

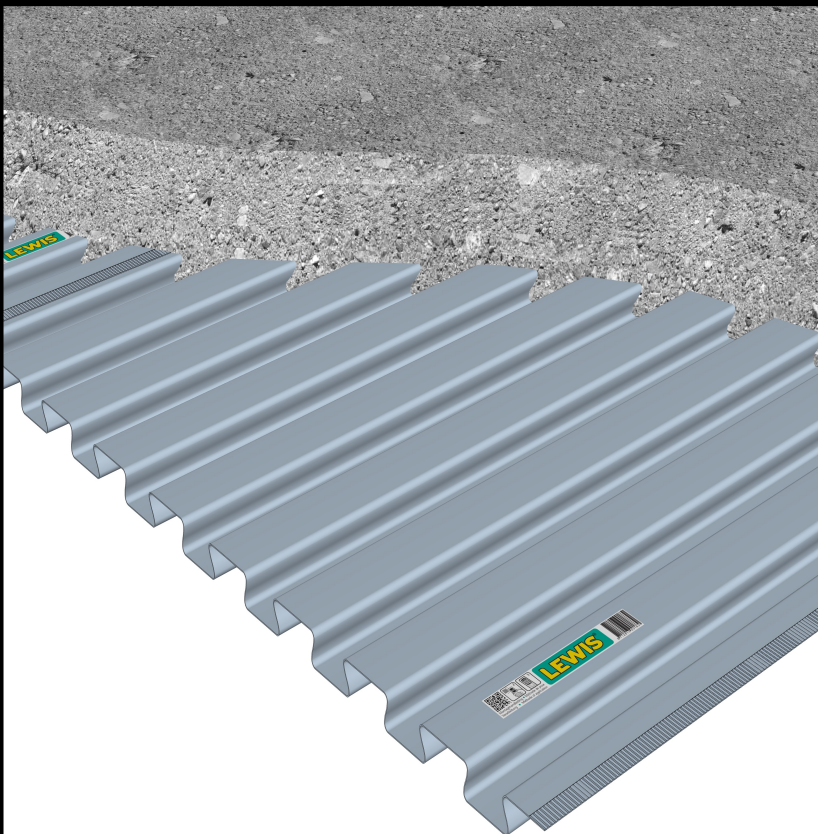
Environmental Product Declaration

according to ISO 14025 and EN 15804



This declaration is for:
**Dovetailed floor deck LEWIS, 0,5 mm
thickness, zinc coating**

Provided by:
Reppel B.V.



program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

MRPI® registration
1.1.00473.2023
date of first issue
01-12-2023
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01-12-2023
expiry date
01-12-2028





COMPANY INFORMATION



Reppel B.V.
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0031 (0)78 6174400
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PRODUCT

Dovetailed floor deck LEWIS, 0,5 mm thickness, zinc coating

DECLARED UNIT/FUNCTIONAL UNIT

1 m²

DESCRIPTION OF PRODUCT

Profiled steel decking for application in lightweight composite floor slabs

VISUAL PRODUCT



MRPI® REGISTRATION

1.1.00473.2023

DATE OF ISSUE

01-12-2023

EXPIRY DATE

01-12-2028

MORE INFORMATION

<https://reppel.nl/en/our-solutions/lewis-dovetailed-sheeting/>

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Kamiel Jansen, Aveco de Bondt**.

The LCA study has been done by **Igor Konovalov, SGS INTRON**.

The certificate is based on an LCA-dossier according to ISO14025 and EN15804+A2/Bepalingsmethode. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2/Bepalingsmethode. Declaration of SVHC that are listed on the 'Candidate List of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043GR
Amsterdam



ir. J-P den Hollander, Managing director MRPI®

DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR[a]

Independent verification of the declaration and data,

according to EN ISO 14025:2010:

internal: external: X

Third party verifier:

Kamiel Jansen, Aveco de Bondt

[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

LEWIS Dovetailed sheeting are steel floor profiles that acts as reinforcement and formwork of a thin composite steel floor deck on wooden beams and light steel structures. The floor slab is finished with a thin layer of (lightweight) fine grade aggregate concrete, sand and cement floor screed or a liquid screed. This layer is project specific and therefore not included in the environmental profile. Large amounts of floor space can be transported to a project with 1 logistic movement. The LEWIS Dovetailed sheeting are designed to minimise the required volume of mortar and thus reduce the weight of the floor slab. The reference service life is 75 years, as long as the default service life of a building.

