Result summary

Houtskeletbouw frame voor Hellend dakelement. Representatief voor leden van de NBvT

Aveco de Bondt

Calculation number:	ReTHiNK-45294
Generation on:	23-08-2023
Issue date:	23-08-2023
Valid until:	23-08-2028
Status:	verified

R<THiNK

1 General information

1.1 PRODUCT

Houtskeletbouw frame voor Hellend dakelement. Representatief voor leden van de NBvT

1.2 VALIDITY

Issue date 23-08-2023

Valid until: 23-08-2028

1.3 OWNER OF THE DECLARATION

Manufacturer: Aveco de Bondt

Address: Burgemeester van der Borchstraat 2, 7451 CH Holten

E-mail: info@avecodebondt.nl

Website: https://www.avecodebondt.nl/

Production location: Categorie 2: NBvT LCA HSB Elementen

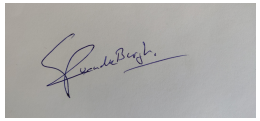
Address production location: Divers (leden van de Nederlandse Branchevereniging voor de Timmerindustrie), Onbekend Onbekend

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



Fred van der Burgh, Agrodome

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 (hellend dakelement)

Declared unit: square meter (m2)

Een Houtskeletbouw (HSB) element, toegepast als hellend dakelement van een eengezinswoning.

1.7 CONVERSION FACTORS

Description	Value	Unit
Declared unit	1	m2
Weight per declared unit	11.761	kg
Conversion factor to 1 kg	0.085027	m2

1 General information

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 C2 = Transport
Module A5 = Construction - Installation process	
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).

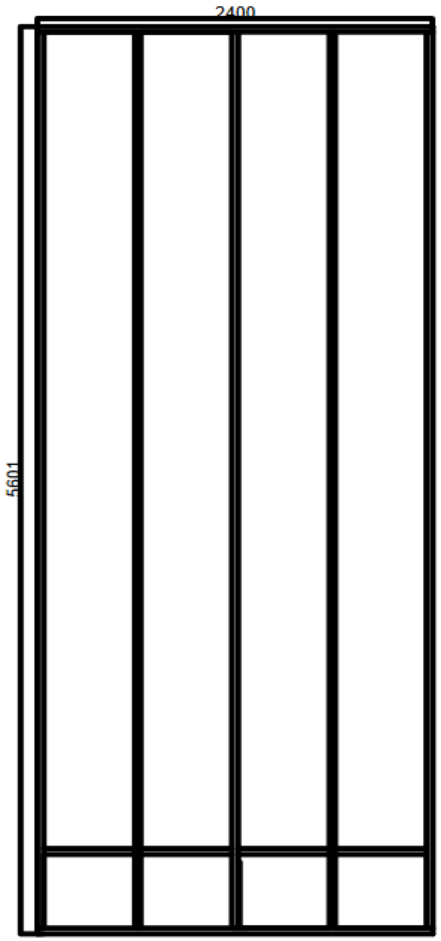
2 Product

2.1 PRODUCT DESCRIPTION

Houtskeletbouw frame voor vloerelementen representatief voor leden NBvT. Het frame is opgebouwd uit houten stijl- en regelwerk van 38 x 270mm (de 270mm is schaalbaar van 180mm tot 286mm) Het frame heeft een onderlinge stijlafstand van h.o.h. 600mm. Bij bepaling is uitgegaan van een houtpercentage van 10%. Uitgangspunt voor de LCA-studie betreft een scharnierkap.

Het element voldoet aan de eisen van BRL 0904 'houtskeletbouw' en/of BRL 0101 'houtachtige dakconstructies' en is representatief voor de leden van de Nederlandse Branchevereniging voor de Timmerindustrie (NBvT) die hiervoor zijn gecertificeerd.

