Result summary

VELUX GGU MK06 0070Q PU Double Glazed Centre-Pivot Window (78 x 118 cm)

Velux Group

Calculation number:	ReTHiNK-43657
Generation on:	15-08-2023
Issue date:	15-08-2023
Valid until:	15-08-2028
Status:	verified

R<THiNK

1 General information

1.1 PRODUCT

VELUX GGU MK06 0070Q PU Double Glazed Centre-Pivot Window (78 x 118 cm)

1.2 VALIDITY

Issue date 15-08-2023

Valid until: 15-08-2028

1.3 OWNER OF THE DECLARATION

Manufacturer: Velux Group

Address: Ådalsvej 99, 2970 Hørsholm

E-mail: b.vandenbroek@nibe.org

Website: https://www.velux.com/

Production location: GGU_MK06_0070Q

Address production location: n/a, n/a JTJ-DE

1.4 VERIFICATION OF THE DECLARATION

CEN standard EN 15804:2012+A2:2019 serves as the core PCR. In compliance with ISO 14040:2006 and 14044:2006.

Independent verification of the declaration according to EN ISO 14025:2011-10.

☐ Internal ☑ External

Kamiel Jansen, Review by Aveco de Bondt

1.5 THIS DECLARATION IS BASED ON THE PRODUCT CATEGORY RULES

NMD Determination method Environmental performance Construction works v1.1 March 2022

1.6 FUNCTIONAL UNIT

m2 (roof window)

Declared unit: square meter (m2)

1 m2 (one square meter) of a single VELUX roof window, based on a fixed size (type MK06, 78 cm x 118 cm, 0,92 m2). This is a deviation from the standard size (1,23 m x 1,48 m, 1,82 m2) as described in the PCR: "Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets" (NEN-EN 17213, 2020) and the memo "Uitgangspunten buitenkozijnen t.b.v. SBK (SGS Search, 2017).

Because the VELUX company only produces fixed sizes of roof windows, the MK06 type is taken as the 'mean' product of the product range and has been used for this LCA. The actual amount of used materials is type dependent and this is substantiated in the applicable (remark) sections.

The functional unit includes the frame and sash, an insulating glass unit (IGU) and basic (supplied) mounting materials. Not included are all the additional materials (i.e. reïnforcing beams, insulation, external covering) and labor and/or energy at the construction site.

1.7 CONVERSION FACTORS

Description	Value	Unit
Declared unit	1	m2
Weight per declared unit	45.259	kg

1 General information

Description	Value	Unit
Conversion factor to 1 kg	0.022095	m2

1.8 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D LCA. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

2 Product

2.1 PRODUCT DESCRIPTION

This report presents the LCA for two product families of a VELUX single roof window. A thermally modified wood with a white/transparent finish (type GGL) or a thermally modified wood with a white polyurethane coating (type GGU), both available with either a double glazing unit (type 70Q) or a triple glazing unit (type 66).

The amount of materials and energy (required for the production process) are determined for a standard MK06 roof window (width x height: 78 cm x 118 cm, 0,92 m2) with either a double or a triple glass pane. All the original input data (of all items) is multiplied by a factor of 1,087 (1/0,92) to give the correct results for the declared functional unit of 1 m2.

VELUX GGU MK06 0070Q PU Double Glazed Centre-Pivot Window (78 x 118 cm)

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

This type of VELUX roof window is used to provide daylight and fresh air in a living space and is specifically designed to be mounted in a sloping roof construction (15°-90°). This LCA report relates to a roof window, which has hinges in the center of the window/frame (pivot hinge) and is opened and closed by pulling or pushing the ventilation flap handle (manually operated). An electrified version is also available, but is not part of this LCA. The VELUX roof windows are intended for use in both new and existing buildings.

2.3 DESCRIPTION PRODUCTION PROCESS

The production process of the frame and sash starts with the preparation of the wooden parts in specialized factories. Some of the wood is thermally treated to improve durability (TMT) before being sawn to a more manageable size along with the rest of the imported wood.

After the pre-treatment process, the wooden parts are cut and profiled for the lamination process. After cutting and milling the profiles, the frame and the sash are assembled. If the window is given a PU coating, the whole frame and sash will be prepared for the pultrusion process (wooden frame/sash with glass fiber reinforced PU). Otherwise the frame and sash will be given a white lacquer (or varnish). All prepared components are now pre-assembled. This includes the frame, sash, ventilation flap and gaskets.

