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The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Rockwool AB, Parafon Production
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	ROUÖFII EIÖP
Registration number:	ROUÖFII EIÖP
ECO Platform reference number:	È
Issue date:	HEFFCFI
Valid to:	HEFFGCH (validity extended to 31.12.2024)

## Parafon Ceiling

PARAFON Decibel Mass

Rockwool AB, Parafon Production



## General information

### Product:

Parafon products;  
Decibel Mass

### Program operator:

The Norwegian EPD Foundation  
P.O. Box 5250 Majorstuen, N - 0303 Oslo, Norway  
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### Declaration number:

POU0E111E1G0P

### ECO Platform reference number:

### This declaration is based on Product Category Rules:

CEN Standard EN 15804 serves as core PCR  
NPCR 010 rev1, Building Boards

### Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence.  
EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

### Declared unit:

1 m<sup>2</sup> of installed ceiling tile

### Declared unit with option:

1 m<sup>2</sup> of installed ceiling tile

### Functional unit:

1 m<sup>2</sup> of installed ceiling tile

### Verification:

The CEN Norm EN 15804 serves as the core PCR.  
Independent verification of the declaration and data,  
according to ISO14025:2010

internal  external

Third party verifier:



Martin Erlandsson, IVL  
(Independent verifier approved by EPD Norway)

### Owner of the declaration:

Rockwool AB, Parafon Production  
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### Manufacturer:

Rockwool AB, Parafon Production  
Diabasvägen 9, 54152 Skövde  
•Sweden  
Phone +46 500 101 100  
[www.parafon.com](http://www.parafon.com)

### Place of production:

Skövde, Sweden

### Management system:

### Organisation no:

SE556347915201

### Issue date:

HEFFEGE

### Valid to:

HEFFEGE (validity extended to 31.12.2024)

### Year of study:

2017

### Comparability:

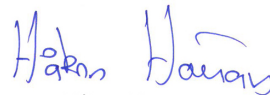
EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

### The EPD has been worked out by:

Josefina Johansson



Approved



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

PARAFON products are sound absorbing tiles and panels for suspended ceilings and free hanging applications. PARAFON Decibel products are also for sound insulation. The products core material are non combustible stone wool and facing material are pre painted glass fibre tissue. PARAFON products are intended for use indoor and are certified according to EN 13964 for Suspended Ceilings.

### Product specification:

PARAFON product covered in this EPD are a multiple layer product for both sound reduction and sound absorption. Decibel Mass is a combined product with stone wool core and a sound insulating gypsum board on the back side. Visible glass fibre facing differ in thicknesses from 115-190 g/m<sup>2</sup>. The values declared in the EPD are based on product with thickest glass facing. The product thickness is 53 mm.

For more information, please visit:  
<http://www.paroc.com/solutions-and-products/solutions/room-acoustics>



### Market:

Main market areas are the Nordic countries. The scenarios beyond cradle-to-gate are based on

### Technical data:

Weight: 5,04 kg

Size: 600x600x53 mm

For more information; see Bibliography, page 7

Materials	kg	%
Mineral wool	2.16	43%
Facings	0.07	1.4%
Gypsum board	2.71	54%
Binder, coatings dustbinding	0.10	2%
Total Product	5.04	100%
Packaging		0.04
Total: Product+Packaging		5.08

### Reference service life, product:

The reference service lifetime of Parafon Acoustic Ceiling Tiles is 50 years.

### Reference service life, building:

The reference service lifetime of 50 years has been assumed for the building in all calculations.