Meer informatie: https://houtbouwsystemen.nl/kennisdeling/



Hellend dakelement 600mm
h.o.h.
Houtpercentage: 9,8% (of 9,2%
conform NTA8800)
Regels 270x38mm

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Het product wordt gebruikt als dakelement, wat betekent dat het wordt gebruikt als een structuur om een ruimte vanaf de bovenzijde af te sluiten. Het kan worden geïnstalleerd in een breed scala aan omgevingen, zoals woningen, kantoren, winkels en andere commerciële gebouwen.

2 Product

2.3 DESCRIPTION PRODUCTION PROCESS

Het houtskeletbouw frame voor hellende dakelementen wordt geprefabriceerd bij een leverancier van houtskeletbouwelementen met KOMO certificering van betreffende toepassingsgebied. Gemaakt van gezaagd en geschaafd Europees vurenhout, aangeleverd in de dimensies: 38x270mm. Het element wordt in de productiehal uitgelegd op een bok of transportband waar de houten stijlen en regels onderling worden verbonden met een nagel tacker. Hierna is het product gereed voor verdere verwerking zoals het aanbrengen van (buiten beschouwing gelaten) beplating, isolatie en folie. Productieafval dat ontstaat bij productie van het houten frame is het zaagsel en resthout dat ontstaat bij het afkorten.

2.4 CONSTRUCTION DESCRIPTION

Houtskeletbouw elementen worden met een torenkraan op de juiste positie gehesen en bevestigd met elektrisch handgereedschap. Materialen voor bevestiging variëren per aansluiting en per bouwmethodiek en zijn om deze reden buiten beschouwing gelaten in dit onderzoek.

3 Results

3 Results

3.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER (SOLID PART)

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.	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
GWP-total	kg CO2 eqv.	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
GWP-b	kg CO2 eqv.	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
GWP-f	kg CO2 eqv.	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
GWP-luluc	kg CO2 eqv.	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
EP-m	kg N eqv.	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
EP-fw	kg P eqv.	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
EP-T	mol N eqv.	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
ODP	kg CFC 11 eqv.	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
POCP	kg NMVOC eqv.	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
ADP-f	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
ADP-mm	kg Sb-eqv.	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

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

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

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 EN15084+A2

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ETP-fw	CTUe	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
PM	disease incidence	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
HTP-c	CTUh	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
HTP-nc	CTUh	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
IR	kBq U235 eqv.	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
SQP	Pt	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

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
		None

3 Results

ILCD classification	Indicator	Disclaimer
ILCD type / level 3	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	
	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
	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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPE	Kg Sb	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
GWP	Kg CO2 Equiv.	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
ODP	Kg CFC-11 Equiv.	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

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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
POCP	Kg Ethene Equiv.	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
AP	Kg SO2 Equiv.	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
EP	Kg PO43- Equiv.	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

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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPF	Kg Sb	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
HTP	kg 1.4 DB	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
FAETP	kg 1.4 DB	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
MAETP	kg 1.4 DB	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
TETP	kg 1.4 DB	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

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

3 Results

3.2 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER (SCALABLE PART)

