

Owner: Schiedel Skorstene ApS
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Valid to: 05-12-2028

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Schiedel Skorstene ApS
Industrivej 23
7470 Karup J, Denmark
VAT no. DK- 14 74 73 46

SCHIEDEL

Issued:

05-12-2023

Valid to:

05-12-2028

Programme

EPD Danmark
www.epddanmark.dk



- ☐ Industry EPD
☒ Product EPD

Declared product(s)

NEM16 (ISOKERN NEM single module - Ø160 mm)
NEM20 (ISOKERN NEM single module - Ø200 mm)

Number of declared datasets/product variations: 1

Production site

Industrivej 23
7470 Karup J, Denmark

Product(s) use

The ISOKERN modular chimney systems, produced by Schiedel Skorstene ApS, provide a lightweight, easily installed, and versatile chimney which can be used internally or externally. The NEM single module-based chimney system is the most simple and versatile solution provided by Schiedel Skorstene ApS. ISOKERN NEM single module-based chimney system is approved for 0 mm distance to combustible materials at T400 = 400°C.

Declared/ functional unit

The declared unit is 1 kg modular chimney block

Year of production site data (A3)

2022

EPD version1st version**Basis of calculation**

This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type

- ☒ Cradle-to-gate with modules C1-C4 and D
☐ Cradle-to-gate with options, modules C1-C4 and D
☐ Cradle-to-grave and module D
☐ Cradle-to-gate
☐ Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:



Mirko Miseljic



Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)

Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and 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	MND	MND	X	X	X	X	X

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product
Aggregate (recycled product)	8,2%
Pumice	69,1%
Cement	16,5%
Mineral filler	4,5%
Fiber	0,12%
Water	1,6%

Important notice

This EPD only covers the modular chimney blocks. To obtain environmental impacts of a complete modular chimney system, this EPD must be combined with the EPD's of the additional building elements (glue, capping etc.) used in the specific construction project.

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight-% of packaging
PET strapping	0,5%
Wooden pallet	99,5%

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 kg modular chimney block on the production site located in Karup, Denmark. Product specific data are based on average values collected in the year 2022. Background data are based on the LCA for Experts 10.7 professional database and are less than 5 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

The products declared within this EPD do not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation".

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics

The products declared within this EPD are covered by harmonized technical specification EN 1858:2008+A1:2011. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer on the manufacturer's website:

<https://www.schiedel.com/dk/>

Reference Service Life (RSL)

No RSL is declared. This EPD is based on a cradle to gate with modules C1-C4 and D and does not include the use stage.

Table of product(s)

Products from Schiedel Skorstene ApS in this EPD			
Product name	Product description	Product composition	kg pr. block
NEM16	360x360x250 mm	8,2% aggregate (recycled), 69,1% pumice, 16,5% cement, 4,5% mineral filler, 0,12% fiber, 1,6% water	28
NEM20	400x400x250 mm		31

Picture of product(s)

ISOKERN NEM single module



NEM16



NEM20

LCA background

Declared unit

The LCI and LCIA results in this EPD relate to environmental impacts caused by the production and end-of-life of 1 kg modular block.

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg.	1	-

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2:2019.

Guarantee of Origin – certificates

Foreground system:

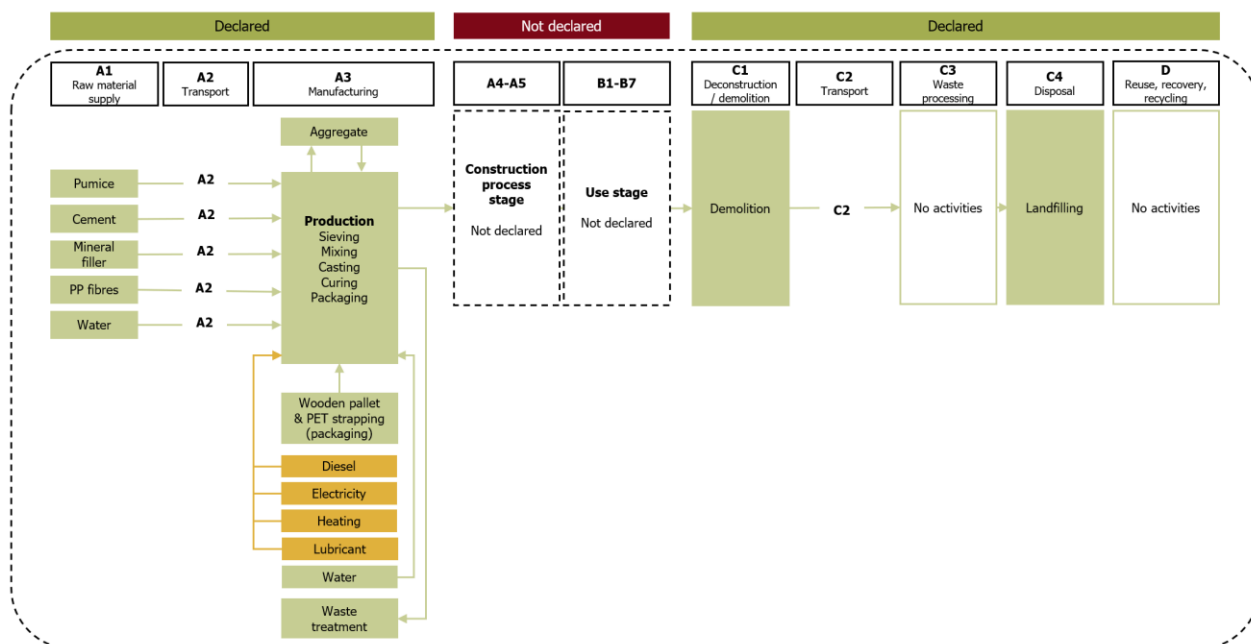
No “Guarantee of Origin” certificates are used in manufacturing. Consumption of electricity is modelled with residual electricity grid mix. Consumption of heat is modelled with average data, representative for the geographical area.

