

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006 AND EN 15804:2012+A2:2019/AC:2021

SmartEPD-2026-077-1122-01

M44 / M45 / S48 / I48 Upstands



Date of Issue:	Expiration:	Last updated:
Oct 22, 2026	Oct 22, 2031	Oct 22, 2026

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information



General Information

VELUX

Ådalsvej 99, 2970 Hørsholm, Denmark

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epd.support@velux.com

velux.com



Product Name:	M44 / M45 / S48 / I48 Upstands
Declared Unit:	1 m ² of a window ≤ 2.3 m ² (reference dimensions according to EN 17213: 1.23 m × 1.48 m)
Declaration Number:	SmartEPD-2026-077-1122-01
Date of Issue:	October 22, 2026
Expiration:	October 22, 2031
Last updated:	October 22, 2026
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, C1 - C4, D
Market(s) of Applicability:	Europe

General Organization Information

VELUX is a Danish manufacturing company that specializes in roof windows, skylights, sun tunnels and related accessories. The company is headquartered in Hørsholm, Denmark and is a part of VKR Holding A/S. VELUX Group is a founding partner of the global Active House Alliance.

Further information can be found at: <https://www.velux.com>

Limitations, Liability and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

Reference Standards

Standard(s):	ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021
Core PCR:	IBU PCR for Building-Related Products and Services Part A v1.4 Date of issue: April 15, 2024
Sub-category PCR:	IBU PCR Part B: Requirements on the EPD for Windows and Doors v1.0/1.7/1.4 Date of issue: January 26, 2021 Valid until: August 01, 2026

Sub-category PCR review panel:

Contact Smart EPD for more information.

General Program Instructions:

Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:

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EPD Program Operator:

Smart EPD

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585 Grove St., Ste. 145, Herndon, VA 20170, USA

Verification:

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:

External

Rifat Karim

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Independent external verification of EPD, according to ISO 14025 and reference PCR(s):

External

Rifat Karim

Independent Consultant

rifat.chimique@gmail.com

Product Information

Declared Unit:

1 m² of a window ≤ 2.3 m² (reference dimensions according to EN 17213: 1.23 m × 1.48 m)

Mass:

54.8 kg

Product Specificity:

✗ Product Average

✓ Product Specific

Product Description

A timber upstand for mounting rooflight domes, Nordic Dome (Akrylovenlys) or PC Rooflight (PC-ovenlys), and flat glass units, Glass Rooflight (Glasovenlys), on flat or low-pitched roofs, supplied as a solid pine frame (20 to 40 cm high) or as an insulated construction (30 to 90 cm high). The solid upstand is 44 to 45 mm quality V+ pine kept to a maximum 18% moisture content; the insulated upstand (I48) is 48 mm, sandwiching a mineral-wool core between water-resistant plywood facings, glued and nailed. The insulated sandwich upstand (S48) is also 48 mm, with PUR insulation between water-resistant plywood facings. The pine & plywood used in the upstands is 100% PEFC-certified. Frame choice, together with the dome or glazing selected, sets the overall U-value of the rooflight, and upstands can be supplied primed or lined internally with lacquered or plastic-coated metal for a smooth, easy-to-clean finish. This EPD represents timber upstands supplied either as a solid pine upstand in 20 to 40 cm heights or as an insulated upstand in 30 to 90 cm heights.

Results for all variations are reported using the most conservative variant (I48 Insulated Upstand - 90 cm) as the reference. It represents only the upstand. See separate EPD for Rooflight (Nordic Dome (Akrylovenlys), PC Rooflight (PC-ovenlys), or Glass Rooflight (Glasovenlys).

Product Specifications

Product SKU(s):

I48 Insulated Upstand – 90 cm; (Reference)

54.8 kg/m²

I48 Insulated Upstand – 60 cm;	39.9 kg/m ²
I48 Insulated Upstand – 30 cm;	25.1 kg/m ²
S48 Insulated Sandwich Upstand – 90 cm;	38.5 kg/m ²
S48 Insulated Sandwich Upstand – 60 cm;	27.6 kg/m ²
S48 Insulated Sandwich Upstand – 30 cm;	16.8 kg/m ²
M45 Massive Upstand – 40 cm	35.4 kg/m ²
M45 Massive Upstand – 20 cm	20.5 kg/m ²
M44 Massive Upstand – 40 cm	32.3 kg/m ²
M44 Massive Upstand – 20 cm	19.6 kg/m ²

Product Classification Codes:

EC3 - Openings -> TranslucentWallAndRoofAssemblies

Material Composition

Material/Component Category	Origin	% Mass
Fasteners	DK	1.91
Insulation	DK	13.5
Plywood	DK	53.43
Polymers parts	DK	0.55
Softwood	DK	30.61

Packaging Material	Origin	kg Mass
Cardboard	DK	0.09
Pallet	DK	0.05
Plastic cover	DK	0.44

Biogenic Carbon Content	kg C per m ²
Biogenic carbon content in product	6.42
Biogenic carbon content in accompanying packaging	0.07

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year:

Jan 1, 2025 - Dec 31, 2025

Manufacturing Specificity:

✗ Industry Average

✗ Manufacturer Average

✓ Facility Specific

Averaging:

This EPD represents timber upstands supplied either as a solid pine frame in 20 or 40 cm heights or as a self-supporting insulated frame in 30, 60, or 90 cm heights; however, the results for all variations are reported using the most conservative variant as the reference. Therefore, no averaging across product variants was performed.