Sound Reducing Products	Edge profiles	Thickness (mm)
Parafon Decibel Mass Exclusive	A	53
Parafon Decibel Mass Exclusive	E24	53
Parafon Decibel Mass Classic	A	53
Parafon Decibel Mass Classic	E24	53

## LCA: Calculation rules

### Declared unit:

1 m<sup>2</sup> of installed ceiling tile (thickness: 53 mm, weight per 1 m<sup>2</sup>: 14 kg)

### System boundary:

Table below identifies the modules included in this study:  
The production stage (module A1-A3) covers the following steps:

- Raw materials production (e.g. diabase, dolomite)
- Binder components production (e.g. resin)
- Transports of raw materials and pre-products to manufacturing plant
- Product manufacturing (power, thermal energy, auxiliaries, emissions)
- Production of packaging materials

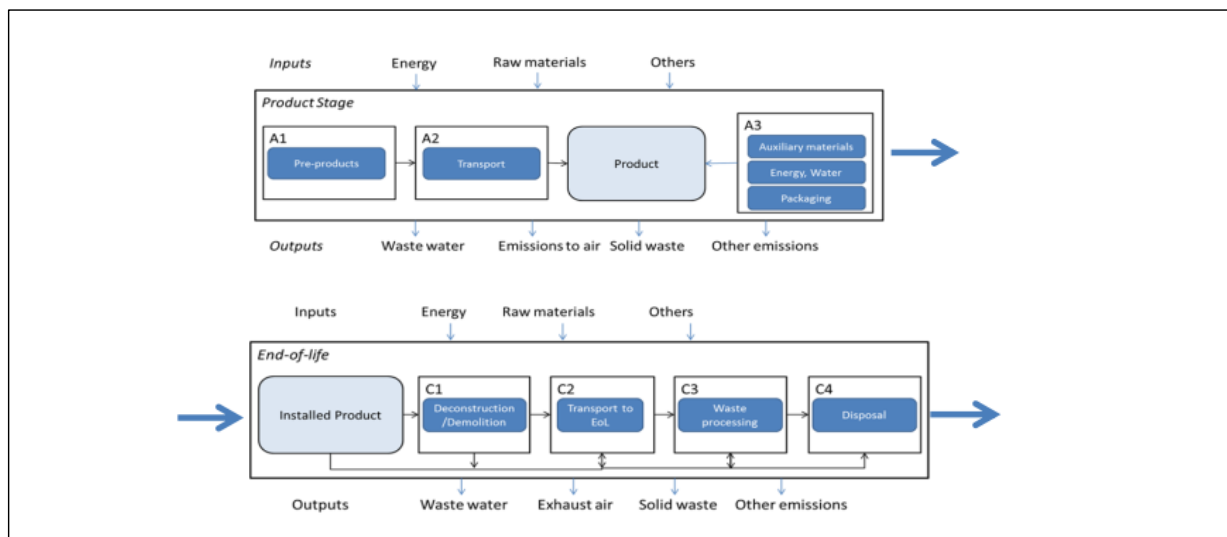
- Waste management, water treatment, end-of-life of residues

With the exception of Modules A1 to A3 (describing the manufacturing of stone wool) all other modules are calculated on the basis of assumptions or scenarios.

The following scenarios were considered in this study:

- module C4 (landfill).

Figure 1. Schematic representation of LCA system boundaries for the production module (A1-A3) and the End-of-Life (C1-C4). In this study, only in the end-of-life of the product, only C4 was considered.



### Data quality:

The stone wool production data is site specific from PAROC plants Hässleholm and Hällekis in Sweden. The acoustics ceiling tiles are made of refined stone wool at PARAFON plant in Skövde, Sweden. Foreground data refer to the year 2015.

For life cycle modeling the GaBi ts Software System for Life Cycle Assessment, developed by thinkstep AG, is used (/GaBi ts 2016/). All relevant background datasets are taken from the GaBi ts software database. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

Background data refer to the years 2012 till 2015 (/GaBi ts 2016/) with a country specific scope as far as available, e.g. for raw material extraction and production, transportation, fuels and energy supply.

All relevant processes (foreground and background) have been considered when modelling stone wool production. The process data and the used background data are consistent. The data quality can be qualified as good.

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804.

Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation.

Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

### End of Life (C2, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	0
Energy recovery	kg	0
To landfill	kg	14

Paroc maintains and offers its customers a used product take-back system called "Paroc Re-Wool" to enable the recycling of old stone wool/acoustic boards.

As module A5 is not declared (including product installation and packaging disposal) and from module C4 (product disposal on landfill) no potential benefits arise module D is not declared.

## LCA: Results

Life Cycle Impact Assessment results represent the environmental impacts for the life cycle of Parafon Acoustic Board from cradle to gate - with options.

### System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage						End of life stage					Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	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	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MND	MND	MND	X	MND

### Environmental impact

Parameter	Unit	A1-A3	C4
GWP	kg CO <sub>2</sub> -eqv	4.14	0.0796
ODP	kg CFC11-eqv	1.95E-09	8.83E-13
POCP	kg C <sub>2</sub> H <sub>4</sub> -eqv	0.000538	4.58E-05
AP	kg SO <sub>2</sub> -eqv	0.0103	0.000477
EP	kg PO <sub>4</sub> <sup>3-</sup> -eqv	0.00198	6.49E-05
ADPM	kg Sb-eqv	5.20E-05	2.75E-08
ADPE	MJ	46.5	1.03

\*including 0,21 kg CO<sub>2</sub>-eq uptake of biogenic carbon dioxide included in product (0,04) and packaging (0,17).

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources.

### Resource use

Parameter	Unit	A1-A3	C4
RPEE	MJ	9.36	-
RPEM	MJ	4.35	-
TPE	MJ	13.7	0.122
NRPE	MJ	49.2	-
NRPM	MJ	6.09	-
TRPE	MJ	55.3	1.07
SM	kg	0.286	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	0.0238	2.19E-04

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

### End of life - Waste

Parameter	Unit	A1-A3	C4
HW	kg	1.64E-04	2.45E-08
NHW	kg	1.32	4.96
RW	kg	0.00365	1.50E-05

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

### End of life - Output flow

Parameter	Unit	A1-A3	C4
CR	kg	0	0
MR	kg	0	0
MER	kg	0	0
EEE	MJ	0	0
ETE	MJ	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example:  $9,0 \text{ E-}03 = 9,0 \cdot 10^{-3} = 0,009$

Key environmental indicators	Unit	Cradle to gate A1-A3	Transport *****
Global warming	kg CO <sub>2</sub> -eqv	4.14	0.13
Energy use (=TPE+TRPE)	MJ	69	-
Dangerous substances	*	-	-

\* The product contain no substances from the Reach candidate list or the Norwegian priority list.

\*\*\*\*\* Transport from production site to central warehouse in Norway

## Additional Norwegian requirements

### Greenhouse gas emission from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Data source	Amount	Unit
GaBi ts database SP 30 (2016)	0.0431	CO <sub>2</sub> -eqv/kWh

### Dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforsikten, Annex III), see table.
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforsikten, Annex III), see table.

### Dangerous substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern or substances on the Norwegian Priority list as of 03.09.2015 or substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

### Transport

Transport from production site to central warehouse in Norway is: 245 km

### Indoor environment




The product meets the requirements for low emissions (M1) according to EN 15251: 2007 Appendix E. PAROC stone wool products fulfil the most stringent requirement (M1) in the Finnish voluntary system for building material emissions developed by the Finnish Society of Indoor Air Quality and Climate in Finland. Our stone wool products are recognized as low emitting products, for which they have been tested since 1995. PAROC low emitting products are recognized by the M1 label.

### Carbon footprint

Carbon footprint has not been worked out for the product.

## Bibliography

ISO 14025:2010	<i>Environmental labels and declarations - Type III environmental declarations - Principles and procedures</i>
ISO 14040:2006	<i>Environmental management - Life cycle assessment - Principles and framework</i>
ISO 14044:2006	<i>Environmental management - Life cycle assessment - Requirements and guidelines</i>
EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
Dr. Iris Matzke, Yannick Bernard	<i>Background report for EPD of Paroc Parafon Acoustic Board. Revised November 2018.</i>
PCR	<i>NPCR 010 rev1, Building Boards, The Norwegian EPD Foundation, 12/2013</i>

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