Result summary

SmartCavity031 - Rd=3,5

Knauf Insulation B.V. (2023)

Calculation number:	ReTHiNK-64972
Generation on:	25-04-2024
Issue date:	25-04-2024
Valid until:	25-04-2029
Status:	verified

R<THiNK

1 General information

1.1 PRODUCT

SmartCavity031 - Rd=3,5

1.2 VALIDITY

Issue date: 25-04-2024

Valid until: 25-04-2029

1.3 OWNER OF THE DECLARATION

Manufacturer: Knauf Insulation B.V. (2023)

Address: Dakota 7, 5126 RL Gilze

E-mail: customerservice.nl@knaufinsulation.com

Website: https://www.knaufinsulation.nl/

Production location: Knauf Insulation (Visé)

Address production location: Rue de Maestricht 95, B-4600 Visé

1.4 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Agnes Schuurmans, SGS Search / Intron

1.5 PRODUCT CATEGORY RULES

NMD Determination method Environmental performance Construction works v1.1 March 2022 and PCR EN 16783

1.6 FUNCTIONAL UNIT

m2

1 m2 of glass mineral wool (GMW), for which a biobased binder ECOSE® is used in the production process. The GMW can be applied with or without an additional facing (depending on environmental and/or technical requirements or conditions).

The final product is manufactured at the production facility Visé (BE) and has a minimum reference service life of 75 years (SBR guide for service lifes).

Reference unit: square meter (m2)

1.7 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	3.498	kg
Conversion factor to 1 kg	0.285878	m2

1.8 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options 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:

1 General information

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+A2. 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 EPD program operators 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

Knauf Insulation GMW is a lightweight thermal insulation material of which the binder is made of biobased raw materials (ECOSE®). The product partially consists of recycled materials (external and internal).

The dimensions, density and mass of the product may vary accordingly to the technical specifications of the final product.

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Knauf Insulation GMW products are used for any insulation purpose in the construction industry. GMW - with or without a facing. Because of the technical specifications, these products are used in high quality level constructions where energy efficiency performance has an essential role, as well as fire and/or sound insulation.

For example, Knauf Insulation GMW can be used in external wall applications such as cavity walls, ventilated façades, metal frame and timber frame constructions.

The specifications (e.g. format, density, thickness, binder content and facing) of Knauf Insulation GMW products depend on the acutal environmental conditions and desired technical requirements.

Knauf Insulation GMW products can be used for (but not limited to):
- Pitched roof constructions (warm or cold variant)
- External walls with insulation from inside (available as system)
- Partition walls (importance of the acoustical performance)
- Timber or metal framed constructions (sandwich panels)

2.3 DESCRIPTION PRODUCTION PROCESS

The production process consists of the following stages.

- Mixture of raw materials
- Production of glass
- Production of ECOSE® binder
- Fiberizing and forming GMW
- Curing and cooling GMW
- Application of optional facing

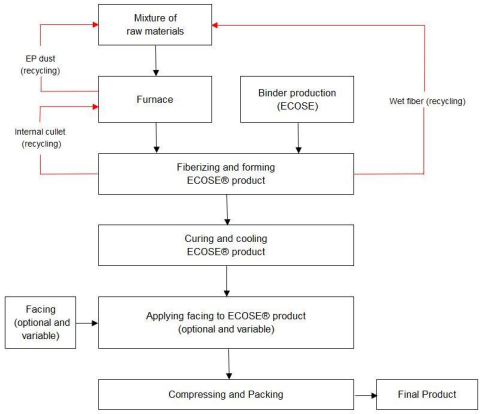
At Knauf Insulation, the main raw material for manufacturing GMW is recycled glass, also called external cullet. For the plant Visé, this is an average of 80% of the total batch.

Furthermore recycled wet fibres are recycled within the own production process (no waste).

Other raw materials used are sand, limestone, dolomite, feldspathoid nepheline and manganese dioxide, borax and sodium carbonate.

All materials are first weighed and mixed. The mixture is sent to an furnace at a very high temperature. The molten glass is fiberised and the binder ECOSE® is applied to the fibers (except for white woolen products). The fibers are collected on a metal conveyor belt (forming process). The recycled cutting residues are also blown in at this location. The thickness of the final product is also regulated at this point. The GMW mattress then goes through the drying oven to cure the binder.