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

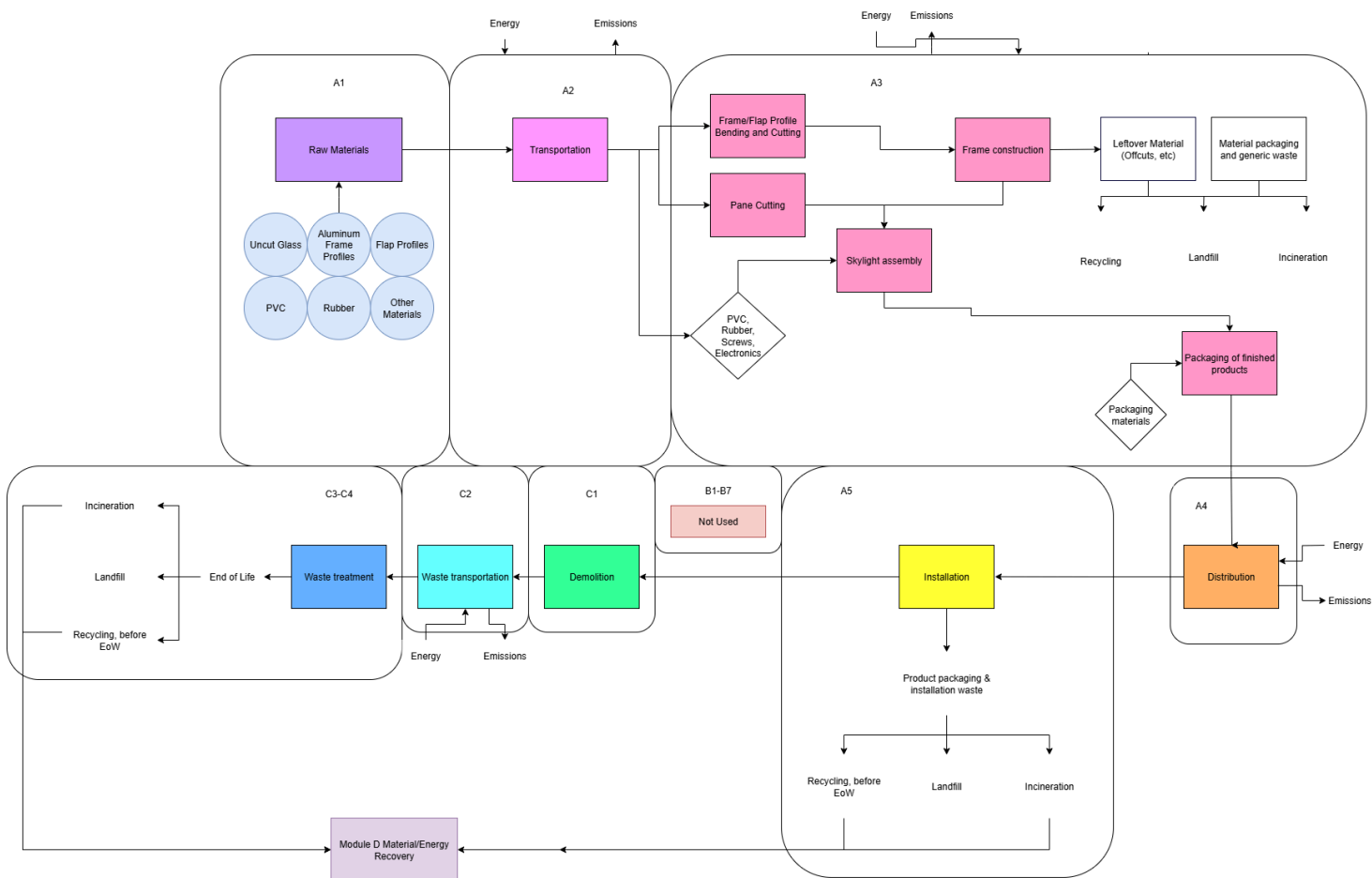
Note:

ND = Module not declared

Plants

Østbirk Østvej 2, Østbirk, Denmark

Product Flow Diagram



Software And Database

LCA Software:

SimaPro v. 10.2

LCI Foreground Database(s):

Ecoinvent v. 3.9.1 | Cut-off by Classification

LCI Background Database(s):

Ecoinvent v. 3.9.1 | Cut-off by Classification

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Precision & Completeness

- **Precision:** Inventory data were directly measured, calculated, or conservatively estimated from primary sources using consistent units and QA checks. Background processes from ecoinvent v3 were adopted with their documented uncertainty/precision metadata where available, preserving a transparent record of data quality.
- **Completeness:** The product system's mass balance and inventory completeness were thoroughly checked. Some exclusions were made in line with the PCR requirements, such as personnel impacts, R&D activities, business travel, and point-of-sale infrastructure. However, no data were intentionally omitted.

Consistency and Reproducibility

- **Consistency:** Primary data for all modules were consistently gathered aiming at the highest level of detail possible. Background processes were modeled mainly with the ecoinvent database. The same allocation rules, cut-off criteria, and impact assessment methods were applied throughout, ensuring methodological coherence and consistent data quality across the entire LCA model.
- **Reproducibility:** This study ensures reproducibility by providing comprehensive disclosure of input–output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness

- **Temporal:** Primary data were collected for a 12-month period representing the 2025 calendar year to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database are typically representative of recent years.
- **Geographical:** Primary data represent VELUX's production facilities. Where applicable, differences in electric grid mix were considered using appropriate secondary data. The use of country-specific data ensures high geographical representativeness, and proxy data were only used when country-specific data were unavailable.
- **Technological:** Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness.

Life Cycle Module Description

Modules A1–A3: The LCA model covers the manufacture of raw materials and components for VELUX products (A1) which are then transported to VELUX facilities by truck (A2). The manufacturing stage (A3) begins with receipt of these materials, which are bent, cut, welded, and assembled into finished flaps and skylight systems. When required, additional parts like DSL grids and electronic components for home-automation systems are custom-cut and assembled to order.

Modules A4–A5: Once manufacture is completed, products are shipped to distribution centers and then to the end user by truck (A4). For installation (A5), a 3% material installation loss was assumed. This module includes disposal of that waste and of the product packaging.

Modules C1–C4 and D: At end of life (C1–C4), the product is assumed to be collected, and each waste stream (e.g., aluminum, glass, PVC) is handled separately—landfilled, recycled, or incinerated with energy recovery. Loads and benefits beyond the system boundary are considered in Module D (e.g., displacement of virgin materials and electricity).

LCA Discussion

Allocation Procedure

Allocation of co-products was avoided, to the extent possible, based on the guidance given in ISO 14044:2006, 4.3, and in EN 15804+A2:2019. Energy use at the facility level was allocated by the amount of product produced. The manufacturing process does not consume water or generate wastewater or air emissions, other than those from fuel combustion. Solid waste was estimated using packaging masses and material losses and allocated following the polluter pays principle.

Cut-off Procedure

The system boundary was defined based on relevance to the goal of the study. For the raw material (A1) and process related inputs (A3), all available energy and material flow data have been included in the model.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:	✓ Yes
Electricity Source:	Offsite
Renewable type(s):	solar
Percent of EPD Owner's product-related electricity covered:	100 %
Commitment pledged for entire EPD validity period:	✓ Yes
Electricity accounting methodology:	Market-based

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Truck and Trailer
Transport Distance:	350 km
Capacity Utilization:	33 %
Packaging Mass:	0.5814 kg
Weight of products transported:	55.38 kg
Capacity utilization volume factor:	1
Assumptions for scenario development:	Transport distance includes finished product to distribution center and distribution center to point of sale.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	3 %
Product Lost per Declared/Functional Unit:	1.644 kg
Mass of Packaging Waste Specified by Type:	0.5814 kg
Biogenic Carbon Contained in Packaging (kg C):	0.06696 kg
Assumptions for scenario development:	Installation Scrap Rate is a conservative assumption

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected Separately:	54.8 kg
Collected with Mixed Construction Waste:	0 kg

Recovery

Recycling:	2.017 kg
Landfill:	8.632 kg
Incineration:	44.15 kg

Assumptions for scenario development:
Disposal and recycling rates as per Environmental Performance Assessment Method for Construction Works / version 1.2 (January 2025).

Reuse, Recovery and / or Recycling Potentials & Relevant Scenario Information (D)

D Module

Recycling Rate of Product:	3.681 %
Net Energy Benefit from Energy Recovery from Waste Treatment Declared as Export Energy in C3:	249.8 MJ
Process and Conversion Efficiencies:	Recycling rates for aluminum, steel and other metals >90%; energy recovery from incineration assumes 18% electrical efficiency and 31% thermal, as per Environmental Performance Assessment Method for Construction Works / version 1.2 (January 2025).

