Environmental
Product
Declaration

According to EN15804+A2 (+indicators A1)

This declaration is for:
Rockzero, outer wall

Provided by:
ROCKWOOL B.V., Prefab Building Systems

MRPI® registration:
1.1.00906.2025

Program operator:
Stichting MRPI®
Publisher:
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www.mrpi.nl

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COMPANY INFORMATION

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MRPI® REGISTRATION

1.1.00906.2025

DATE OF THIS ISSUE

11-7-2025

EXPIRY DATE

11-7-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco Intelligence. The LCA study has been done by Agnes Stehmann-Schuurmans & Bob Roijen, SGS INTRON B.V. . The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). 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. 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

1043 GR

Amsterdam

PRODUCT

Rockzero, outer wall

DECLARED UNIT / FUNCTIONAL UNIT

1 Surface area (m2)

DESCRIPTION OF PRODUCT

Rockzero is a constructural building method in which the entire building envelope largely consists of ROCKWOOL stone wool, based on a constructural column structure made from steel and stonewool, finished with OSB and Fermacell. The thermal performance ranges from Rc = 6-9 m²K/W (7 in this EPD).

VISUAL PRODUCT

MORE INFORMATION

https://prefab.rockwool.com/nl

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration an data according to EN15804+A2 (+indicators A1) Internal: External: X
	Third party verifier: Gert-Jan Vroege, Eco Intelligence
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Rockzero is a constructural building method in which the entire building envelope largely consists of ROCKWOOL stone wool. The walls of the system consist of a supporting column structure. The columns are made of high-pressure stone wool with a slender steel profile on either side. A column is placed every 60 cm with 100 mm thick ROCKWOOL insulation in between. OSB4 boards are mounted on the columns on the inside of the house.
The OSB4 ensures an airtight but vapour-open performance. Spacer profiles (called inner spacers) are placed on the OSB4. These inner spacers are made of stone wool and a thin steel profile. The piping for electricity is mounted on the OSB, and the remaining space is filled with a layer of ROCKWOOL insulation (thickness 50 mm). A gypsum fibreboard is applied to the spacer profiles for the interior finish.

A spacer made of stone wool is mounted on the outside of each column (called outer spacer). A rail (for cavity anchors) or a metal profile (for mounting the facade cladding) is attached to this. The space between the columns is filled with ROCKWOOL insulation. The thickness of the spacers and insulation varies and depends on the desired thermal performance (Rc-value). A U-profile closes the columns and insulation at the top and bottom.

The wall elements are produced in sizes up to 3.5 x 6 meter. The results in this LCA are presented per m2 (fully filled, excluding openings for windows and doors).

The reference service life (RSL) of Rockzero wall systems is the same as the default service life of a residential building, which is 75 years for Dutch buildings.

Rockzero wall system elements are transported with steel trestles. These trestles are returned to Vianen after assembly and reused and excluded in the LCA. No further packaging is required.
The Rc-value ranges from 6-9 m²K/W. It is set at 7 in this EPD. Data for scaling are included in the Dutch National Environmental Database (NMD) and can be used for calculating other Rc-values, see #nmd_202071 and #nmd_202072 via https://milieudatabase.nl/nl/viewer/?search=Rockzero .

Component (> 1%)	(kg)
Steel spacers	9,92
ROCKWOOL stone wool	17,38
OSB	7,44
Fermacell	14,38
Other (screws, glue, etc.)	3,28

SCOPE AND TYPE

Rockzero elements are assembled in Vianen, the Netherlands. The ROCKWOOL stone wool components are produced in Roermond (NL), Doense (DK) and Flechtingen (D). This EPD is specific for stone wool from these production locations. Also, specific EPD data for Fermacell is used. Other data are generic.