The production process of the window pane also starts in a specialized factory. The jumbo glass sheets are cut to size. After the hardening and tempering process, the glass sheets, the stainless steel spacers and additional materials are assembled. The result is a window pane (double or triple glazing) and this is transported to the applicable factories for final assembly.

The prefabricated frame, sash and window pane are assembled into a Velux roof window. The windows are packed and stored after a passed quality check.

After the production and assembly process, the Velux roof windows are shipped individually to a central warehouse (basic mounting material is included) and from there they are delivered to the customer. A direct delivery from the factory to the customer is possible, but is not part of this LCA.

2.4 CONSTRUCTION DESCRIPTION

Before installing a VELUX single roof window, the roof construction must be prepared for it. Depending on the local situation, less or more pre-construction work (i.e. structural adjustments to ensure the integrity of the roof structure) needs to be carried out. These additional materials, energy and labor are not part of this LCA.

The actual mounting of the VELUX window consists of mounting the supplied brackets to the roof construction and the window itself with screws. An outer cover protects the window against weather influences (wind and watertight). The type of cover depends on the type of roof and must therefore be purchased separately (and is not part of this LCA). The amount of energy for tools is neglectable and no additional materials are needed to install the window.

3 Results

3.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
AP	mol H+ eqv.	6.53E-1	4.16E-2	9.90E-2	1.78E-2	2.68E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.52E-3	9.98E-3	3.40E-4	-2.03E-1	6.49E-1
GWP-total	kg CO2 eqv.	7.56E+1	7.07E+0	2.37E+1	3.07E+0	9.47E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.08E-1	3.70E+1	1.20E+0	-4.12E+1	1.17E+2
GWP-b	kg CO2 eqv.	-2.15E+1	3.24E-3	5.43E+0	1.42E-3	4.88E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.80E-4	2.11E+1	1.15E+0	3.47E-2	1.12E+1
GWP-f	kg CO2 eqv.	9.67E+1	7.06E+0	1.82E+1	3.07E+0	4.58E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.08E-1	1.59E+1	4.34E-2	-4.11E+1	1.05E+2
GWP-luluc	kg CO2 eqv.	3.00E-1	2.60E-3	5.40E-2	1.12E-3	1.11E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.23E-4	6.49E-4	1.18E-5	-9.59E-2	2.74E-1
EP-m	kg N eqv.	1.19E-1	1.46E-2	2.24E-2	6.27E-3	5.63E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.24E-3	3.47E-3	1.42E-4	-3.73E-2	1.35E-1
EP-fw	kg P eqv.	3.93E-3	7.11E-5	1.38E-3	3.09E-5	1.71E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.13E-6	5.32E-5	5.07E-7	-1.04E-3	4.60E-3
EP-T	mol N eqv.	1.20E+0	1.61E-1	2.36E-1	6.91E-2	5.93E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.37E-2	3.91E-2	1.34E-3	-4.69E-1	1.32E+0
ODP	kg CFC 11 eqv.	7.49E-6	1.56E-6	2.21E-6	6.77E-7	4.03E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.34E-7	1.32E-7	1.54E-8	-2.24E-6	1.04E-5
POCP	kg NMVOC eqv.	3.74E-1	4.58E-2	7.33E-2	1.97E-2	1.79E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.91E-3	1.04E-2	4.01E-4	-1.21E-1	4.24E-1
ADP-f	MJ	1.35E+3	1.06E+2	2.65E+2	4.63E+1	5.68E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.16E+0	1.08E+1	1.06E+0	-4.29E+2	1.42E+3
ADP-mm	kg Sb-eqv.	1.76E-2	1.78E-4	5.98E-3	7.77E-5	7.22E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.54E-5	2.09E-5	2.59E-7	-6.17E-4	2.39E-2
WDP	m3 world eqv.	4.76E+1	3.80E-1	6.05E+0	1.66E-1	1.67E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.28E-2	1.79E-1	1.29E-2	-5.55E+0	5.06E+1

