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	2.46E-02	2.46E-02	0.00E+00	0.00E+00	1.18E+03	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	4.61E-02	4.61E-02	0.00E+00	0.00E+00	2.13E+03	0.00E+00	0.00E+00

Information on biogenic carbon content – Fire-retardant(transparent) Exterior Cladding

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	196
Biogenic carbon content in packaging	kg C	0

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

Additional environmental information

Natural Exterior Cladding

The representativeness of the results for the whole product family have been studied and the LCIA-results of the reference product are also applicable as they are to Natural Exterior Cladding -products with dimensions from 20mm thick and 120 mm wide (20x120mm) to 28mm thick and 198mm wide (28x198mm) with a variation in any environmental impact category less than ±10 %.

For products outside these dimensions extrapolation should be used for the module A1, as the energy consumption per declared unit increases with smaller dimensions of products. In the table below are presented conservative estimates for three smaller dimensions.

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
28x28mm	**Factor**	1.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20x45mm	**Factor**	1.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20x100mm	**Factor**	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Painted Exterior Cladding

The representativeness of the results have been studied and the LCIA-results of the reference product are also applicable to Painted Exterior Cladding -products with dimensions from 23mm thick and 120 mm wide (23x120mm) to 23mm thick and 195mm wide (23x195mm) with a variation in any environmental impact category less than ±10 %.

For products with thickness other than 23 mm or width less than 120mm extrapolation should be used for all the module A1-D, as the energy consumption per declared unit increases with smaller dimensions of products and the painted surface per declared unit increases with smaller dimensions of products. In the table below are presented conservative estimates for two smaller dimensions.

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
20x45mm	**Factor**	1.92	1.12	1.00	1.00	1.01	1.43	1.00	1.01
20x145mm	**Factor**	1.12	1.04	1.00	1.00	1.00	1.12	1.00	1.00

Fire-retardant Exterior Cladding

The representativeness of the results have been studied and the LCIA-results of the reference product are also applicable to Painted Exterior Cladding -products with dimensions from 23mm thick and 120 mm wide (23x120mm) to 23mm thick and 195mm wide (23x195mm) with a variation in any environmental impact category less than ±10 %.

For products with thickness other than 23 mm or width less than 120mm extrapolation should be used for all the module A1-D, as the energy consumption per declared unit increases with smaller dimensions of products and the surface area for surface treatment per declared unit increases with smaller dimensions of products. In the table below are presented conservative estimates for two smaller dimensions.

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
20x45mm	Factor	1.80	1.21	1.00	1.00	1.02	1.43	1.00	1.01
20x145mm	Factor	1.13	1.06	1.00	1.00	1.01	1.13	1.00	1.00

Fire-retardant(transparent) Exterior Cladding

The representativeness of the results have been studied and the LCIA-results of the reference product are also applicable to Painted Exterior Cladding -products with dimensions from 23mm thick and 120 mm wide (23x120mm) to 23mm thick and 195mm wide (23x195mm) with a variation in any environmental impact category less than ±10 %.

For products with thickness other than 23 mm or width less than 120mm extrapolation should be used for all the module A1-D, as the energy consumption per declared unit increases with smaller dimensions of products and the surface area for surface treatment per declared unit increases with smaller dimensions of products. In the table below are presented conservative estimates for two smaller dimensions.

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
20x45mm	Factor	1.89	1.20	1.00	1.00	1.01	1.43	1.00	1.01
20x145mm	Factor	1.13	1.06	1.00	1.00	1.00	1.13	1.00	1.00

References

General Programme Instructions of the International EPD® System. Version 3.01.
PCR 2019:14. Name. Version 1.11
c-PCR-006 (to PCR 2019:2014): Wood and wood-based products for use in construction (EN 16485:2014), version 2019-12-20.
Ecoinvent. 2021. Ecoinvent 3.8 database (cut-off).
EN 15804:2012 + A2:2019. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.
Etteplan Finland Oy. 2023. LCA for exterior wooden claddings.
ISO 14040. 2006. Environmental management – Life cycle assessment – Principles and framework.
ISO 14044. 2006. Environmental management – Life cycle assessment – Requirements and guidelines.
Sphera. 2022. GaBi Professional database 2022.

EPD®

www.environdec.com