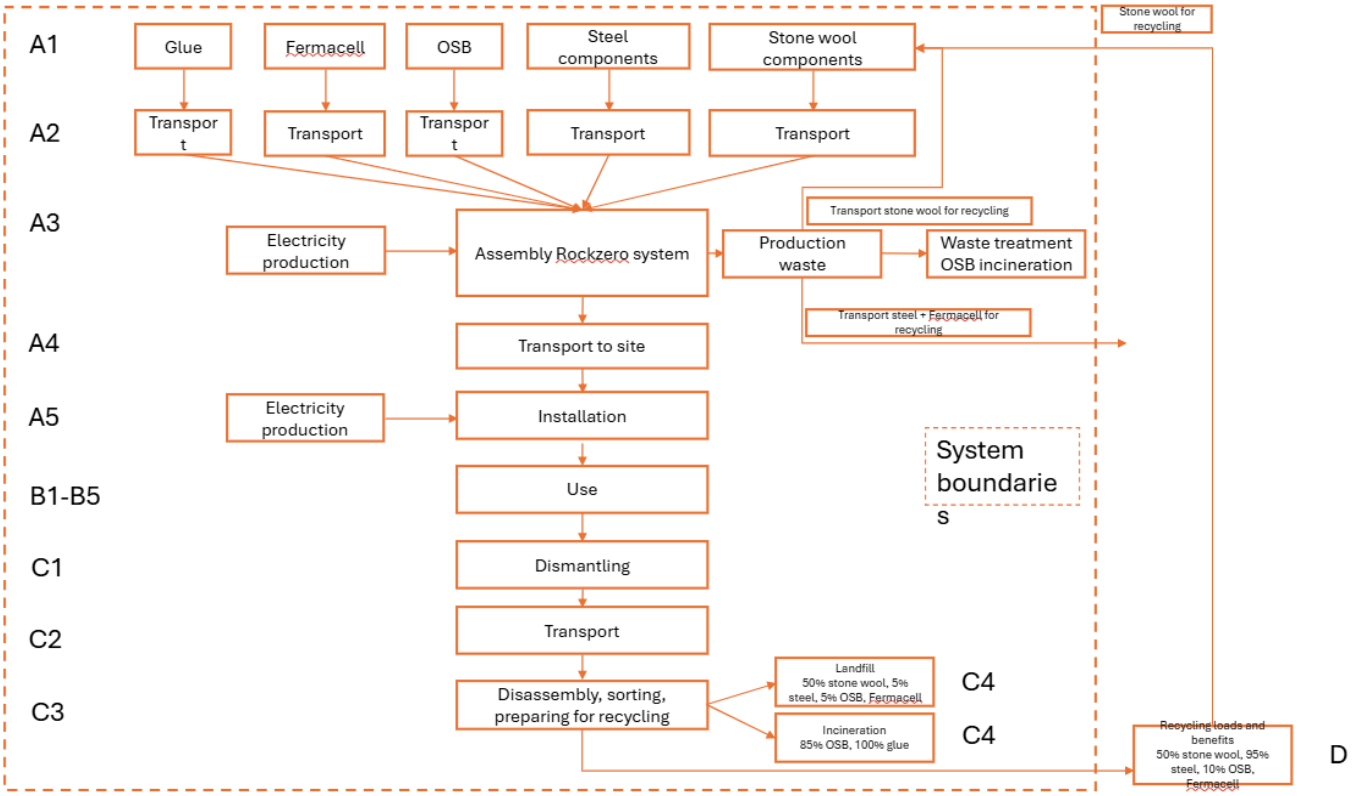
In this LCA, application in the Netherlands is assumed for the scenarios in Modules A4 (transport to site), A5 (construction), B (use) and C-D (end-of-life).

The LCA is calculated with Simapro 9, NMD 'basisprocessendatabase' v3.9 and ecoinvent v3.6. The LCIA is calculated with EF3.0.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
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	x	x	x	x	x	ND	ND	x	x	x	x	x

X = Modules Assessed

ND = Not Declared



REPRESENTATIVENESS

This EPD is fully technological and geographical representative for the Rockzero assembly, and stone wool and Fermacell production.

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb eq.	8,24E-02	1,11E-04	1,94E-06	8,25E-02	3,52E-05	1,03E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,03E-06	8,74E-06	1,75E-05	6,74E-06	-3,61E-02
ADPF	MJ	7,92E+02	6,07E+01	4,14E+00	8,59E+02	1,90E+01	8,61E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,61E+00	5,20E+00	4,91E+00	7,34E+00	-1,30E+02
GWP	kg CO2 eq.	5,49E+01	4,05E+00	2,72E-01	5,92E+01	1,27E+00	6,23E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,23E-01	3,40E-01	3,53E-01	1,20E+00	-1,27E+01
ODP	kg CFC11 eq.	3,81E-06	7,40E-07	2,30E-08	4,57E-06	2,32E-07	1,05E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,05E-07	6,31E-08	4,14E-08	9,03E-08	1,27E-07
POCP	kg ethene eq.	5,02E-02	2,04E-03	1,38E-04	5,24E-02	6,31E-04	6,11E-04	1,50E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,11E-04	4,98E-05	2,79E-04	4,37E-04	-8,18E-03
AP	kg SO2 eq.	2,30E-01	1,21E-02	1,10E-03	2,43E-01	3,01E-03	4,54E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	4,54E-03	1,46E-03	3,14E-03	3,53E-03	-2,34E-02
EP	kg (PO4) 3 eq.	3,90E-02	2,14E-03	2,94E-04	4,15E-02	4,66E-04	1,03E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,03E-03	2,47E-04	4,07E-04	8,25E-04	-3,94E-03