Results

Environmental Impact Assessment Results

EF 3.1

per 1 m² of product of a window ≤ 2.3 m² (reference dimensions according to EN 17213: 1.23 m $\times$ 1.48 m).

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

I48 Insulated Upstand - 90 cm; 54.8 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-2.04e+1	1.94e+0	1.08e+0	0	7.60e-1	7.28e+1	4.00e+0	-2.14e+0
GWP-biogenic	kg CO ₂ eq	EF 3.1	-7.57e+1	6.50e-4	2.35e-1	0	2.54e-4	7.21e+1	3.95e+0	-2.27e-2
GWP-fossil	kg CO ₂ eq	EF 3.1	5.52e+1	1.94e+0	8.44e-1	0	7.60e-1	7.42e-1	4.57e-2	-2.10e+0
GWP-luluc	kg CO ₂ eq	EF 3.1	2.05e-1	9.47e-4	1.03e-5	0	3.71e-4	1.91e-4	2.29e-5	-1.74e-2
ODP	kg CFC11 eq	EF 3.1	1.53e-6	4.41e-8	1.06e-9	0	1.73e-8	1.18e-8	9.14e-10	-5.34e-7
AP	mol H ⁺ eq	EF 3.1	3.97e-1	4.81e-3	2.22e-4	0	1.88e-3	7.13e-3	3.60e-4	-8.09e-2
EP-freshwater	kg P eq	EF 3.1	2.18e-2	1.43e-4	3.45e-6	0	5.61e-5	2.98e-4	6.37e-6	-9.98e-4
EP-marine	kg N eq	EF 3.1	1.06e-1	1.31e-3	1.21e-4	0	5.12e-4	3.79e-3	9.42e-4	-2.11e-2
EP-terrestrial	mol N eq	EF 3.1	1.18e+0	1.34e-2	1.04e-3	0	5.26e-3	3.64e-2	1.58e-3	-3.73e-1
POCP	kg NMVOC eq	EF 3.1	3.82e-1	7.85e-3	2.81e-4	0	3.07e-3	9.28e-3	5.56e-4	-6.60e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	4.81e-4	5.43e-6	6.30e-8	0	2.13e-6	1.17e-6	6.39e-8	-6.88e-6
ADP-fossil	MJ	EF 3.1	9.28e+2	2.95e+1	2.80e-1	0	1.15e+1	5.83e+0	8.23e-1	-2.16e+1
WDP	m ³ depriv.	EF 3.1	4.42e+1	1.41e-1	3.82e-2	0	5.51e-2	-5.09e-1	2.54e-2	-1.28e+0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

I48 Insulated Upright - 60 cm; 39.9 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-1.67e+1	1.42e+0	7.87e-1	0	5.56e-1	5.41e+1	2.97e+0	-1.70e+0
GWP-biogenic	kg CO ₂ eq	EF 3.1	-5.62e+1	4.74e-4	1.71e-1	0	1.86e-4	5.35e+1	2.93e+0	-1.52e-2
GWP-fossil	kg CO ₂ eq	EF 3.1	3.94e+1	1.42e+0	6.15e-1	0	5.56e-1	5.68e-1	3.15e-2	-1.67e+0
GWP-luluc	kg CO ₂ eq	EF 3.1	1.52e-1	6.90e-4	7.52e-6	0	2.71e-4	1.40e-4	1.67e-5	-1.28e-2
ODP	kg CFC11 eq	EF 3.1	1.16e-6	3.21e-8	7.71e-10	0	1.26e-8	8.78e-9	6.41e-10	-4.43e-7
AP	mol H ⁺ eq	EF 3.1	2.76e-1	3.50e-3	1.62e-4	0	1.38e-3	5.29e-3	2.45e-4	-5.97e-2
EP-freshwater	kg P eq	EF 3.1	1.55e-2	1.04e-4	2.52e-6	0	4.10e-5	2.21e-4	4.60e-6	-7.97e-4
EP-marine	kg N eq	EF 3.1	7.45e-2	9.54e-4	8.85e-5	0	3.75e-4	2.81e-3	6.89e-4	-1.57e-2
EP-terrestrial	mol N eq	EF 3.1	8.20e-1	9.80e-3	7.61e-4	0	3.85e-3	2.70e-2	1.06e-3	-2.77e-1
POCP	kg NMVOC eq	EF 3.1	2.68e-1	5.72e-3	2.05e-4	0	2.25e-3	6.88e-3	3.81e-4	-4.97e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	3.67e-4	3.96e-6	4.60e-8	0	1.55e-6	8.66e-7	4.65e-8	-4.63e-6
ADP-fossil	MJ	EF 3.1	6.59e+2	2.15e+1	2.04e-1	0	8.43e+0	4.31e+0	5.80e-1	-1.79e+1
WDP	m ³ depriv.	EF 3.1	3.04e+1	1.03e-1	2.78e-2	0	4.03e-2	-3.77e-1	1.87e-2	-1.12e+0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particulate Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

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I48 Insulated Upright - 30 cm; 25.1 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-1.29e+1	8.90e-1	4.94e-1	0	3.52e-1	3.53e+1	1.93e+0	-1.27e+0
GWP-biogenic	kg CO ₂ eq	EF 3.1	-3.67e+1	2.98e-4	1.08e-1	0	1.18e-4	3.49e+1	1.91e+0	-7.72e-3
GWP-fossil	kg CO ₂ eq	EF 3.1	2.36e+1	8.89e-1	3.87e-1	0	3.51e-1	3.93e-1	1.72e-2	-1.25e+0
GWP-luluc	kg CO ₂ eq	EF 3.1	9.89e-2	4.34e-4	4.73e-6	0	1.71e-4	8.94e-5	1.05e-5	-8.26e-3
ODP	kg CFC11 eq	EF 3.1	7.96e-7	2.02e-8	4.85e-10	0	7.98e-9	5.72e-9	3.69e-10	-3.52e-7
AP	mol H ⁺ eq	EF 3.1	1.55e-1	2.20e-3	1.02e-4	0	8.70e-4	3.45e-3	1.30e-4	-3.84e-2
EP-freshwater	kg P eq	EF 3.1	9.20e-3	6.56e-5	1.58e-6	0	2.59e-5	1.44e-4	2.84e-6	-5.97e-4
EP-marine	kg N eq	EF 3.1	4.33e-2	6.00e-4	5.56e-5	0	2.37e-4	1.84e-3	4.36e-4	-1.03e-2
EP-terrestrial	mol N eq	EF 3.1	4.62e-1	6.16e-3	4.78e-4	0	2.43e-3	1.76e-2	5.49e-4	-1.81e-1
POCP	kg NMVOC eq	EF 3.1	1.54e-1	3.59e-3	1.29e-4	0	1.42e-3	4.49e-3	2.05e-4	-3.35e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	2.54e-4	2.49e-6	2.89e-8	0	9.82e-7	5.62e-7	2.92e-8	-2.37e-6
ADP-fossil	MJ	EF 3.1	3.91e+2	1.35e+1	1.28e-1	0	5.33e+0	2.79e+0	3.36e-1	-1.42e+1
WDP	m ³ depriv.	EF 3.1	1.65e+1	6.44e-2	1.75e-2	0	2.55e-2	-2.44e-1	1.21e-2	-9.76e-1