After cooling, the mattress is cut to the correct width and length, then optionally covered with a facing (depending on the technical requirements of the final product), compressed and packed.

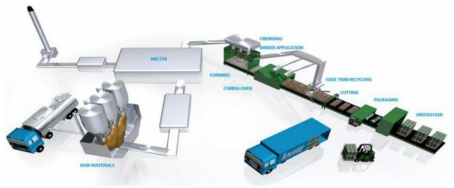


Information about Glass Mineral Wool production

The Glass Mineral Wool products for (GMW) are available in the form of slabs, rolls and boards.

In general the density for Glass Mineral Wool ranges from 10 to 85 kg/m3 and Glass Mineral Wool consists of at least 92% inert material. The inert part is made of recycled glass (external cullet, up to 80% of the composition) and mainly sand and dolomite.

The remaining fraction (less than or equal to 8%) is made of bio-based binder components. At Knauf Insulation, the binder used for GMW products is the ECOSE® Technology binder whose origin is plant starch.



2.4 CONSTRUCTION DESCRIPTION

The installation process of a Knauf Insulation GMW product depends on the actual application. In general, all products are fixed to the construction or fitted between a framework. This requires minimal (if any) additional energy or auxiliary materials and therefore the impact is assumed to be negligible (and not declared).

3 Results

3.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
AP	mol H+ eqv.	4.11E-3	1.22E-3	2.10E-2	2.63E-2	4.16E-4	7.18E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.88E-4	2.50E-5	1.60E-4	2.06E-3	3.00E-2
GWP-total	kg CO2 eqv.	3.23E-1	1.05E-1	3.04E+0	3.46E+0	1.45E-1	6.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.96E-2	3.39E-2	1.88E-1	3.40E-1	4.82E+0
GWP-b	kg CO2 eqv.	-1.44E-1	3.09E-5	-2.12E-1	-3.56E-1	7.20E-5	2.99E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.29E-5	3.01E-2	1.71E-1	5.34E-3	1.50E-1
GWP-f	kg CO2 eqv.	4.66E-1	1.05E-1	3.25E+0	3.82E+0	1.45E-1	3.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.96E-2	3.75E-3	1.68E-2	3.39E-1	4.67E+0
GWP-luluc	kg CO2 eqv.	4.23E-4	4.59E-5	2.77E-3	3.24E-3	6.27E-5	8.63E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.82E-5	1.36E-6	4.69E-6	-2.74E-5	3.39E-3
EP-m	kg N eqv.	1.02E-3	3.51E-4	2.79E-3	4.16E-3	7.89E-5	1.48E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.01E-4	8.09E-6	5.49E-5	1.48E-4	4.70E-3
EP-fw	kg P eqv.	2.49E-5	9.21E-7	1.03E-4	1.29E-4	1.33E-6	3.35E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.00E-7	6.19E-8	1.88E-7	1.57E-5	1.50E-4
EP-T	mol N eqv.	1.21E-2	3.89E-3	6.69E-2	8.29E-2	8.85E-4	2.38E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.12E-3	8.93E-5	6.05E-4	4.25E-3	9.23E-2
ODP	kg CFC 11 eqv.	7.11E-8	2.27E-8	3.85E-7	4.79E-7	3.21E-8	1.85E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.09E-8	9.19E-10	6.92E-9	-1.67E-8	5.32E-7
POCP	kg NMVOC eqv.	1.70E-3	1.06E-3	8.76E-3	1.15E-2	3.38E-4	4.29E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.19E-4	2.75E-5	1.76E-4	4.02E-4	1.32E-2
ADP-f	MJ	7.93E+0	1.53E+0	5.42E+1	6.37E+1	2.16E+0	1.61E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.48E-1	7.22E-2	4.70E-1	-1.36E+0	6.74E+1
ADP-mm	kg Sb-eqv.	1.42E-5	2.25E-6	2.76E-5	4.41E-5	5.23E-6	1.37E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.26E-6	6.97E-8	1.54E-7	1.14E-4	1.66E-4
WDP		9.80E-1	4.85E-3	1.49E+0	2.47E+0	6.65E-3	6.18E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.68E-3	-1.18E-3	2.11E-2	2.58E-1	2.82E+0

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

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
	m3 world eqv.															