Background system:

Other processes upstream and downstream from the production are modelled with processes from the LCA for Experts background database that is based on average data.

Flowdiagram

The flow diagram below presents the main processes included in the life cycle of the modular chimney blocks.



System boundary

This EPD is based on a cradle-to-gate LCA with modules C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, manufacturing processes, and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The manufacturing of the ISOKERN single modular chimney blocks takes place at Schiedel's production facility in Karup, Denmark.

The main component of the modular chimney blocks is pumice. Pumice used in production is delivered in bulk from Iceland. At the production facility in Karup, pumice is stored outdoors. Water is used to minimize dust and to maintain a homogeneous moisture level of the raw material.

At the storage site, pumice is separated into different fractions in a sieving tower. In the production, the specific quantities of pumice, aggregates and fibers are transported to a mixer, where water, cement and mineral filler are added. The aggregates used are crushed chimney blocks with damage, cracks and/or defects, that do not meet Schiedel's requirements and standards.

At the mixer, the input materials are combined into a homogeneous mass. Subsequently, the concrete mix is casted in the block machine, by applying vibration and pressure. After casting, the blocks are transported to the curing chamber.

Thereafter, the blocks are checked for any damage, cracks and/or defects. The products that meet Schiedel's requirements and standards are transported to the palletiser. After packaging, the blocks are transported to the storage area where curing of the blocks is completed.

Construction (A4-A5) includes:

Not declared.

Use (B1-B7) includes:

Not declared.

End of Life (C1-C4) includes:

End of life includes a European scenario for waste processing of chimney blocks. Due to the exposure to flue gases during use, the blocks are contaminated with soot, and thus not suitable for recycling according to guidelines by the Danish waste management industry.

C1 – Deconstruction/demolition: At the end-of-life, chimney blocks are demolished. The energy consumption during demolition is connected to the operation of the machinery used.

C2 – Transport to landfill: From the deconstruction site, the chimney blocks are transported to the landfill site. The transport scenario is based on an average distance and means of transportation.

C3 – Waste processing: The chimney blocks are disposed of as landfill waste, hence there are no activities in C3.

C4 – Landfilling: The chimney blocks are disposed of at a landfilling site for inert matter (unspecific construction waste).

End-of-life is modelled using a 100% landfilling scenario.

As this EPD only covers the modular chimney blocks, additional building elements (glue, capping etc.) used in the specific construction project is not included in the end-of-life module.

Re-use, recovery and recycling potential (D) includes:

There are no activities in module D due to the selected end-of-life landfill scenario.

LCA results

ENVIRONMENTAL IMPACTS PER KG							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2,11E-01	4,21E-03	5,00E-03	0,00E+00	1,43E-02	0,00E+00
GWP-fossil	[kg CO ₂ eq.]	2,02E-01	4,16E-03	4,94E-03	0,00E+00	1,48E-02	0,00E+00
GWP-biogenic	[kg CO ₂ eq.]	8,27E-05	1,99E-05	1,13E-05	0,00E+00	-5,10E-04	0,00E+00
GWP-luluc	[kg CO ₂ eq.]	1,91E-04	3,81E-05	4,64E-05	0,00E+00	4,67E-05	0,00E+00
ODP	[kg CFC 11 eq.]	1,93E-09	5,35E-16	6,52E-16	0,00E+00	3,82E-14	0,00E+00
AP	[mol H ⁺ eq.]	7,59E-04	5,71E-05	7,79E-06	0,00E+00	1,07E-04	0,00E+00
EP-freshwater	[kg P eq.]	1,97E-06	1,50E-08	1,83E-08	0,00E+00	3,02E-08	0,00E+00
EP-marine	[kg N eq.]	2,30E-04	2,58E-05	2,89E-06	0,00E+00	2,75E-05	0,00E+00
EP-terrestrial	[mol N eq.]	2,54E-03	2,84E-04	3,40E-05	0,00E+00	3,03E-04	0,00E+00
POCP	[kg NM/OC eq.]	6,86E-04	8,36E-05	6,87E-06	0,00E+00	8,31E-05	0,00E+00
ADPm ¹	[kg Sb eq.]	2,83E-07	2,73E-10	3,32E-10	0,00E+00	6,94E-10	0,00E+00
ADPf ¹	[MJ]	1,85E+00	5,60E-02	6,83E-02	0,00E+00	2,00E-01	0,00E+00
WDP ¹	[m ³ world eq. deprived]	2,40E-02	4,97E-05	6,06E-05	0,00E+00	1,65E-03	0,00E+00
Caption	GWP-total = Globale 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