Product characteristics

COMPONENT > 1% of total mass	[%]
Hot-dip galvanized steel	100%

SCOPE AND TYPE

The production of the LEWIS Dovetail plates takes place at the Reppel production location in Zwijndrecht, the Netherlands. The products are sold in the Netherlands and across Europe. This EPD is a producer-specific EPD.

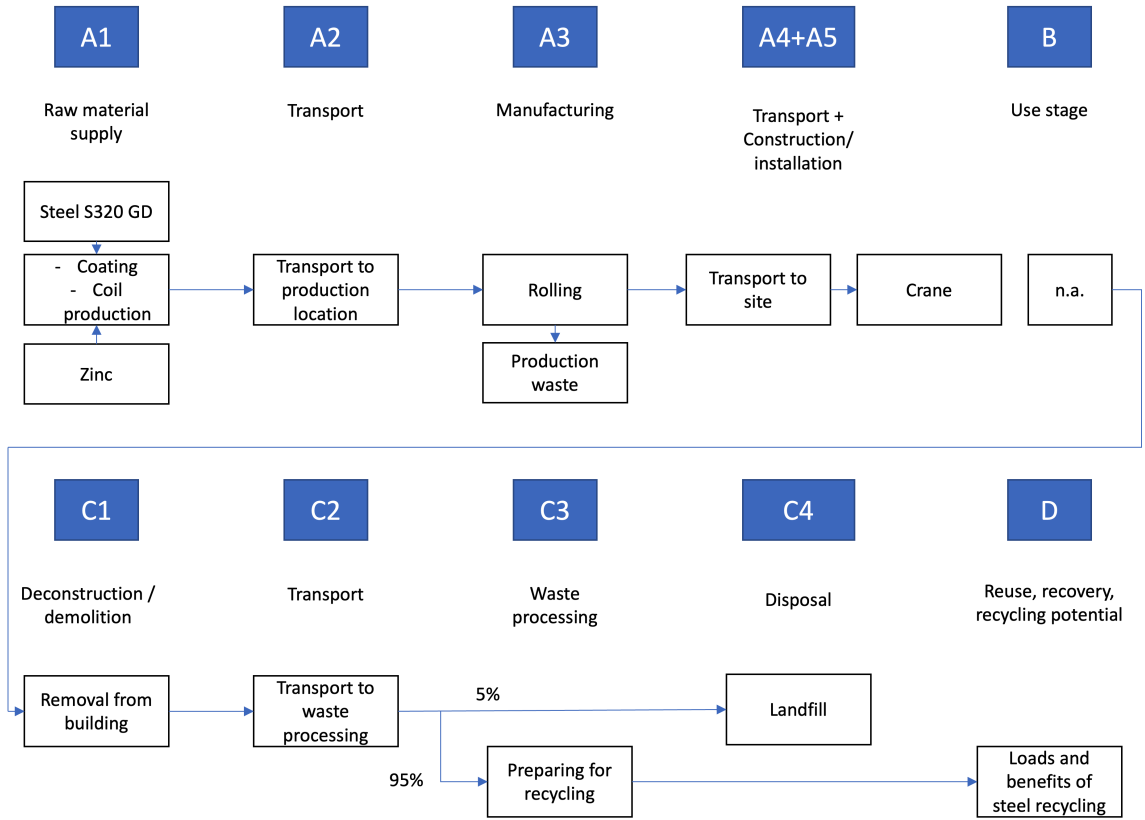
This EPD is in accordance with the European standard EN 15804:2012 + A1:2013 and A2:2019. Scenarios and fixed values have been taken from the Dutch Environmental Performance Assessment Method for Construction Works, version 1.1 March 2022. This means that the underlying standards ISO 14040:2006 "Environmental management - Life cycle analysis - Principles and framework" and ISO 14044:2006 "Environmental management - Life cycle analysis - Requirements and guidelines" have been followed. EN 15804 is also in line with ISO 21930:2017 and the EPD fulfills ISO 14025:2006.

The LCA calculations were performed using Simapro and Ecoinvent v3.6

PRODUCT STAGE	CONSTRUCTION					USE STAGE							END OF LIFE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	PROCESS												STAGE				
	STAGE																
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	

X = Modules Assessed

ND = Not Declared



LCA process diagram according to EN 15804 (7.2.1)

REPRESENTATIVENESS

The steel is processed at the Reppel production location in Zwijndrecht. The products are also sent to customers from here.

ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
ADPE	kg Sb eq.	5.27 E-2	1.68 E-6	1.49 E-7	5.27 E-2	3.08 E-6	7.31 E-4	2.77 E-8	3.72 E-6	9.47 E-6	1.75 E-8	-6.65 E-6
ADPF	MJ	1.42 E-1	4.74 E-4	6.53 E-4	1.44 E-1	8.67 E-4	1.08 E-2	6.86 E-5	1.05 E-3	1.11 E-3	2.56 E-5	-5.67 E-2
GWP	kg CO2 eq.	1.91 E+1	6.46 E-2	8.66 E-2	1.93 E+1	1.18 E-1	2.13 E+0	9.70 E-3	1.42 E-1	1.69 E-1	1.88 E-3	-9.18 E+0
ODP	kg CFC11 eq.	1.36 E-6	1.20 E-8	4.25 E-9	1.38 E-6	2.19 E-8	1.87 E-7	1.06 E-9	2.64 E-8	2.11 E-8	6.26 E-10	-3.20 E-7
POCP	kg ethene eq.	2.44 E-2	3.87 E-5	1.21 E-5	2.45 E-2	7.09 E-5	1.92 E-3	5.54 E-6	8.55 E-5	1.49 E-4	2.00 E-6	-2.00 E-2
AP	kg SO2 eq.	2.54 E-1	2.78 E-4	1.50 E-4	2.55 E-1	5.08 E-4	1.75 E-2	4.48 E-5	6.13 E-4	1.66 E-3	1.37 E-5	-3.11 E-2
EP	kg (PO4)3- eq.	4.88 E-2	5.55 E-5	3.27 E-5	4.89 E-2	1.01 E-4	3.61 E-3	9.99 E-6	1.22 E-4	2.11 E-4	2.65 E-6	-3.69 E-3

Toxicity indicators for Dutch market

HTP	kg DCB eq.	1.07 E+1	2.76 E-2	7.52 E-3	1.07 E+1	5.05 E-2	1.71 E+0	2.30 E-3	6.09 E-2	2.05 E-1	8.50 E-4	-5.74 E+0
FAETP	kg DCB eq.	2.66 E-1	8.09 E-4	2.03 E-4	2.67 E-1	1.48 E-3	2.09 E-2	3.97 E-5	1.79 E-3	3.81 E-3	2.02 E-5	7.12 E-2
MAETP	kg DCB eq.	5.70 E+2	2.89 E+0	9.22 E-1	5.74 E+2	5.29 E+0	4.53 E+1	1.50 E-1	6.38 E+0	1.66 E+1	7.21 E-2	5.95 E+1
TETP	kg DCB eq.	3.83 E-2	9.78 E-5	1.38 E-4	3.85 E-2	1.79 E-4	2.30 E-3	2.83 E-5	2.16 E-4	6.37 E-4	2.13 E-6	4.80 E-1
ECI	Euro	3.52 E+0	7.80 E-3	6.14 E-3	3.54 E+0	1.43 E-2	3.74 E-1	1.00 E-3	1.72 E-2	3.76 E-2	2.65 E-4	-1.15 E+0
ADPF	kg Sb. eq.	1.42 E-1	4.74 E-4	6.53 E-4	1.44 E-1	8.67 E-4	1.08 E-2	6.86 E-5	1.05 E-3	1.11 E-3	2.56 E-5	-5.67 E-2

- ADPE = Abiotic Depletion Potential for non-fossil resources
- ADPF = Abiotic Depletion Potential for fossil resources
- GWP = Global Warming Potential
- ODP = Depletion potential of the stratospheric ozone layer
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- AP = Acidification Potential of land and water
- EP = Eutrophication Potential
- HTP = Human Toxicity Potential
- FAETP = Fresh water aquatic ecotoxicity potential
- MAETP = Marine aquatic ecotoxicity potential
- TETP = Terrestrial ecotoxicity potential
- ECI = Environmental Cost Indicator
- ADPF = Abiotic Depletion Potential for fossil resources expressed in [kg Sb-eq.]