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)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ETP-fw	CTUe	2.53E+1	1.29E+0	5.17E+1	7.83E+1	1.83E+0	4.40E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.67E-1	9.00E-2	3.05E-1	2.42E+1	1.10E+2
PM	disease incidence	4.94E-8	8.08E-9	1.45E-7	2.02E-7	7.94E-9	6.02E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.46E-9	7.31E-10	3.10E-9	2.04E-8	2.45E-7
HTP-c	CTUh	3.89E-10	4.88E-11	2.55E-9	2.99E-9	5.60E-11	1.50E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.16E-11	5.19E-12	7.05E-12	1.23E-10	3.35E-9
HTP-nc	CTUh	1.23E-8	1.36E-9	1.07E-7	1.20E-7	1.85E-9	3.53E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.30E-10	8.73E-11	2.17E-10	3.65E-9	1.30E-7
IR	kBq U235 eqv.	2.90E-2	6.44E-3	1.31E-1	1.67E-1	9.46E-3	4.70E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.13E-3	2.65E-4	1.93E-3	1.94E-3	1.88E-1
SQP	Pt	6.35E+0	1.11E+0	1.35E+2	1.42E+2	1.29E+0	3.05E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.49E-1	1.07E-1	9.86E-1	-9.40E+0	1.39E+2

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

3 Results

ILCD classification	Indicator	Disclaimer
ILCD type / level 2	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
	Acidification 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
	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

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPE	Kg Sb	1.43E-5	2.25E-6	2.77E-5	4.42E-5	5.23E-6	1.37E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.26E-6	6.97E-8	1.54E-7	1.14E-4	1.66E-4

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

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
GWP	Kg CO2 Equiv.	4.65E-1	1.04E-1	3.21E+0	3.78E+0	1.44E-1	3.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.92E-2	3.68E-3	1.65E-2	3.43E-1	4.64E+0
ODP	Kg CFC-11 Equiv.	6.33E-8	1.81E-8	3.65E-7	4.46E-7	2.57E-8	1.74E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.72E-9	7.37E-10	5.49E-9	-1.59E-8	4.88E-7
POCP	Kg Ethene Equiv.	2.24E-4	7.95E-5	1.98E-3	2.29E-3	6.92E-5	6.56E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.97E-5	3.79E-6	1.76E-5	2.49E-5	2.50E-3
AP	Kg SO2 Equiv.	2.96E-3	9.56E-4	1.46E-2	1.85E-2	3.43E-4	5.14E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.16E-4	1.91E-5	1.21E-4	1.58E-3	2.13E-2
EP	Kg PO43- Equiv.	7.00E-4	1.36E-4	2.45E-3	3.28E-3	5.18E-5	9.37E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.25E-5	3.51E-6	2.33E-5	1.54E-4	3.65E-3

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

NATIONAL ANNEX NMD

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPF	Kg Sb	3.90E-3	7.38E-4	2.69E-2	3.16E-2	1.03E-3	8.00E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.62E-4	3.56E-5	2.25E-4	-5.36E-4	3.35E-2
HTP	kg 1.4 DB	4.08E-1	4.71E-2	7.91E-1	1.25E+0	5.32E-2	4.80E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.07E-2	2.36E-3	7.46E-3	1.58E-1	1.53E+0
FAETP	kg 1.4 DB	1.99E-2	1.21E-3	2.04E-2	4.15E-2	1.46E-3	1.87E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.04E-4	3.87E-5	1.77E-4	2.68E-3	4.84E-2
MAETP	kg 1.4 DB	1.70E+1	4.58E+0	5.55E+1	7.71E+1	5.50E+0	4.44E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.17E+0	1.37E-1	6.33E-1	9.13E+0	9.91E+1

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

3 Results

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
TETP	kg 1.4 DB	9.47E-4	1.59E-4	3.11E-2	3.23E-2	2.08E-4	7.02E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.32E-5	7.78E-6	1.87E-5	-1.09E-4	3.32E-2