Note:

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Abbreviations:

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S48 Insulated Sandwich Upstand - 90 cm; 38.5 kg/m2

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	EF 3.1	-1.35e+0	1.36e+0	7.58e-1	0	5.57e-1	6.11e+1	2.94e+0	-5.71e+0
GWP-biogenic	kg CO2 eq	EF 3.1	-5.58e+1	4.57e-4	1.65e-1	0	1.86e-4	5.32e+1	2.92e+0	-1.24e-2
GWP-fossil	kg CO2 eq	EF 3.1	5.43e+1	1.36e+0	5.93e-1	0	5.56e-1	7.95e+0	2.05e-2	-5.69e+0
GWP-luluc	kg CO2 eq	EF 3.1	1.51e-1	6.65e-4	7.25e-6	0	2.71e-4	1.88e-4	1.54e-5	-1.28e-2
ODP	kg CFC11 eq	EF 3.1	2.29e-6	3.10e-8	7.43e-10	0	1.26e-8	1.62e-8	4.75e-10	-7.92e-7
AP	mol H+ eq	EF 3.1	3.54e-1	3.38e-3	1.56e-4	0	1.38e-3	6.92e-3	1.46e-4	-5.76e-2
EP-freshwater	kg P eq	EF 3.1	2.03e-2	1.01e-4	2.43e-6	0	4.10e-5	2.41e-4	4.03e-6	-7.10e-4
EP-marine	kg N eq	EF 3.1	1.10e-1	9.20e-4	8.53e-5	0	3.75e-4	3.75e-3	6.41e-4	-1.63e-2
EP-terrestrial	mol N eq	EF 3.1	1.02e+0	9.44e-3	7.34e-4	0	3.85e-3	3.50e-2	5.81e-4	-2.80e-1
POCP	kg NMVOC eq	EF 3.1	3.55e-1	5.51e-3	1.97e-4	0	2.25e-3	8.87e-3	2.35e-4	-5.34e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	4.96e-4	3.81e-6	4.43e-8	0	1.56e-6	1.20e-6	4.24e-8	-3.33e-6
ADP-fossil	MJ	EF 3.1	1.06e+3	2.07e+1	1.97e-1	0	8.44e+0	5.57e+0	4.38e-1	-8.42e+1
WDP	m3 depriv.	EF 3.1	5.29e+1	9.89e-2	2.68e-2	0	4.03e-2	-3.78e-2	1.83e-2	-1.34e+0

Note:

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Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

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S48 Insulated Sandwich Upstand - 60 cm; 27.6 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-9.70e-1	9.79e-1	5.44e-1	0	3.99e-1	4.39e+1	2.11e+0	-4.10e+0
GWP-biogenic	kg CO ₂ eq	EF 3.1	-4.01e+1	3.28e-4	1.18e-1	0	1.34e-4	3.82e+1	2.09e+0	-8.93e-3
GWP-fossil	kg CO ₂ eq	EF 3.1	3.90e+1	9.79e-1	4.26e-1	0	3.99e-1	5.71e+0	1.47e-2	-4.08e+0
GWP-luluc	kg CO ₂ eq	EF 3.1	1.08e-1	4.77e-4	5.20e-6	0	1.95e-4	1.35e-4	1.10e-5	-9.18e-3
ODP	kg CFC11 eq	EF 3.1	1.64e-6	2.22e-8	5.34e-10	0	9.06e-9	1.17e-8	3.41e-10	-5.68e-7
AP	mol H ⁺ eq	EF 3.1	2.54e-1	2.42e-3	1.12e-4	0	9.88e-4	4.97e-3	1.05e-4	-4.13e-2
EP-freshwater	kg P eq	EF 3.1	1.45e-2	7.22e-5	1.74e-6	0	2.95e-5	1.73e-4	2.89e-6	-5.09e-4
EP-marine	kg N eq	EF 3.1	7.88e-2	6.60e-4	6.12e-5	0	2.69e-4	2.69e-3	4.60e-4	-1.17e-2
EP-terrestrial	mol N eq	EF 3.1	7.35e-1	6.78e-3	5.27e-4	0	2.76e-3	2.51e-2	4.17e-4	-2.01e-1
POCP	kg NMVOC eq	EF 3.1	2.55e-1	3.96e-3	1.41e-4	0	1.61e-3	6.37e-3	1.69e-4	-3.83e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	3.56e-4	2.74e-6	3.18e-8	0	1.12e-6	8.64e-7	3.04e-8	-2.39e-6
ADP-fossil	MJ	EF 3.1	7.58e+2	1.49e+1	1.41e-1	0	6.06e+0	4.00e+0	3.14e-1	-6.04e+1
WDP	m ³ depriv.	EF 3.1	3.80e+1	7.09e-2	1.92e-2	0	2.89e-2	-2.71e-2	1.31e-2	-9.64e-1

Note:

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Abbreviations:

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S48 Insulated Sandwich Upstand - 30 cm; 16.8 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-8.73e-1	5.94e-1	3.30e-1	0	2.38e-1	2.58e+1	1.26e+0	-2.49e+0
GWP-biogenic	kg CO ₂ eq	EF 3.1	-2.40e+1	1.99e-4	7.18e-2	0	7.97e-5	2.29e+1	1.25e+0	-3.47e-3
GWP-fossil	kg CO ₂ eq	EF 3.1	2.31e+1	5.93e-1	2.58e-1	0	2.38e-1	2.93e+0	8.84e-3	-2.48e+0
GWP-luluc	kg CO ₂ eq	EF 3.1	6.68e-2	2.89e-4	3.15e-6	0	1.16e-4	7.70e-5	6.61e-6	-5.50e-3
ODP	kg CFC11 eq	EF 3.1	1.03e-6	1.35e-8	3.23e-10	0	5.41e-9	6.48e-9	2.05e-10	-3.96e-7
AP	mol H ⁺ eq	EF 3.1	1.46e-1	1.47e-3	6.79e-5	0	5.89e-4	2.86e-3	6.33e-5	-2.58e-2
EP-freshwater	kg P eq	EF 3.1	8.52e-3	4.38e-5	1.06e-6	0	1.76e-5	1.02e-4	1.73e-6	-4.37e-4
EP-marine	kg N eq	EF 3.1	4.40e-2	4.00e-4	3.71e-5	0	1.61e-4	1.55e-3	2.76e-4	-7.14e-3
EP-terrestrial	mol N eq	EF 3.1	4.13e-1	4.11e-3	3.19e-4	0	1.65e-3	1.45e-2	2.52e-4	-1.23e-1
POCP	kg NMVOC eq	EF 3.1	1.44e-1	2.40e-3	8.58e-5	0	9.62e-4	3.68e-3	1.02e-4	-2.45e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	2.38e-4	1.66e-6	1.93e-8	0	6.66e-7	4.94e-7	1.82e-8	-1.96e-6
ADP-fossil	MJ	EF 3.1	4.30e+2	9.01e+0	8.56e-2	0	3.61e+0	2.30e+0	1.89e-1	-3.63e+1
WDP	m ³ depriv.	EF 3.1	2.00e+1	4.30e-2	1.17e-2	0	1.73e-2	-3.86e-2	7.88e-3	-8.21e-1