ADDITIONAL ENVIRONMENTAL IMPACTS PER KG							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	2,49E-08	2,29E-09	6,56E-11	0,00E+00	1,31E-09	0,00E+00
IRP ²	[kBq U235 eq.]	6,64E-03	1,57E-05	1,91E-05	0,00E+00	2,64E-04	0,00E+00
ETP-fw ¹	[CTUe]	1,83E+00	4,02E-02	4,89E-02	0,00E+00	1,08E-01	0,00E+00
HTP-c ¹	[CTUh]	9,97E-11	8,13E-13	9,93E-13	0,00E+00	1,68E-11	0,00E+00
HTP-nc ¹	[CTUh]	9,18E-10	3,71E-11	4,42E-11	0,00E+00	1,77E-09	0,00E+00
SQP ¹	-	6,05E-01	2,34E-02	2,85E-02	0,00E+00	4,86E-02	0,00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² 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.						

RESOURCE USE PER KG							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1,79E-01	4,08E-03	4,97E-03	0,00E+00	3,26E-02	0,00E+00
PERM	[MJ]	1,52E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,94E-01	4,08E-03	4,97E-03	0,00E+00	3,26E-02	0,00E+00
PENRE	[MJ]	1,82E+00	5,62E-02	6,86E-02	0,00E+00	2,00E-01	0,00E+00
PENRM	[MJ]	5,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,87E+00	5,62E-02	6,86E-02	0,00E+00	2,00E-01	0,00E+00
SM	[kg]	7,67E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	7,02E-04	4,46E-06	5,44E-06	0,00E+00	5,05E-05	0,00E+00
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources 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 excluding non renewable primary 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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.						

WASTE CATEGORIES AND OUTPUT FLOWS PER KG							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3,27E-03	1,74E-13	2,12E-13	0,00E+00	4,36E-12	0,00E+00
NHWD	[kg]	7,08E-02	8,57E-06	1,05E-05	0,00E+00	1,00E+00	0,00E+00
RWD	[kg]	5,14E-05	1,05E-07	1,28E-07	0,00E+00	2,28E-06	0,00E+00

CRU	[kg]	3,42E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,62E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	3,68E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	6,29E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	2,78E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.						

BIOGENIC CARBON CONTENT PER KG		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	3,59E-04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

LCA interpretation

The table below lists the processes that contribute the most to the core environmental impacts.

ENVIRONMENTAL IMPACTS, EN15804:2012+A2:2019				
Impact category	Unit	Maximum contribution	Process	% of category
Climate Change - total	kg CO ₂ eq.	1,17E-01	A1: BASIS cement	50%
Climate Change - fossil	kg CO ₂ eq.	1,06E-01	A1: BASIS cement	47%
Climate Change - biogenic	kg CO ₂ eq.	-1,30E-03	A3: Wood pallet	-20%
Climate Change, land use and land use change	kg CO ₂ eq.	7,09E-05	A2: Transport, pumice	22%
Ozone depletion	kg CFC-11 eq.	1,93E-09	A1: BASIS cement	100%
Acidification	Mole of H ⁺ eq.	3,23E-04	A2: Transport, pumice	35%
Eutrophication, freshwater	kg P eq.	1,75E-06	A1: BASIS cement	86%
Eutrophication, marine	kg N eq.	1,36E-04	A2: Transport, pumice	47%
Eutrophication, terrestrial	Mole of N eq.	1,49E-03	A2: Transport, pumice	47%
Photochemical ozone formation, human health	kg NMVOC eq.	3,70E-04	A2: Transport, pumice	43%
Resource use, mineral and metals	kg Sb eq.	2,81E-07	A1: BASIS cement	99%
Resource use, fossils	MJ	3,93E-01	A3: Heat	18%
Water use	m ³ world equiv.	2,35E-02	A3: Water	91%

Based on the above results, the largest environmental impacts generally take place during the production of materials in A1. The production of cement in particular, has a large impact. In addition, the transport of pumice in A2 also contributes significantly to the total environmental impact.

Technical information on scenarios

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	0	kg
For energy recovery	0	kg
For final disposal	1	kg
Assumptions for scenario development	Assumed a 100% landfilling scenario	-

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.2.

References

Publisher	 www.epddanmark.dk <small>Template version 2023.1</small>
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Line Granheim Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA software / background data	LCA for Experts version 10.7.1.28, 2023.1 including databases https://sphaera.com/
3rd party verifier	 Mirko Miseljic FORCE Technology Park Alle 345 DK-2605 Brøndby www.forcetechnology.com

General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – "Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – "Environmental management – Life cycle assessment – Requirements and guidelines"