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	1.87 E+1	6.51 E-2	8.87 E-2	1.88 E+1	1.19 E-1	2.69 E+0	9.87 E-3	1.44 E-1	1.61 E-1	1.92 E-3	-9.74 E+0
GWP-fossil	kg CO2 eq.	1.99 E+1	6.51 E-2	8.77 E-2	2.00 E+1	1.19 E-1	2.16 E+0	9.81 E-3	1.44 E-1	1.71 E-1	1.92 E-3	-9.85 E+0
GWP-biogenic	kg CO2 eq.	-1.21 E+0	3.95 E-5	9.63 E-4	-1.20 E+0	7.23 E-5	5.30 E-1	5.68 E-5	8.72 E-5	-9.78 E-3	3.80 E-6	1.02 E-1
GWP-luluc	kg CO2 eq.	1.66 E-2	2.30 E-5	2.53 E-5	1.66 E-2	4.21 E-5	5.55 E-4	1.87 E-6	5.08 E-5	1.91 E-4	5.34 E-7	7.27 E-3
ODP	kg CFC11 eq.	1.36 E-6	1.50 E-8	4.22 E-9	1.38 E-6	2.74 E-8	2.19 E-7	1.27 E-9	3.31 E-8	2.45 E-8	7.89 E-10	-2.40 E-7
AP	mol H+ eq.	4.27 E-1	3.71 E-4	1.91 E-4	4.28 E-1	6.78 E-4	2.81 E-2	6.16 E-5	8.18 E-4	2.07 E-3	1.82 E-5	-3.80 E-2
EP-freshwater	kg PO4 eq.	9.83 E-4	5.36 E-7	4.91 E-6	9.89 E-4	9.80 E-7	4.20 E-5	3.06 E-7	1.18 E-6	1.16 E-5	2.15 E-8	-3.48 E-4
EP-marine	kg N eq.	2.98 E-2	1.33 E-4	4.32 E-5	3.00 E-2	2.43 E-4	4.72 E-3	2.45 E-5	2.93 E-4	4.56 E-4	6.25 E-6	-7.05 E-3
EP-terrestrial	mol N eq.	1.69 E+0	1.46 E-3	5.28 E-4	1.69 E+0	2.67 E-3	1.20 E-1	2.72 E-4	3.23 E-3	5.29 E-3	6.90 E-5	-8.22 E-2
POCP	kg NMVOC eq.	9.47 E-2	4.18 E-4	1.30 E-4	9.52 E-2	7.64 E-4	1.44 E-2	7.40 E-5	9.22 E-4	1.45 E-3	2.00 E-5	-5.60 E-2
ADP-minerals & metals	kg Sb eq.	5.27 E-2	1.68 E-6	1.49 E-7	5.27 E-2	3.08 E-6	7.31 E-4	2.77 E-8	3.72 E-6	9.47 E-6	1.75 E-8	-6.65 E-6
ADP-fossil	MJ, net calorific value	2.47 E+2	9.99 E-1	1.15 E+0	2.49 E+2	1.83 E+0	2.00 E+1	1.32 E-1	2.20 E+0	2.36 E+0	5.36 E-2	-6.87 E+1
WDP	m3 world eq. deprived	9.24 E+0	3.07 E-3	8.49 E-3	9.26 E+0	5.61 E-3	3.60 E-1	5.97 E-4	6.77 E-3	2.38 E-2	2.40 E-3	-1.88 E+0

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenic

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment

EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment

EP-terrestrial = Eutrophication Potential, Accumulated Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals&metals = Abiotic Depletion Potential for non fossil resources [2]

ADP-fossil = Abiotic Depletion for fossil resources potential [2]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

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 experience with the indicator.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	3.63 E-6	5.87 E-9	5.87 E-10	3.64 E-6	1.07 E-8	3.85 E-7	1.36 E-9	1.30 E-8	2.60 E-8	3.53 E-10	-5.69 E-7
IRP	kBq U235 eq.	6.38 E-1	4.37 E-3	2.38 E-3	6.45 E-1	7.99 E-3	6.56 E-2	4.18 E-4	9.64 E-3	1.18 E-2	2.20 E-4	1.68 E-1
ETP-fw	CTUe	9.47 E+2	8.11 E-1	1.03 E+0	9.49 E+2	1.48 E+0	3.64 E+1	1.07 E-1	1.79 E+0	1.02 E+1	3.47 E-2	-3.30 E+2
HTP-c	CTUh	8.16 E-8	2.89 E-11	1.42 E-11	8.16 E-8	5.28 E-11	4.08 E-9	2.54 E-12	6.37 E-11	2.48 E-10	8.03 E-13	-1.26 E-9
HTP-nc	CTUh	8.85 E-7	9.67 E-10	4.90 E-10	8.87 E-7	1.77 E-9	3.90 E-8	7.16 E-11	2.13 E-9	1.18 E-8	2.47 E-11	1.91 E-6
SQP	---	1.67 E+2	8.54 E-1	2.32 E-1	1.68 E+2	1.56 E+0	4.09 E+0	2.20 E-2	1.89 E+0	4.76 E+0	1.12 E-1	-1.52 E+1