Note:

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Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

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M45 Massive Upright - 40 cm; 35.4 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-3.61e+1	1.26e+0	6.98e-1	0	5.16e-1	5.47e+1	2.99e+0	-7.05e-1
GWP-biogenic	kg CO ₂ eq	EF 3.1	-5.69e+1	4.20e-4	1.52e-1	0	1.73e-4	5.42e+1	2.97e+0	-1.59e-2
GWP-fossil	kg CO ₂ eq	EF 3.1	2.06e+1	1.26e+0	5.46e-1	0	5.16e-1	5.33e-1	2.08e-2	-6.77e-1
GWP-luluc	kg CO ₂ eq	EF 3.1	1.47e-1	6.12e-4	6.68e-6	0	2.52e-4	1.34e-4	1.56e-5	-1.26e-2
ODP	kg CFC11 eq	EF 3.1	5.68e-7	2.85e-8	6.84e-10	0	1.17e-8	8.76e-9	4.83e-10	-3.39e-7
AP	mol H ⁺ eq	EF 3.1	1.06e-1	3.11e-3	1.44e-4	0	1.28e-3	5.33e-3	1.48e-4	-5.36e-2
EP-freshwater	kg P eq	EF 3.1	7.53e-3	9.27e-5	2.23e-6	0	3.81e-5	2.23e-4	4.10e-6	-4.62e-4
EP-marine	kg N eq	EF 3.1	3.48e-2	8.47e-4	7.85e-5	0	3.48e-4	2.84e-3	6.53e-4	-1.50e-2
EP-terrestrial	mol N eq	EF 3.1	3.24e-1	8.69e-3	6.75e-4	0	3.57e-3	2.72e-2	5.88e-4	-2.68e-1
POCP	kg NMVOC eq	EF 3.1	1.22e-1	5.07e-3	1.81e-4	0	2.08e-3	6.92e-3	2.39e-4	-4.52e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	2.06e-4	3.51e-6	4.08e-8	0	1.44e-6	8.63e-7	4.31e-8	-2.45e-7
ADP-fossil	MJ	EF 3.1	3.30e+2	1.91e+1	1.81e-1	0	7.83e+0	4.28e+0	4.45e-1	-5.07e+0
WDP	m ³ depriv.	EF 3.1	7.98e+0	9.10e-2	2.47e-2	0	3.74e-2	-3.82e-1	1.87e-2	-7.16e-1

Note:

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Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particulate Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

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M45 Massive Upright - 20 cm; 20.5 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-1.89e+1	7.28e-1	4.04e-1	0	2.96e-1	3.12e+1	1.70e+0	-6.80e-1
GWP-biogenic	kg CO ₂ eq	EF 3.1	-3.24e+1	2.44e-4	8.80e-2	0	9.90e-5	3.09e+1	1.69e+0	-7.87e-3
GWP-fossil	kg CO ₂ eq	EF 3.1	1.34e+1	7.27e-1	3.16e-1	0	2.96e-1	3.19e-1	1.19e-2	-6.65e-1
GWP-luluc	kg CO ₂ eq	EF 3.1	8.56e-2	3.55e-4	3.87e-6	0	1.44e-4	7.64e-5	8.91e-6	-7.15e-3
ODP	kg CFC11 eq	EF 3.1	4.11e-7	1.65e-8	3.96e-10	0	6.71e-9	5.01e-9	2.75e-10	-2.38e-7
AP	mol H ⁺ eq	EF 3.1	6.97e-2	1.80e-3	8.32e-5	0	7.32e-4	3.04e-3	8.47e-5	-3.14e-2
EP-freshwater	kg P eq	EF 3.1	4.87e-3	5.37e-5	1.29e-6	0	2.18e-5	1.27e-4	2.34e-6	-3.79e-4
EP-marine	kg N eq	EF 3.1	2.15e-2	4.90e-4	4.55e-5	0	1.99e-4	1.62e-3	3.72e-4	-8.74e-3
EP-terrestrial	mol N eq	EF 3.1	2.02e-1	5.04e-3	3.91e-4	0	2.05e-3	1.55e-2	3.36e-4	-1.55e-1
POCP	kg NMVOC eq	EF 3.1	7.54e-2	2.94e-3	1.05e-4	0	1.19e-3	3.95e-3	1.36e-4	-2.74e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	1.55e-4	2.03e-6	2.36e-8	0	8.27e-7	4.93e-7	2.46e-8	-2.08e-7
ADP-fossil	MJ	EF 3.1	2.09e+2	1.10e+1	1.05e-1	0	4.49e+0	2.44e+0	2.54e-1	-6.35e+0
WDP	m ³ depriv.	EF 3.1	4.93e+0	5.27e-2	1.43e-2	0	2.14e-2	-2.17e-1	1.06e-2	-6.78e-1

Note:

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Abbreviations:

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M44 Massive Upright - 40 cm; 32.3 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-3.13e+1	1.15e+0	6.37e-1	0	4.68e-1	4.95e+1	2.70e+0	-9.36e-1
GWP-biogenic	kg CO ₂ eq	EF 3.1	-5.14e+1	3.84e-4	1.39e-1	0	1.57e-4	4.90e+1	2.68e+0	-1.23e-2
GWP-fossil	kg CO ₂ eq	EF 3.1	2.00e+1	1.15e+0	4.98e-1	0	4.68e-1	5.21e-1	1.88e-2	-9.12e-1
GWP-luluc	kg CO ₂ eq	EF 3.1	1.34e-1	5.59e-4	6.09e-6	0	2.28e-4	1.21e-4	1.41e-5	-1.15e-2
ODP	kg CFC11 eq	EF 3.1	7.00e-7	2.60e-8	6.25e-10	0	1.06e-8	7.96e-9	4.37e-10	-4.04e-7
AP	mol H ⁺ eq	EF 3.1	1.03e-1	2.84e-3	1.31e-4	0	1.16e-3	4.82e-3	1.35e-4	-4.96e-2
EP-freshwater	kg P eq	EF 3.1	7.26e-3	8.46e-5	2.04e-6	0	3.45e-5	2.02e-4	3.71e-6	-5.16e-4
EP-marine	kg N eq	EF 3.1	3.28e-2	7.73e-4	7.17e-5	0	3.16e-4	2.57e-3	5.90e-4	-1.38e-2
EP-terrestrial	mol N eq	EF 3.1	3.06e-1	7.93e-3	6.17e-4	0	3.24e-3	2.47e-2	5.34e-4	-2.45e-1
POCP	kg NMVOC eq	EF 3.1	1.15e-1	4.63e-3	1.66e-4	0	1.89e-3	6.27e-3	2.16e-4	-4.22e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	2.11e-4	3.21e-6	3.72e-8	0	1.31e-6	7.82e-7	3.90e-8	-1.58e-6
ADP-fossil	MJ	EF 3.1	3.19e+2	1.74e+1	1.65e-1	0	7.10e+0	3.87e+0	4.03e-1	-9.87e+0
WDP	m ³ depriv.	EF 3.1	7.42e+0	8.31e-2	2.25e-2	0	3.39e-2	-3.43e-1	1.69e-2	-7.57e-1