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

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
PERE	MJ	2.73E+0	1.75E-2	3.27E+1	3.54E+1	3.69E-2	7.28E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.36E-3	1.16E-3	3.80E-3	-2.68E+0	3.35E+1
PERM	MJ	0.00E+0	0.00E+0	2.48E+0	2.48E+0	0.00E+0	4.95E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.53E+0
PERT	MJ	2.73E+0	1.75E-2	3.52E+1	3.79E+1	3.69E-2	7.78E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.36E-3	1.16E-3	3.80E-3	-2.68E+0	3.60E+1
PENRE	MJ	8.28E+0	1.63E+0	5.50E+1	6.49E+1	2.30E+0	1.65E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.94E-1	7.67E-2	4.99E-1	-1.46E+0	6.87E+1
PENRM	MJ	2.05E-1	0.00E+0	3.96E+0	4.17E+0	0.00E+0	8.33E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.34E-1	4.12E+0
PENRT	MJ	8.48E+0	1.63E+0	5.89E+1	6.91E+1	2.30E+0	1.73E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.94E-1	7.67E-2	4.99E-1	-1.60E+0	7.29E+1
SM	Kg	2.64E+0	0.00E+0	6.45E-2	2.70E+0	6.77E-1	6.76E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-6.74E-2	3.38E+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	0.00E+0
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	0.00E+0
FW	M3	2.47E-2	1.66E-4	4.43E-2	6.92E-2	2.58E-4	1.81E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.11E-5	-2.47E-5	5.02E-4	6.37E-3	7.82E-2

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

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
HWD	Kg	8.10E-6	3.40E-6	8.32E-5	9.47E-5	5.82E-6	2.62E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.90E-6	1.45E-7	7.02E-7	-1.27E-6	1.05E-4
NHWD	Kg	1.37E-1	7.91E-2	3.40E-1	5.57E-1	8.54E-2	1.15E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.74E-2	2.82E-3	3.19E+0	6.27E-2	4.06E+0
RWD	Kg	3.30E-5	1.02E-5	1.21E-4	1.65E-4	1.46E-5	4.94E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.91E-6	4.10E-7	3.09E-6	2.38E-6	1.95E-4

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

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
CRU	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	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.05E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.41E-1	0.00E+0	0.00E+0	3.62E-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	0.00E+0
EE	MJ	0.00E+0	0.00E+0	1.89E-2	1.89E-2	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	2.72E+0	2.74E+0
EET	MJ	0.00E+0	0.00E+0	1.20E-2	1.20E-2	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	1.72E+0	1.73E+0
EEE	MJ	0.00E+0	0.00E+0	6.95E-3	6.95E-3	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	9.98E-1	1.01E+0

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	0.04552	kg C
Biogenic carbon content in accompanying packaging	0.08045	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount carbon dioxide uptake is taken into account. 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	0.1669	kg CO2 (biogenic)
Packaging	0.295	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	€ 0.08	15,9 %
A2 Transport	€ 0.02	3,0 %
A3 Manufacturing	€ 0.33	64,1 %
A4 Transport from the gate to the site	€ 0.01	2,9 %
A5 Construction - Installation process	€ 0.02	4,5 %
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	€ 0.01	1,2 %
C3 Waste processing	€ 0.00	0,1 %
C4 Disposal	€ 0.00	0,5 %
D Benefits and loads beyond the product system boundary	€ 0.04	7,8 %
ECI NL per functional unit	**€ 0.51**	

4 Contact information

Publisher	Operator	Owner of declaration
Knauf Insulation B.V. (2023) Dakota 7 5126 RL Gilze, NL	**Stichting NMD** Visseringlaan 22b 2288 ER Rijswijk, NL	**Knauf Insulation B.V. (2023)** Dakota 7 5126 RL Gilze, NL
E-mail: customerservice.nl@knaufinsulation.com **Website:** https://www.knaufinsulation.nl/	**E-mail:** info@milieudatabase.nl **Website:** www.milieudatabase.nl	**E-mail:** customerservice.nl@knaufinsulation.com **Website:** https://www.knaufinsulation.nl/