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.	1.54E-2	5.99E-6	8.67E-3	1.41E-3	2.05E-3	0.00E+0	0.00E+0	0.00E+0	9.02E-4	1.29E-3	3.15E-3	1.11E-4	-2.02E-2	1.27E-2
GWP-total	kg CO2 eqv.	-1.59E+1	1.03E-3	2.62E+0	2.43E-1	7.57E-1	0.00E+0	0.00E+0	0.00E+0	6.49E-2	2.22E-1	1.77E+1	2.06E+0	-1.06E+0	6.66E+0
GWP-b	kg CO2 eqv.	-1.84E+1	4.77E-7	2.35E-2	1.12E-4	3.69E-2	0.00E+0	0.00E+0	0.00E+0	5.11E-5	1.02E-4	1.76E+1	2.04E+0	-6.10E-2	1.20E+0
GWP-f	kg CO2 eqv.	2.42E+0	1.03E-3	2.59E+0	2.42E-1	7.17E-1	0.00E+0	0.00E+0	0.00E+0	6.49E-2	2.22E-1	9.39E-2	1.30E-2	-9.93E-1	5.37E+0
GWP-luluc	kg CO2 eqv.	9.97E-3	3.78E-7	3.93E-4	8.88E-5	3.71E-4	0.00E+0	0.00E+0	0.00E+0	8.85E-6	8.12E-5	3.66E-5	6.84E-6	-7.07E-3	3.89E-3
EP-m	kg N eqv.	5.28E-3	2.11E-6	2.80E-3	4.95E-4	7.87E-4	0.00E+0	0.00E+0	0.00E+0	3.98E-4	4.53E-4	1.45E-3	6.92E-5	-5.90E-3	5.84E-3
EP-fw	kg P eqv.	5.90E-2	1.04E-8	1.85E-3	2.45E-6	1.83E-3	0.00E+0	0.00E+0	0.00E+0	2.26E-7	2.24E-6	2.69E-6	3.62E-7	-6.72E-5	6.26E-2
EP-T	mol N eqv.	1.81E-2	2.33E-5	1.79E-2	5.46E-3	7.09E-3	0.00E+0	0.00E+0	0.00E+0	4.36E-3	4.99E-3	1.67E-2	3.94E-4	-9.59E-2	-2.10E-2
ODP	kg CFC 11 eqv.	4.52E-7	2.28E-10	1.13E-7	5.35E-8	4.99E-8	0.00E+0	0.00E+0	0.00E+0	1.38E-8	4.89E-8	1.18E-8	3.94E-9	-2.15E-7	5.32E-7
POCP	kg NMVOC eqv.	1.73E-2	6.64E-6	5.79E-3	1.56E-3	2.27E-3	0.00E+0	0.00E+0	0.00E+0	1.14E-3	1.43E-3	4.36E-3	1.41E-4	-1.71E-2	1.69E-2
ADP-f	MJ	4.14E+1	1.56E-2	4.20E+1	3.66E+0	4.04E+0	0.00E+0	0.00E+0	0.00E+0	8.69E-1	3.34E+0	1.02E+0	3.03E-1	-1.29E+1	8.37E+1
ADP-mm	kg Sb-eqv.	5.20E-5	2.62E-8	6.98E-5	6.14E-6	5.06E-6	0.00E+0	0.00E+0	0.00E+0	3.49E-7	5.61E-6	5.73E-7	1.66E-8	-1.43E-5	1.25E-4

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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
WDP	m3 world eqv.	3.28E-1	5.57E-5	3.05E-1	1.31E-2	4.64E-2	0.00E+0	0.00E+0	0.00E+0	8.10E-4	1.20E-2	3.33E-2	1.36E-2	-1.04E-1	6.49E-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)

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	8.52E+1	1.39E-2	1.08E+1	3.26E+0	9.95E+0	0.00E+0	0.00E+0	0.00E+0	5.64E-1	2.98E+0	2.35E+0	2.29E-1	-1.93E+2	-7.72E+1
PM	disease incidence	8.06E-7	9.29E-11	8.70E-8	2.18E-8	3.24E-8	0.00E+0	0.00E+0	0.00E+0	1.28E-9	1.99E-8	2.53E-8	2.03E-9	-2.74E-7	7.22E-7
HTP-c	CTUh	1.97E-9	4.50E-13	7.66E-10	1.06E-10	2.79E-10	0.00E+0	0.00E+0	0.00E+0	9.95E-12	9.67E-11	2.94E-9	7.33E-12	-2.39E-9	3.78E-9
HTP-nc	CTUh	6.56E-8	1.52E-11	1.22E-8	3.57E-9	5.62E-9	0.00E+0	0.00E+0	0.00E+0	7.93E-10	3.26E-9	9.40E-9	3.09E-10	-7.57E-8	2.51E-8
IR	kBq U235 eqv.	3.57E-1	6.52E-5	4.25E-2	1.53E-2	1.85E-2	0.00E+0	0.00E+0	0.00E+0	3.76E-3	1.40E-2	3.26E-3	1.19E-3	-3.54E-2	4.20E-1
SQP	Pt	2.22E+3	1.35E-2	4.97E+1	3.17E+0	6.93E+1	0.00E+0	0.00E+0	0.00E+0	1.12E-1	2.90E+0	3.47E-1	7.15E-1	-7.78E+2	1.57E+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