Note:

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Abbreviations:

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M44 Massive Upright - 20 cm; 19.6 kg/m²

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	EF 3.1	-1.67e+1	6.94e-1	3.86e-1	0	2.80e-1	2.94e+1	1.60e+0	-8.99e-1
GWP-biogenic	kg CO ₂ eq	EF 3.1	-3.05e+1	2.32e-4	8.40e-2	0	9.36e-5	2.90e+1	1.59e+0	-5.45e-3
GWP-fossil	kg CO ₂ eq	EF 3.1	1.37e+1	6.94e-1	3.02e-1	0	2.80e-1	3.38e-1	1.12e-2	-8.86e-1
GWP-luluc	kg CO ₂ eq	EF 3.1	8.17e-2	3.38e-4	3.69e-6	0	1.36e-4	7.22e-5	8.38e-6	-6.83e-3
ODP	kg CFC11 eq	EF 3.1	5.65e-7	1.57e-8	3.78e-10	0	6.35e-9	4.75e-9	2.60e-10	-3.17e-7
AP	mol H ⁺ eq	EF 3.1	7.11e-2	1.72e-3	7.93e-5	0	6.92e-4	2.87e-3	8.01e-5	-3.06e-2
EP-freshwater	kg P eq	EF 3.1	4.94e-3	5.12e-5	1.23e-6	0	2.06e-5	1.20e-4	2.20e-6	-4.38e-4
EP-marine	kg N eq	EF 3.1	2.13e-2	4.68e-4	4.34e-5	0	1.89e-4	1.53e-3	3.50e-4	-8.39e-3
EP-terrestrial	mol N eq	EF 3.1	2.01e-1	4.80e-3	3.73e-4	0	1.94e-3	1.47e-2	3.18e-4	-1.48e-1
POCP	kg NMVOC eq	EF 3.1	7.48e-2	2.80e-3	1.00e-4	0	1.13e-3	3.72e-3	1.29e-4	-2.69e-2
ADP-minerals&metals	kg Sb eq	EF 3.1	1.65e-4	1.94e-6	2.25e-8	0	7.82e-7	4.65e-7	2.31e-8	-1.61e-6
ADP-fossil	MJ	EF 3.1	2.14e+2	1.05e+1	1.00e-1	0	4.24e+0	2.30e+0	2.39e-1	-1.08e+1
WDP	m ³ depriv.	EF 3.1	4.79e+0	5.03e-2	1.36e-2	0	2.03e-2	-2.02e-1	1.00e-2	-7.01e-1

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particulate Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

per 1 m² of product of a window ≤ 2.3 m² (reference dimensions according to EN 17213: 1.23 m × 1.48 m).

I48 Insulated Uprand - 90 cm; 54.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.15e+3	4.31e-1	8.26e-3	0	1.69e-1	1.45e-1	1.28e-2	-3.95e+2
PERM	MJ	8.71e+2	0	0	0	0	0	0	0
PERT	MJ	3.02e+3	4.31e-1	8.26e-3	0	1.69e-1	1.45e-1	1.28e-2	-3.95e+2
PENRE	MJ	9.28e+2	2.95e+1	2.80e-1	0	1.15e+1	5.83e+0	8.23e-1	-2.16e+1
PENRM	MJ	6.09e-1	1.24e-3	1.19e-5	0	4.86e-4	1.58e-4	2.22e-5	-2.23e-3
PENRT	MJ	9.28e+2	2.95e+1	2.80e-1	0	1.15e+1	5.83e+0	8.23e-1	-2.16e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.22e+0	3.99e-3	1.21e-3	0	1.56e-3	-9.61e-3	6.05e-4	-2.56e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

I48 Insulated Uprand - 60 cm; 39.9 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.60e+3	3.14e-1	6.02e-3	0	1.23e-1	1.07e-1	9.23e-3	-2.93e+2
PERM	MJ	6.48e+2	0	0	0	0	0	0	0
PERT	MJ	2.24e+3	3.14e-1	6.02e-3	0	1.23e-1	1.07e-1	9.23e-3	-2.93e+2
PENRE	MJ	6.59e+2	2.15e+1	2.04e-1	0	8.43e+0	4.31e+0	5.80e-1	-1.79e+1
PENRM	MJ	4.40e-1	9.06e-4	8.68e-6	0	3.56e-4	1.17e-4	1.61e-5	-1.31e-3
PENRT	MJ	6.59e+2	2.15e+1	2.04e-1	0	8.43e+0	4.31e+0	5.80e-1	-1.79e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	8.41e-1	2.91e-3	8.83e-4	0	1.14e-3	-7.10e-3	4.47e-4	-2.18e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

I48 Insulated Upright - 30 cm; 25.1 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.04e+3	1.97e-1	3.79e-3	0	7.80e-2	6.98e-2	5.67e-3	-1.91e+2
PERM	MJ	4.25e+2	0	0	0	0	0	0	0
PERT	MJ	1.46e+3	1.97e-1	3.79e-3	0	7.80e-2	6.98e-2	5.67e-3	-1.91e+2
PENRE	MJ	3.91e+2	1.35e+1	1.28e-1	0	5.33e+0	2.79e+0	3.36e-1	-1.42e+1
PENRM	MJ	2.72e-1	5.69e-4	5.45e-6	0	2.25e-4	7.60e-5	1.00e-5	-3.85e-4
PENRT	MJ	3.91e+2	1.35e+1	1.28e-1	0	5.33e+0	2.79e+0	3.36e-1	-1.42e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	4.62e-1	1.83e-3	5.55e-4	0	7.23e-4	-4.59e-3	2.89e-4	-1.80e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

S48 Insulated Sandwich Upright - 90 cm; 38.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.60e+3	3.03e-1	5.81e-3	0	1.23e-1	1.61e-1	8.03e-3	-2.91e+2
PERM	MJ	6.30e+2	0	0	0	0	0	0	0
PERT	MJ	2.23e+3	3.03e-1	5.81e-3	0	1.23e-1	1.61e-1	8.03e-3	-2.91e+2
PENRE	MJ	1.06e+3	2.07e+1	1.97e-1	0	8.44e+0	5.57e+0	4.38e-1	-8.42e+1
PENRM	MJ	5.62e-1	8.73e-4	8.37e-6	0	3.56e-4	1.74e-4	1.44e-5	-1.53e-3
PENRT	MJ	1.06e+3	2.07e+1	1.97e-1	0	8.44e+0	5.57e+0	4.38e-1	-8.42e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.44e+0	2.81e-3	8.51e-4	0	1.14e-3	3.56e-3	4.37e-4	-2.29e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