Toxicity indicators and ECI (Dutch market)

HTP	kg DCB eq.	2,62E+01	1,61E+00	9,20E-02	2,79E+01	5,08E-01	2,24E-01	2,40E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	2,24E-01	1,45E-01	3,81E-01	3,52E-01	-2,36E+00
FAETP	kg DCB eq.	7,43E-01	4,46E-02	2,00E-03	7,89E-01	1,40E-02	3,16E-03	2,39E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	3,16E-03	4,26E-03	7,15E-03	6,61E-03	-6,52E-02
MAETP	kg DCB eq.	1,26E+03	1,70E+02	5,39E+00	1,43E+03	5,38E+01	1,10E+01	4,71E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,10E+01	1,52E+01	3,11E+01	2,37E+01	-3,69E+01
TETP	kg DCB eq.	1,92E-01	5,72E-03	1,46E-03	2,00E-01	1,81E-03	5,02E-04	2,71E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	5,02E-04	5,15E-04	1,35E-03	6,41E-04	2,04E-01
ECI	euro	6,71E+00	4,42E-01	3,02E-02	7,18E+00	1,34E-01	8,19E-02	4,09E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,19E-02	4,04E-02	7,25E-02	1,17E-01	-1,00E+00
ADPF	kg Sb eq.	3,81E-01	2,92E-02	1,99E-03	4,13E-01	9,15E-03	4,14E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	4,14E-03	2,50E-03	2,36E-03	3,53E-03	-6,26E-02

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

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	4,05E+01	4,08E+00	7,13E-01	4,53E+01	1,28E+00	6,30E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,30E-01	3,43E-01	1,19E+01	5,34E+00	-1,32E+01
GWP-fossil	kg CO2 eq.	5,64E+01	4,08E+00	2,76E-01	6,08E+01	1,28E+00	6,30E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,30E-01	3,43E-01	3,58E-01	1,18E+00	-1,32E+01
GWP-biogenic	kg CO2 eq.	-1,61E+01	0,00E+00	4,37E-01	-1,57E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	1,15E+01	4,16E+00	0,00E+00
GWP-luluc	kg CO2 eq.	1,36E-01	1,43E-03	3,75E-04	1,37E-01	4,54E-04	5,56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	5,56E-05	1,21E-04	3,76E-04	1,37E-04	1,11E-02
ODP	kg CFC11 eq.	3,92E-06	9,27E-07	2,42E-08	4,87E-06	2,90E-07	1,31E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,31E-07	7,90E-08	4,78E-08	1,11E-07	2,16E-07
AP	mol H+ eq.	3,91E-01	1,54E-02	1,58E-03	4,08E-01	3,67E-03	6,36E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,36E-03	1,95E-03	3,92E-03	4,96E-03	-3,72E-02
EP-fresh water	kg PO4 eq.	2,91E-03	3,22E-05	1,56E-05	2,96E-03	1,02E-05	3,77E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	3,77E-06	2,82E-06	2,36E-05	4,86E-06	-7,58E-05
EP-marine	kg N eq.	5,81E-02	4,25E-03	4,38E-04	6,28E-02	7,26E-04	2,79E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	2,79E-03	6,99E-04	8,67E-04	2,10E-03	-9,42E-03
EP-terrestrial	mol N eq.	9,28E-01	4,71E-02	6,35E-03	9,81E-01	8,12E-03	3,07E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	3,07E-02	7,70E-03	1,01E-02	2,30E-02	-1,07E-01
POCP	kg NMVOC eq.	2,24E-01	1,50E-02	1,29E-03	2,40E-01	3,11E-03	8,43E-03	2,53E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,43E-03	1,87E-03	2,74E-03	5,94E-03	-3,40E-02
ADP-minerals & metals	kg Sb eq.	8,24E-02	1,11E-04	1,94E-06	8,25E-02	3,52E-05	1,03E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,03E-06	8,74E-06	1,75E-05	6,74E-06	-3,61E-02
ADP-fossil	MJ, net calorific value	6,80E+02	6,16E+01	3,63E+00	7,46E+02	1,93E+01	8,65E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,65E+00	5,26E+00	4,94E+00	7,29E+00	-3,51E+01
WDP	m3 world eq. Deprived	1,98E+01	1,72E-01	2,77E-02	2,00E+01	5,46E-02	1,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,39E-02	1,61E-02	4,84E-02	1,99E-01	8,31E-01