3 Results

ILCD classification	Indicator	Disclaimer
ILCD type / level 3	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
	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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPE	Kg Sb	5.20E-5	2.62E-8	6.98E-5	6.14E-6	4.74E-6	0.00E+0	0.00E+0	0.00E+0	3.22E-8	5.61E-6	5.73E-7	1.66E-8	-1.43E-5	1.25E-4
GWP	Kg CO2 Equiv.	2.41E+0	1.02E-3	2.52E+0	2.40E-1	7.20E-1	0.00E+0	0.00E+0	0.00E+0	6.88E-2	2.20E-1	9.25E-2	8.85E-2	-9.76E-1	5.38E+0
ODP	Kg CFC-11 Equiv.	4.06E-7	1.82E-10	1.05E-7	4.26E-8	4.56E-8	0.00E+0	0.00E+0	0.00E+0	1.20E-8	3.90E-8	1.09E-8	3.16E-9	-2.09E-7	4.55E-7
POCP		2.33E-3	6.18E-7	9.95E-4	1.45E-4	1.65E-4	0.00E+0	0.00E+0	0.00E+0	2.26E-5	1.33E-4	4.07E-4	2.80E-5	-2.06E-3	2.17E-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

3 Results

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
	Kg Ethene Equiv.														
AP	Kg SO2 Equiv.	1.15E-2	4.50E-6	7.03E-3	1.06E-3	1.08E-3	0.00E+0	0.00E+0	0.00E+0	2.02E-4	9.66E-4	2.14E-3	8.50E-5	-1.30E-2	1.11E-2
EP	Kg PO43- Equiv.	2.89E-3	8.84E-7	1.49E-3	2.08E-4	2.34E-4	0.00E+0	0.00E+0	0.00E+0	3.86E-5	1.90E-4	5.53E-4	3.40E-5	-4.20E-3	1.43E-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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
ADPF	Kg Sb	1.67E-2	7.53E-6	2.08E-2	1.77E-3	1.94E-3	0.00E+0	0.00E+0	0.00E+0	4.70E-4	1.62E-3	5.32E-4	1.46E-4	-6.67E-3	3.73E-2
HTP	kg 1.4 DB	1.21E+0	4.31E-4	3.65E-1	1.01E-1	1.12E-1	0.00E+0	0.00E+0	0.00E+0	1.70E-2	9.25E-2	2.54E-1	6.45E-3	-1.12E+0	1.04E+0
FAETP	kg 1.4 DB	3.12E-2	1.26E-5	1.31E-2	2.95E-3	3.95E-3	0.00E+0	0.00E+0	0.00E+0	3.37E-4	2.70E-3	1.98E-3	1.12E-4	-2.32E-2	3.31E-2
MAETP	kg 1.4 DB	8.43E+1	4.53E-2	2.42E+1	1.06E+1	1.07E+1	0.00E+0	0.00E+0	0.00E+0	1.13E+0	9.72E+0	5.12E+0	4.68E-1	-3.23E+1	1.14E+2
TETP	kg 1.4 DB	9.01E-3	1.52E-6	5.15E-3	3.58E-4	6.06E-4	0.00E+0	0.00E+0	0.00E+0	6.06E-5	3.27E-4	2.70E-4	2.38E-5	-6.06E-3	9.74E-3

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

3 Results

3.3 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER (SOLID PART)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
PERE	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
PERM	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
PERT	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
PENRE	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
PENRM	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
PENRT	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
SM	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
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
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	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

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
HWD	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
NHWD	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
RWD	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

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

3 Results

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	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	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
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	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
EET	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
EEE	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

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

3.4 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER (SCALABLE PART)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
PERE	MJ	2.10E+4	1.95E-4	6.27E+2	4.58E-2	6.49E+2	0.00E+0	0.00E+0	0.00E+0	7.65E-3	4.18E-2	6.02E-2	9.55E-3	-1.61E+2	2.21E+4
PERM	MJ	1.72E+4	0.00E+0	5.17E+2	0.00E+0	5.33E+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	1.83E+4
PERT	MJ	3.78E+2	1.95E-4	7.44E+0	4.58E-2	1.17E+1	0.00E+0	0.00E+0	0.00E+0	7.65E-3	4.18E-2	6.02E-2	9.55E-3	-1.61E+2	2.37E+2
PENRE	MJ	5.43E+3	1.65E-2	2.21E+2	3.88E+0	1.71E+2	0.00E+0	0.00E+0	0.00E+0	1.05E+0	3.55E+0	1.10E+0	3.22E-1	-1.33E+1	5.82E+3
PENRM	MJ	3.07E+1	0.00E+0	3.47E+0	0.00E+0	1.02E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-8.79E-2	3.51E+1
PENRT	MJ	4.16E+1	1.65E-2	4.53E+1	3.88E+0	4.36E+0	0.00E+0	0.00E+0	0.00E+0	1.05E+0	3.55E+0	1.10E+0	3.22E-1	-1.34E+1	8.78E+1
SM	Kg	1.77E-1	0.00E+0	5.51E-3	0.00E+0	5.47E-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	1.88E-1
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
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	1.59E-2	1.90E-6	4.37E-2	4.45E-4	2.79E-3	0.00E+0	0.00E+0	0.00E+0	9.91E-5	4.07E-4	4.93E-3	3.27E-4	-2.55E-3	6.61E-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

Abbreviation	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D	Total
HWD	Kg	8.90E-5	3.95E-8	3.06E-5	9.26E-6	1.23E-5	0.00E+0	0.00E+0	0.00E+0	7.24E-6	8.47E-6	2.62E-6	2.51E-7	-3.30E-5	1.27E-4
NHWD	Kg	1.62E+0	9.88E-4	2.56E-1	2.32E-1	1.58E-1	0.00E+0	0.00E+0	0.00E+0	1.76E-3	2.12E-1	6.62E-2	1.18E+0	-2.91E-1	3.43E+0
RWD	Kg	3.10E-4	1.02E-7	3.96E-5	2.40E-5	1.37E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.19E-5	3.57E-6	1.81E-6	-5.19E-5	3.63E-4

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	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	1.80E-2	0.00E+0	2.26E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.34E-1	0.00E+0	0.00E+0	6.75E-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	2.05E+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	7.35E+1	7.55E+1
EET	MJ	0.00E+0	0.00E+0	1.30E+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	4.65E+1	4.78E+1
EEE	MJ	0.00E+0	0.00E+0	7.52E-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	2.70E+1	2.77E+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

3.5 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	5.11	kg C
Biogenic carbon content in accompanying packaging	0	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	18.74	kg CO2 (biogenic)

3 Results

3.6 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	€ 0.32	71,8 %
A2 Transport	€ 0.00	0,0 %
A3 Manufacturing	€ 0.21	47,1 %
A4 Transport from the gate to the site	€ 0.03	6,5 %
A5 Construction - Installation process	€ 0.05	12,3 %
B1 Use	€ 0.00	0,0 %
B2 Maintenance	€ 0.00	0,0 %
B3 Repair	€ 0.00	0,0 %
C1 De-construction / demolition	€ 0.01	1,4 %
C2 Transport	€ 0.03	6,0 %
C3 Waste processing	€ 0.04	9,6 %
C4 Disposal	€ 0.01	1,3 %
D Benefits and loads beyond the product system boundary	€ -0.25	-56,0 %
ECI NL per functional unit	**€ 0.44**	

4 Contact information

Publisher	Operator	Owner of declaration
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