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

3 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15084+A2

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ETP-fw	CTUe	4.77E+3	9.48E+1	9.06E+2	4.13E+1	1.89E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.17E+0	8.82E+1	3.91E+1	-9.61E+2	5.17E+3
PM	disease incidence	8.19E-6	6.34E-7	1.58E-6	2.76E-7	3.53E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.47E-8	1.02E-7	6.91E-9	-2.39E-6	8.80E-6
HTP-c	CTUh	1.79E-7	3.08E-9	7.32E-8	1.34E-9	1.03E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.65E-10	6.75E-8	1.67E-11	-4.47E-8	2.90E-7
HTP-nc	CTUh	2.24E-6	1.04E-7	5.85E-7	4.51E-8	9.49E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.94E-9	8.96E-8	5.13E-10	-1.67E-7	3.00E-6
IR	kBq U235 eqv.	2.94E+0	4.46E-1	9.22E-1	1.94E-1	1.48E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.84E-2	4.28E-2	4.49E-3	-5.27E-1	4.21E+0
SQP	Pt	2.70E+3	9.21E+1	1.05E+3	4.01E+1	1.33E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.95E+0	9.49E+0	2.33E+0	-1.25E+3	2.78E+3

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	AAcidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2

3 Results

ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A1

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPE	Kg Sb	1.76E-2	1.78E-4	5.98E-3	7.77E-5	7.22E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.54E-5	2.09E-5	2.59E-7	-6.17E-4	2.39E-2
GWP	Kg CO2 Equiv.	9.48E+1	7.00E+0	1.83E+1	3.04E+0	4.54E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.02E-1	1.59E+1	8.49E-2	-4.01E+1	1.04E+2
ODP	Kg CFC-11 Equiv.	6.99E-6	1.24E-6	2.00E-6	5.40E-7	3.62E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.07E-7	1.19E-7	1.23E-8	-2.07E-6	9.30E-6
POCP	Kg Ethene Equiv.	6.39E-2	4.24E-3	1.19E-2	1.84E-3	2.79E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.63E-4	9.69E-4	4.69E-5	-1.69E-2	6.91E-2
AP	Kg SO2 Equiv.	5.42E-1	3.13E-2	7.98E-2	1.34E-2	2.18E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.65E-3	7.40E-3	2.55E-4	-1.62E-1	5.37E-1
EP	Kg PO43- Equiv.	6.03E-2	6.10E-3	1.34E-2	2.63E-3	2.85E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.20E-4	1.67E-3	6.31E-5	-1.96E-2	6.79E-2

ADPE=Depletion of abiotic resources-elements | **GWP**=Global warming | **ODP**=Ozone layer depletion | **POCP**=Photochemical oxidants creation | **AP**=Acidification of soil and water | **EP**=Eutrophication

3 Results

NATIONAL ANNEX NMD

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPF	Kg Sb	6.65E-1	5.15E-2	1.31E-1	2.24E-2	2.81E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.43E-3	5.31E-3	5.03E-4	-2.64E-1	6.44E-1
HTP	kg 1.4 DB	1.09E+2	2.95E+0	2.98E+1	1.28E+0	4.61E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.54E-1	2.10E+0	1.72E-2	-2.24E+1	1.27E+2
FAETP	kg 1.4 DB	7.66E-1	8.60E-2	3.08E-1	3.74E-2	4.30E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.40E-3	7.34E-2	8.14E-4	-1.60E-1	1.16E+0
MAETP	kg 1.4 DB	2.91E+3	3.10E+2	6.67E+2	1.34E+2	1.55E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.66E+1	2.09E+2	1.74E+0	-1.00E+3	3.41E+3
TETP	kg 1.4 DB	2.30E-1	1.04E-2	1.75E-1	4.53E-3	1.25E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.96E-4	5.72E-3	4.72E-5	3.18E-2	4.71E-1

ADPF=Depletion of abiotic resources-fossil fuels | **HTP**=Human toxicity | **FAETP**=Ecotoxicity. fresh water | **MAETP**=Ecotoxicity. marine water (MAETP) | **TETP**=Ecotoxicity. terrestric