PM = Potential incidence of disease due to PM emissions

IRP = Potential Human exposure efficiency relative to U235 [1]

ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]

HTP-c = Potential Comparative Toxic Unit for humans [2]

HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]

SQP = Potential soil quality index [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 experience with the indicator.

RESOURCE USE per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.89 E+1	1.43 E-2	1.10 E-1	2.90 E+1	2.62 E-2	5.57 E-1	7.50 E-3	3.16 E-2	3.71 E-1	4.33 E-4	2.00 E+0
PERM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	2.89 E+1	1.43 E-2	1.10 E-1	2.90 E+1	2.62 E-2	5.57 E-1	7.50 E-3	3.16 E-2	3.71 E-1	4.33 E-4	2.00 E+0
PENRE	MJ	2.63 E+2	1.06 E+0	1.23 E+0	2.65 E+2	1.94 E+0	2.13 E+1	1.40 E-1	2.34 E+0	2.51 E+0	5.69 E-2	-7.13 E+1
PENRM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PENRT	MJ	2.63 E+2	1.06 E+0	1.23 E+0	2.65 E+2	1.94 E+0	2.13 E+1	1.40 E-1	2.34 E+0	2.51 E+0	5.69 E-2	-7.13 E+1
SM	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m3	2.51 E-1	1.13 E-4	6.97 E-4	2.52 E-1	2.07 E-4	9.86 E-3	4.40 E-5	2.50 E-4	1.12 E-3	5.72 E-5	-3.56 E-2

PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable energy resources used as raw materials

PERT = Total use of renewable primary energy resources

PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

PENRT = Total use of non-renewable primary energy resources

SM = Use of secondary materials

RSF = Use of renewable secondary fuels

NRSF = Use of non renewable secondary fuels

FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	7.84 E-3	2.55 E-6	6.68 E-7	7.85 E-3	4.67 E-6	1.77 E-4	2.29 E-7	5.64 E-6	7.13 E-6	8.00 E-8	-1.18 E-3
NHWD	kg	3.37 E+0	6.19 E-2	3.25 E-3	3.43 E+0	1.13 E-1	4.55 E-1	1.84 E-2	1.37 E-1	6.91 E-2	3.64 E-1	-9.64 E-1
RWD	kg	5.80 E-4	6.79 E-6	2.38 E-6	5.89 E-4	1.24 E-5	9.21 E-5	5.92 E-7	1.50 E-5	1.40 E-5	3.52 E-7	5.82 E-5
CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73 E+0	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
BCCpr	kg C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BCCpa	kg C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BCCpr = Biogenic carbon content in product

BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

Methodolgy in accordance with the Environmental Performance Assessment Method for Construction Works. No cut-offs. Calculations are based on process data from the year 2021.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Reppel purchases HDG steel coils (A1), which are transported to the Reppel production location in Zwijndrecht (A2) where the steel coils are roll formed into the LEWIS dovetailed cross section and cut into sheets (A3).

Transport to and processes at the construction site

Parameter	Process
Transport mode	Transport, freight, lorry, unspecified {RER} market for transport, freight, lorry, unspecified Cut-off, U
Distance	150 km



DECLARATION OF SVHC

There are no substances included in the product that exceed the limit for registration included in the latest "Candidate List of Substances of Very High Concern for Authorization".

REFERENCES

Nationale Milieudatabase, "Environmental Performance Assessment Method for Construction Works, v1.1, March 2022".

Nationale Milieudatabase, "NMD-Toetsingsprotocol opname data in de nationale milieudatabase" (verification protocol)

EN 15804 A1:2012 and A2:2019, "Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products"

ISO 14040:2006, "Environmental management - Environmental management -- Life cycle assessment - Principles and framework"

ISO 14044:2006, "Environmental management - Life cycle assessment - Requirements and guidelines"

ISO 21930:2017, "Sustainability in building construction – Environmental declaration of building products"

ISO 14025:2006, "Environmental labels and declarations – Type III environmental declarations"

REMARKS

None