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenictotal

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 [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- 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	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	4,78E-06	2,77E-07	1,58E-08	5,07E-06	8,11E-08	1,67E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,67E-07	3,09E-08	4,85E-08	5,91E-08	-3,90E-07
IRP	kBq U235 eq.	1,77E+00	2,69E-01	8,99E-03	2,05E+00	8,44E-02	3,63E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	3,63E-02	2,30E-02	2,33E-02	2,96E-02	4,60E-01
ETP-fw	CTUe	2,02E+03	4,94E+01	1,16E+01	2,08E+03	1,55E+01	5,36E+00	5,19E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	5,36E+00	4,27E+00	1,92E+01	8,94E+00	-4,66E+02
HTP-c	CTUh	2,09E-07	1,38E-09	2,85E-10	2,11E-07	4,33E-10	1,81E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,81E-10	1,52E-10	4,64E-10	2,17E-09	-4,00E-08
HTP-nc	CTUh	2,25E-06	5,34E-08	5,81E-09	2,31E-06	1,64E-08	4,49E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	4,49E-09	5,08E-09	2,19E-08	1,22E-08	7,63E-07
SQP	-	1,48E+03	4,26E+01	3,33E+01	1,56E+03	1,35E+01	1,13E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,13E+00	4,66E+00	8,84E+00	1,02E+01	-1,76E+02

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, cancer [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.

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.

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,27E-02	1,61E-04	4,39E-06	1,29E-02	5,06E-05	2,28E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	2,28E-05	1,34E-05	1,36E-05	1,52E-05	-3,64E-05
NHWD	kg	8,56E+00	2,96E+00	4,07E-02	1,16E+01	9,39E-01	1,09E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	1,09E-02	3,26E-01	1,35E-01	2,36E+01	1,20E-01
RWD	kg	1,61E-03	4,20E-04	1,06E-05	2,04E-03	1,31E-04	5,83E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	5,83E-05	3,58E-05	2,74E-05	4,56E-05	-5,29E-07
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	3,11E+00	0,00E+00	0,00E+00	3,11E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	2,12E+01	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,77E+01	0,00E+00
ETE	MJ	9,18E-01	0,00E+00	0,00E+00	9,18E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	3,05E+01	0,00E+00

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,20E+02	8,72E-01	7,10E+00	1,28E+02	2,76E-01	8,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,39E-02	7,55E-02	1,97E+00	2,57E+01	-1,03E+02
PERM	MJ	1,52E+02	0,00E+00	0,00E+00	1,52E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	-1,24E+00	-2,35E+01	2,88E-02
PERT	MJ	2,71E+02	8,72E-01	7,10E+00	2,79E+02	2,76E-01	8,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	8,39E-02	7,55E-02	7,38E-01	2,24E+00	-1,02E+02
PENRE	MJ	7,25E+02	6,54E+01	3,88E+00	7,94E+02	2,05E+01	9,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	9,19E+00	5,59E+00	5,24E+00	7,76E+00	4,47E+00
PENRM	MJ	1,60E+00	0,00E+00	0,00E+00	1,60E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,27E+02	6,54E+01	3,88E+00	7,96E+02	2,05E+01	9,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	9,19E+00	5,59E+00	5,24E+00	7,76E+00	4,47E+00
SM	kg	5,77E+00	0,00E+00	0,00E+00	5,77E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	-8,76E-02	-1,66E+00	4,34E-02
RSF	MJ	1,04E+00	0,00E+00	0,00E+00	1,04E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,20E-01
NSRF	MJ	3,39E+01	0,00E+00	0,00E+00	3,39E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,06E-01
FW	m3	5,91E-01	6,51E-03	2,13E-03	6,00E-01	2,06E-03	6,49E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	6,49E-04	5,95E-04	2,39E-03	7,62E-03	-6,51E-03

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials
PERM = Use of renewable primary 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
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	0,00E+00	0,00E+00	0,00E+00	4,27E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

The Rockzero assembly data are estimated, lacking full year data collection, but this has neglible influence on the results. ROCKWOOL stone wool data are collected for the full year 2022. Mass and energy balances are >95% correct since they are based on yearly consumptions. Data quality is assessed as good to very good.

The ROCKWOOL stone wool production is allocated on mass basis since all fibres from the lines are similar.

Secondary raw materials from the metallurgic industry that are used as input are allocated based on their waste status: waste is free of burden, co-products are allocated for 1% of the primary material production.

Internally recycled stone wool is free of burden (included in production figures) and is not assessed as 'secondary raw material'.

Background datasets are no older than 10 years.