3.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
PERE	MJ	5.38E+2	1.33E+0	2.12E+2	5.79E-1	2.59E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.15E-1	9.46E-1	2.10E-2	-2.72E+2	5.07E+2
PERM	MJ	5.02E+1	0.00E+0	7.09E+1	0.00E+0	3.63E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.25E+2
PERT	MJ	5.88E+2	1.33E+0	2.83E+2	5.79E-1	2.95E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.15E-1	9.46E-1	2.10E-2	-2.72E+2	6.31E+2
PENRE	MJ	1.33E+3	1.13E+2	2.95E+2	4.91E+1	5.73E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.73E+0	1.16E+1	1.13E+0	-4.22E+2	1.45E+3
PENRM	MJ	1.15E+2	0.00E+0	1.72E+0	0.00E+0	3.49E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-4.98E+0	1.15E+2
PENRT	MJ	1.45E+3	1.13E+2	2.97E+2	4.91E+1	6.08E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.73E+0	1.16E+1	1.13E+0	-4.27E+2	1.56E+3
SM	Kg	3.29E+0	0.00E+0	7.16E-1	0.00E+0	1.20E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.13E+0
RSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **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 Results

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
NRSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	1.46E+0	1.29E-2	2.20E-1	5.64E-3	5.27E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.12E-3	1.45E-2	1.23E-3	-1.96E-1	1.57E+0

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
HWD	Kg	1.50E-2	2.69E-4	4.41E-3	1.17E-4	9.51E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.32E-5	1.29E-2	1.12E-6	1.84E-2	5.21E-2
NHWD	Kg	1.89E+1	6.73E+0	8.92E+0	2.93E+0	1.46E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.81E-1	1.03E+0	6.85E+0	-5.05E+0	4.23E+1
RWD	Kg	3.06E-3	6.99E-4	1.09E-3	3.04E-4	1.72E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.02E-5	4.94E-5	6.97E-6	-5.60E-4	4.88E-3

HWD=hazardous waste disposed | **NHWD**=non hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
CRU	Kg	0.00E+0	0.00E+0	6.91E-3	0.00E+0	7.94E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.96E-2	0.00E+0	0.00E+0	2.73E-2
MFR	Kg	0.00E+0	0.00E+0	3.01E+0	0.00E+0	2.82E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.94E+1	0.00E+0	2.01E+0	2.73E+1
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EE	MJ	0.00E+0	0.00E+0	4.81E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.89E+2	2.37E+2
EET	MJ	0.00E+0	0.00E+0	3.04E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.20E+2	1.50E+2
EEE	MJ	0.00E+0	0.00E+0	1.77E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.95E+1	8.71E+1

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EE**=Exported energy | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

3 Results

3.3 INFORMATION ON BIOGENIC CARBON CONTENT PER SQUARE METER

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per square meter:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	6.081	kg C
Biogenic carbon content in accompanying packaging	1.316	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of uptake of carbon dioxide is account in module A1 by the main parts of the product. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results.

Uptake Biogenic Carbon dioxide	Amount	Unit
product	22.3	kg CO2 (biogenic)
Packaging	4.824	kg CO2 (biogenic)

3 Results

3.4 ENVIRONMENTAL COST INDICATOR NL PER SQUARE METER

Using the environmental cost indicator (ECI) method, which is presented in the NMD Determination Method (2020), the results are aggregated to the single-point score. The ECI is a relevant valuation method, especially in the Dutch construction sector. In the Netherlands, it is a prerequisite for public tenders. The aim of the indicator is to show the shadow price for environmental impacts of a product or project. The application of single-point scores is an additional assessment tool for eco-balance results. However, it must be pointed out that weightings are always based on a value maintenance and not on a scientific basis (EN 14040). The ECI results are shown in the following table.

Module EN15804	ECI NL	Share in total (%)
A1 Raw Materials Supply	€ 17.79	88,7 %
A2 Transport	€ 0.85	4,2 %
A3 Manufacturing	€ 4.17	20,8 %
A4 Transport from the gate to the site	€ 0.37	1,8 %
A5 Construction - Installation process	€ 0.78	3,9 %
B1 Use	€ 0.00	0,0 %
B2 Maintenance	€ 0.00	0,0 %
B3 Repair	€ 0.00	0,0 %
C1 De-construction / demolition	€ 0.00	0,0 %
C2 Transport	€ 0.07	0,4 %
C3 Waste processing	€ 1.06	5,3 %
C4 Disposal	€ 0.01	0,0 %
D Benefits and loads beyond the product system boundary	€ -5.03	-25,0 %
ECI NL per functional unit	**€ 20.07**	

4 Contact information

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