S48 Insulated Sandwich Upstand - 60 cm; 27.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.15e+3	2.17e-1	4.17e-3	0	8.86e-2	1.16e-1	5.76e-3	-2.09e+2
PERM	MJ	4.52e+2	0	0	0	0	0	0	0
PERT	MJ	1.60e+3	2.17e-1	4.17e-3	0	8.86e-2	1.16e-1	5.76e-3	-2.09e+2
PENRE	MJ	7.58e+2	1.49e+1	1.41e-1	0	6.06e+0	4.00e+0	3.14e-1	-6.04e+1
PENRM	MJ	4.03e-1	6.26e-4	6.00e-6	0	2.55e-4	1.25e-4	1.03e-5	-1.10e-3
PENRT	MJ	7.58e+2	1.49e+1	1.41e-1	0	6.06e+0	4.00e+0	3.14e-1	-6.04e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.03e+0	2.01e-3	6.10e-4	0	8.21e-4	2.55e-3	3.14e-4	-1.65e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

S48 Insulated Sandwich Upstand - 30 cm; 16.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6.92e+2	1.32e-1	2.53e-3	0	5.29e-2	6.56e-2	3.46e-3	-1.25e+2
PERM	MJ	2.73e+2	0	0	0	0	0	0	0
PERT	MJ	9.66e+2	1.32e-1	2.53e-3	0	5.29e-2	6.56e-2	3.46e-3	-1.25e+2
PENRE	MJ	4.30e+2	9.01e+0	8.56e-2	0	3.61e+0	2.30e+0	1.89e-1	-3.63e+1
PENRM	MJ	2.31e-1	3.80e-4	3.64e-6	0	1.52e-4	7.10e-5	6.21e-6	-2.40e-4
PENRT	MJ	4.30e+2	9.01e+0	8.56e-2	0	3.61e+0	2.30e+0	1.89e-1	-3.63e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	5.49e-1	1.22e-3	3.70e-4	0	4.90e-4	8.24e-4	1.88e-4	-1.40e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

M45 Massive Upright - 40 cm; 35.4 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.58e+3	2.79e-1	5.34e-3	0	1.14e-1	1.07e-1	8.17e-3	-2.96e+2
PERM	MJ	6.75e+2	0	0	0	0	0	0	0
PERT	MJ	2.26e+3	2.79e-1	5.34e-3	0	1.14e-1	1.07e-1	8.17e-3	-2.96e+2
PENRE	MJ	3.31e+2	1.91e+1	1.81e-1	0	7.83e+0	4.28e+0	4.45e-1	-5.06e+0
PENRM	MJ	3.46e-1	8.04e-4	7.70e-6	0	3.30e-4	1.16e-4	1.47e-5	-1.37e-3
PENRT	MJ	3.30e+2	1.91e+1	1.81e-1	0	7.83e+0	4.28e+0	4.45e-1	-5.06e+0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	2.33e-1	2.58e-3	7.83e-4	0	1.06e-3	-7.22e-3	4.45e-4	-1.38e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

M45 Massive Upright - 20 cm; 20.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	9.07e+2	1.61e-1	3.10e-3	0	6.56e-2	6.11e-2	4.66e-3	-1.69e+2
PERM	MJ	3.84e+2	0	0	0	0	0	0	0
PERT	MJ	1.29e+3	1.61e-1	3.10e-3	0	6.56e-2	6.11e-2	4.66e-3	-1.69e+2
PENRE	MJ	2.09e+2	1.10e+1	1.05e-1	0	4.49e+0	2.44e+0	2.54e-1	-6.35e+0
PENRM	MJ	2.01e-1	4.65e-4	4.46e-6	0	1.89e-4	6.64e-5	8.36e-6	-4.87e-4
PENRT	MJ	2.09e+2	1.10e+1	1.05e-1	0	4.49e+0	2.44e+0	2.54e-1	-6.35e+0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.46e-1	1.50e-3	4.54e-4	0	6.08e-4	-4.09e-3	2.54e-4	-1.28e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

M44 Massive Uprand - 40 cm; 32.3 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.43e+3	2.54e-1	4.88e-3	0	1.04e-1	9.71e-2	7.39e-3	-2.68e+2
PERM	MJ	6.10e+2	0	0	0	0	0	0	0
PERT	MJ	2.04e+3	2.54e-1	4.88e-3	0	1.04e-1	9.71e-2	7.39e-3	-2.68e+2
PENRE	MJ	3.19e+2	1.74e+1	1.65e-1	0	7.10e+0	3.87e+0	4.03e-1	-9.86e+0
PENRM	MJ	3.16e-1	7.33e-4	7.03e-6	0	2.99e-4	1.05e-4	1.33e-5	-9.27e-4
PENRT	MJ	3.19e+2	1.74e+1	1.65e-1	0	7.10e+0	3.87e+0	4.03e-1	-9.86e+0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	2.18e-1	2.36e-3	7.15e-4	0	9.62e-4	-6.47e-3	4.02e-4	-1.35e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

M44 Massive Uprand - 20 cm; 19.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.56e+2	1.54e-1	2.95e-3	0	6.21e-2	5.78e-2	4.39e-3	-1.59e+2
PERM	MJ	3.62e+2	0	0	0	0	0	0	0
PERT	MJ	1.22e+3	1.54e-1	2.95e-3	0	6.21e-2	5.78e-2	4.39e-3	-1.59e+2
PENRE	MJ	2.14e+2	1.05e+1	1.00e-1	0	4.24e+0	2.30e+0	2.39e-1	-1.08e+1
PENRM	MJ	1.92e-1	4.44e-4	4.26e-6	0	1.79e-4	6.27e-5	7.87e-6	-1.93e-4
PENRT	MJ	2.14e+2	1.05e+1	1.00e-1	0	4.24e+0	2.30e+0	2.39e-1	-1.08e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.42e-1	1.43e-3	4.33e-4	0	5.75e-4	-3.79e-3	2.39e-4	-1.22e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 m² of product of a window ≤ 2.3 m² (reference dimensions according to EN 17213: 1.23 m × 1.48 m).

I48 Insulated Upstand - 90 cm; 54.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	3.00e+0	0	9.06e-2	0	0	0	8.63e+0	0
RWD	kg	2.12e-3	8.98e-6	1.16e-7	0	3.51e-6	1.73e-6	2.25e-7	-4.08e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.76e+0	0	7.97e-2	0	0	1.28e+0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	1.02e+2	0	5.66e+0	0	0	2.50e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

I48 Insulated Upstand - 60 cm; 39.9 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	1.96e+0	0	6.60e-2	0	0	0	5.56e+0	0
RWD	kg	1.49e-3	6.55e-6	8.49e-8	0	2.57e-6	1.28e-6	1.63e-7	-3.76e-7
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.40e+0	0	5.81e-2	0	0	1.22e+0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	7.51e+1	0	4.13e+0	0	0	1.86e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

I48 Insulated Upright - 30 cm; 25.1 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	9.23e-1	0	4.15e-2	0	0	0	2.48e+0	0
RWD	kg	8.59e-4	4.11e-6	5.33e-8	0	1.62e-6	8.33e-7	1.02e-7	3.38e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.04e+0	0	3.65e-2	0	0	1.18e+0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	4.86e+1	0	2.59e+0	0	0	1.21e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

S48 Insulated Sandwich Upright - 90 cm; 38.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	7.89e-1	0	6.36e-2	0	0	0	1.75e+0	0
RWD	kg	2.31e-3	6.31e-6	8.18e-8	0	2.57e-6	1.95e-6	1.46e-7	-3.81e-7
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	6.34e-1	0	5.60e-2	0	0	1.35e+0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	8.65e+1	0	3.98e+0	0	0	2.31e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

S48 Insulated Sandwich Upright - 60 cm; 27.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	5.66e-1	0	4.57e-2	0	0	0	1.26e+0	0
RWD	kg	1.66e-3	4.53e-6	5.87e-8	0	1.85e-6	1.40e-6	1.05e-7	-2.73e-7
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	4.55e-1	0	4.02e-2	0	0	9.66e-1	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	6.21e+1	0	2.85e+0	0	0	1.66e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

S48 Insulated Sandwich Upstand - 30 cm; 16.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	3.40e-1	0	2.77e-2	0	0	0	7.67e-1	0
RWD	kg	9.09e-4	2.74e-6	3.56e-8	0	1.10e-6	7.91e-7	6.28e-8	2.27e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	4.16e-1	0	2.44e-2	0	0	9.65e-1	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	3.64e+1	0	1.73e+0	0	0	9.63e+1	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

M45 Massive Upstand - 40 cm; 35.4 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	7.94e-1	0	5.86e-2	0	0	0	1.75e+0	0
RWD	kg	5.68e-4	5.81e-6	7.53e-8	0	2.38e-6	1.27e-6	1.49e-7	1.93e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	2.48e+0	0	5.15e-2	0	0	7.96e-1	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	7.48e+1	0	3.66e+0	0	0	1.88e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

M45 Massive Upright - 20 cm; 20.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	4.53e-1	0	3.39e-2	0	0	0	1.01e+0	0
RWD	kg	3.53e-4	3.36e-6	4.36e-8	0	1.37e-6	7.28e-7	8.46e-8	3.29e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.43e+0	0	2.98e-2	0	0	7.78e-1	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	4.27e+1	0	2.12e+0	0	0	1.07e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

M44 Massive Upright - 40 cm; 32.3 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	7.19e-1	0	5.35e-2	0	0	0	1.60e+0	0
RWD	kg	5.40e-4	5.30e-6	6.87e-8	0	2.16e-6	1.16e-6	1.34e-7	2.47e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	2.25e+0	0	4.70e-2	0	0	1.01e+0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	6.77e+1	0	3.34e+0	0	0	1.70e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

M44 Massive Upright - 20 cm; 19.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	4.28e-1	0	3.24e-2	0	0	0	9.64e-1	0
RWD	kg	3.55e-4	3.21e-6	4.16e-8	0	1.29e-6	6.88e-7	7.97e-8	3.44e-6
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.35e+0	0	2.85e-2	0	0	9.70e-1	0	0
MER	kg	0	0	0	0	0	0	0	0
EE	MJ	4.02e+1	0	2.02e+0	0	0	1.01e+2	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals

per 1 m² of product of a window ≤ 2.3 m² (reference dimensions according to EN 17213: 1.23 m × 1.48 m).

I48 Insulated Upstand - 90 cm; 54.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-1.02e+2	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	2.36e+1	0	0	0	0	7.46e+1	3.93e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-3.45e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	3.20e+0	0	2.46e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNCR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

I48 Insulated Upstand - 60 cm; 39.9 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-7.55e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.74e+1	0	0	0	0	5.52e+1	2.90e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-2.73e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	2.55e+0	0	1.79e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

I48 Insulated Upstand - 30 cm; 25.1 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-4.89e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.13e+1	0	0	0	0	3.57e+1	1.88e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-2.00e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	1.89e+0	0	1.12e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

S48 Insulated Sandwich Upstand - 90 cm; 38.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-7.59e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.75e+1	0	0	0	0	5.55e+1	2.92e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-1.32e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	1.14e+0	0	1.72e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

S48 Insulated Sandwich Upstand - 60 cm; 27.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-5.45e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.26e+1	0	0	0	0	3.98e+1	2.10e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-9.45e-1	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	8.21e-1	0	1.24e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

S48 Insulated Sandwich Upstand - 30 cm; 16.8 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-3.24e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	7.48e+0	0	0	0	0	2.37e+1	1.25e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-8.21e-1	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	7.46e-1	0	7.50e-2	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

M45 Massive Upright - 40 cm; 35.4 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-7.41e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.71e+1	0	0	0	0	5.42e+1	2.85e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-4.73e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	4.57e+0	0	1.59e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

M45 Massive Upright - 20 cm; 20.5 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-4.22e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	9.75e+0	0	0	0	0	3.09e+1	1.62e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-2.71e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	2.62e+0	0	9.20e-2	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

M44 Massive Upright - 40 cm; 32.3 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-6.70e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	1.55e+1	0	0	0	0	4.90e+1	2.58e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-4.28e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	4.14e+0	0	1.45e-1	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

M44 Massive Upright - 20 cm; 19.6 kg/m²

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO ₂	-3.97e+1	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO ₂	9.17e+0	0	0	0	0	2.90e+1	1.53e+0	0
Bio Carbon Removal from Packaging	kg CO ₂	-2.56e+0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO ₂	2.47e+0	0	8.77e-2	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO ₂	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO ₂	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO ₂	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO ₂	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

The manufacturing of the products in this analysis involves the direct procurement of raw materials from suppliers. These materials are then transported to manufacturing facilities in the EU where they are stored, processed, and combined to produce finished products. Notably, the product stage (stage 1) has the highest impact contribution, mainly attributed to the environmental impacts associated with raw material manufacturing.

Given that the raw materials used in product manufacturing have a significant impact, exploration of opportunities to substitute these materials with alternatives that have a lower environmental impact. Additionally, consideration should be given to collaborating with suppliers who employ sustainable manufacturing techniques or integrate more renewable energy into their production processes. Such initiatives can lead to more environmentally friendly products and further enhance the sustainability of the products in this analysis.



Additional Environmental Information

None

Further Information

Technical characteristics

Name	Unit	Value
Mounting type (sealing system)	–	Factory timber-EPS upstand

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