• GWP-b is calculated manually, according to the NMD guideline (Modules A-C overall zero, Module D zero).

• Energy parameters (PERE, PERM, PENRE, PENRM), secondary material (SM), use of secondary fuels (RSF, NRSF), components for reuse (CRU), materials for recycling (MFR), energy recovery (MER) and exported energy (EE) are calculated manually based on the inventory.

• The Lower Heating Values (LHV) are used for the calculation of energy use.

• Ecoinvent processes include infrastructure (capital goods). Capital goods at ROCKWOOL are cut-off since these are assumed to contribute <5%.

• Ecoinvent processes for landfill exclude long-term emissions.

• Transport data are based on full load and empty return transport.

Cut-offs:
• Ink / label and inkjet cleaner auxiliary.
• Evt. use of forktrucks in Vianen.
• Transport of auxiliaries in A3. The amounts and contributions to the environmental impact is <1%.
• Use of offices, canteens etc..
• Transport of personnel.
• Sorting of glue in C3 (0.6% m/m) and energy recovery of glue incineration in C4.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Rockzero is assembled of columns made of mostly cold rolled steel and pressed mineral wool components with the spaces between the columns filled with stone wool insulation batts. The columns are mounted as an exterior wall of a building. The space in between the columns is filled in with stone wool insulation batts.

ROCKWOOL stone wool fibres are produced from non-scarce natural stones (basalt), secondary materials and briquettes. Briquettes are made of rock mineral wool waste from both production and the recycling service ROCKCYCLE for construction & demolition waste, secondary materials and by-products from other industries such as slags, alumina and cement. The basalt stone, secondary raw materials and briquettes are transported via conveyor belts to the furnace, where a dosed mixture is heated up to approximately 1500 °C. The materials melt at this temperature (like in a volcano). The droplets of melt exiting the furnace are spun into fibres. Droplets fall onto rapidly rotating flywheels or the mixture is drawn through tiny holes in rapidly rotating spinners. This process shapes it into fibres. All losses during spinning are recycled back into the production process, either directly by being blown into the spinning process or via the briquette routing.

Module A4:
The transport distance to the construction site is modelled with a default distance of 150 km in the Netherlands. The results in Module A4 can be scaled linearly. For a distance of 100 km, 100/150 times the A4 values can be applied.

Module A5:
Though Rockzero is a prefab system, not requiring much installation activities, the assembly is conservatively estimated, including the use of handheld tools, some of which are power tools, and air pressure compressor for fixing OSB boards that consume electricity: 0.0426 kWh/m2.
Also, a crane may be required for installation. The cranes that are on site anyways, are used for this. ROCKWOOL estimates that it takes appr. 10 minutes to lift an element of 24 m2 into the right position.

Since Rockzero is a prefab system, there is no installation waste at the jobsite.

Rockzero is not packed, so there is also no packaging waste in Module A5.

Module B:
Rockzero systems do not require maintenance, repair, replacement or refurbishment under normal use conditions. Therefore, Modules B2-B5 are zero. B6 (operational energy use) and B7 (operational water use) are not applicable for wall elements. The Rockzero elements contribute to the energy performance of the building and do not use operational energy or water themselves.

In B1, formaldehyde emissions are declared, as these are defined in the ROCKWOOL LCA Group rules. This is a worst-case approach: emissions from Rockzero elements will be lower since the stone wool is covered by OSB.

Rockzero participates in ROCKWOOL's RockCycle recycling service. If desired, a return guarantee for Rockzero is provided by ROCKWOOL, whereby all stone wool will be recycled. It is assumed that 50% of the stone wool will be recycled, either through the Rockzero system guarantee, or through the take-back of stone wool via the Rockcycle recycling service. Rockcycle is available for all sorting companies and is a working (return) system for many years.

For Rockzero this is probably a conservative assumption, because it is prefabricated and easy to dismantle and sort.

For the other materials, the Dutch NMD default waste scenarios apply.

End-of-life scenario	Incineration	Recycling	Reuse	Landfill
Steel		95,00%		5,00%
ROCKWOOL stone wool		50,00%		50,00%
OSB	85,00%	10,00%		5,00%
Fermacell (cf EPD)		70,00%		30,00%
Glue	100,00%			

DECLARATION OF SVHC

The products do not contain substances of very high concern.

REFERENCES

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

Bepalingsmethode Milieuprestatie Bouwwerken Berekeningswijze voor het bepalen van de milieuprestatie van bouwwerken gedurende hun gehele levensduur, gebaseerd op de EN 15804+A2. Versie 1.2 (januari 2025)

EN 16783:2024 Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations