

Environmental Product Declaration

In accordance with 14025 and EN15804 +A2

Reclaimed bricks



Owner of the declaration:
Utomhus Østfold Gress AS

Product name:
Reclaimed bricks

Declared unit:
1 tonne reclaimed bricks

Product category /PCR:
EN 15804:2012 + A2:2019

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-5884-5158-EN

Registration number:
NEPD-5884-5158-EN

Issue date:
05.02.2024

Valid to:
05.02.2029

General information

Product:

Reclaimed bricks

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-5884-5158-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804+A2, NPCR Part A
Construction products and services and TBE PCR
for Clay Construction Products.

Statements:

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

Declared unit:

1 tonne reclaimed bricks

Declared unit with option:

-

Functional unit:

-

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

internal external

Sign



Julie Lyslo Skullestad

Independent verifier approved by EPD Norway

Owner of the declaration:

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Manufacturer:

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Place of production:

Rygge, Moss, Norway

Management system:

-

Organisation no:

952 279 475

Issue date:

05.02.2024

Valid to:

05.02.2029

Year of study:

2022

Comparability:

EPDs from other programmes than the Norwegian *Næringslivets stiftelse for miljødeklarasjoner* may not be comparable.

The EPD has been worked out by:

Kjartan Steen-Olsen, Asplan Viak AS

Approved



Manager of EPD Norway

Product

Product description:

Reclaimed building bricks. The bricks are sourced from demolition projects in the region, and the demolition waste is transported to Utomhus Østfold Gress' facility, where reusable bricks are identified and prepared for reuse in new construction projects. Damaged bricks are used in other products, while the remainder is delivered for use as filler mass in sub-base layers or embankment materials for infrastructure projects in the region. The EPD is based on an assumed average distance from demolition sites in the region to Utomhus Østfold Gress' facility, thus representing an average product.

Product specification:

The product is reclaimed bricks without any additives.

Materials	Tonne	%
Reclaimed bricks	1	100 %
Packaging: Wooden pallets	0,005	

Technical data:

The bricks have a standard dimension of 240 x 115 x 70 mm and an average weight of 3 kg. They are stacked and marketed on wooden pallets. Utomhus Østfold Gress buys used pallets for transport. It is conservatively assumed that these pallets can be reused 5 times; hence 1/5 of the production impacts are included in the assessment.

Market:

Norway

Reference service life, product:

According to TBE PCR for clay construction products, the RSL for bricks is 150 years. Depending on the source of the reclaimed bricks, their RSL can be expected to be shorter than this to a degree.

Reference service life, building:

-

LCA: Calculation rules

Declared unit:

1 tonne

Data quality:

Data has been collected in 2022-2023 and is representative for 2022. Data for the raw material and production and transport (A1-A3 and A4) is based on specific consumption data and technical data sheets. The yearly averages for 2022 are referred to. Generic data is from

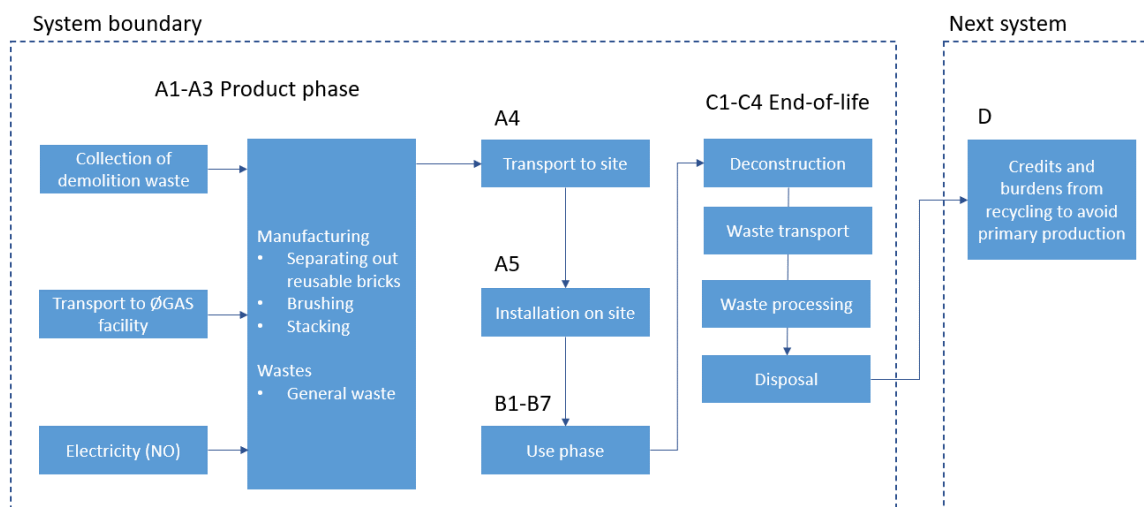
ecoinvent v3.8, Allocation, Cut-Off by classification, SimaPro v 9.4.0.2. Characterization factors from EN15804: 2012 + A2: 2019

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.

System boundary:

The system boundary is from cradle to grave (module A1-D). Modules A5 and B1-B7 are assumed to have negligible impacts according to the PCR guidelines. The flow chart for production, transport and end of life is shown in the figure below.



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.

LCA: Scenarios and additional technical information

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

Scenarios have been developed to account for downstream processes such as demolition and waste treatment in accordance with the requirements of EN 15804 and NPCR PART A.

Transport from production place to assembly/user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	50 %	Lorry 24 metric ton, EURO 6	77,5	0,029 l/tkm	2,2

Assembly (A5)

	Unit	Value
Material loss	Kg	30

Material and energy use considered negligible.

End of Life (C1-C4)

	Unit	Value
Hazardous waste disposed	Kg	N.R.
Collected as mixed construction waste	Kg	N.R.
Reuse	Kg	N.R.
Recycling	Kg	9,90E+02
Energy recovery	Kg	N.R.
To landfill	Kg	1,00E+01

The product is generally assumed to be recycled as roadfill, in soil substrate production or other in module C3, with 1 % assumed landfilled in C4.

Benefits and loads beyond the system boundaries (D)

	Unit	Value
-		

The reclaimed bricks input in module A1-A3 are considered a diverted waste stream, free of burden. Thus, no benefits are assumed in module D to avoid double counting.

Additional technical information

-

LCA: Results

The result is valid for the declared unit, 1 kg of reclaimed bricks.

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

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
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	X	X	MNR	MNR	MNR	MNR	MNR	MNR	MNR	X	X	X	X	X

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	1,59E+01	1,32E+01	8,66E+00	0,00E+00	8,25E+01	5,87E-01	1,26E-01	0,00E+00
GWP-fossil	kg CO2 eq.	2,40E+01	1,32E+01	5,24E-01	0,00E+00	8,23E+01	5,69E-01	1,24E-01	0,00E+00
GWP-biogenic	kg CO2 eq.	-8,14E+00	1,47E-02	8,14E+00	0,00E+00	1,56E-01	1,66E-02	1,40E-03	0,00E+00
GWP-LULUC	kg CO2 eq.	1,19E-02	2,50E-03	3,06E-04	0,00E+00	2,81E-02	9,01E-04	8,31E-05	0,00E+00
ODP	kg CFC11 eq.	8,19E-07	2,89E-07	1,01E-08	0,00E+00	1,63E-06	1,26E-08	2,39E-09	0,00E+00
AP	mol H ⁺ eq.	7,79E-02	2,33E-02	3,58E-03	0,00E+00	3,00E-01	5,05E-03	8,32E-04	0,00E+00
EP-freshwater	kg P eq.	2,21E-04	5,24E-05	8,82E-06	0,00E+00	4,69E-04	1,19E-05	2,38E-06	0,00E+00
EP-marine	kg N eq.	2,43E-02	6,21E-03	1,47E-03	0,00E+00	1,19E-01	1,81E-03	3,27E-04	0,00E+00
EP-terrestrial	mol N eq.	2,53E-01	6,34E-02	1,59E-02	0,00E+00	1,28E+00	1,99E-02	3,56E-03	0,00E+00
POCP	kg NMVOC eq.	1,29E-01	4,11E-02	4,88E-03	0,00E+00	5,44E-01	6,05E-03	1,13E-03	0,00E+00
ADP-M&M	kg Sb eq.	3,79E-05	1,10E-05	1,46E-06	0,00E+00	1,83E-04	1,47E-05	3,67E-07	0,00E+00
ADP-fossil	MJ	5,15E+02	1,85E+02	7,58E+00	0,00E+00	1,07E+03	7,93E+00	1,95E+00	0,00E+00
WDP	m ³	1,58E+00	4,94E-01	3,48E-02	0,00E+00	3,53E+00	1,23E-01	2,66E-02	0,00E+00

GWP-total: Global Warming Potential; **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 Exceedance; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq. **EP-marine:** Eutrophication

potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial**: Eutrophication potential, Accumulated Exceedance; **POCP**: Formation potential of tropospheric ozone; **ADP-M&M**: Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil**: Abiotic depletion potential for fossil resources; **WDP**: Water deprivation potential, deprivation weighted water consumption

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1,10E-06	5,46E-07	1,84E-07	0,00E+00	6,55E-06	4,07E-06	5,67E-08	0,00E+00
IRP	kBq U235 eq.	2,12E-01	5,85E-02	1,20E-02	0,00E+00	4,35E-01	5,07E-02	3,72E-03	0,00E+00
ETP-fw	CTUe	2,43E+02	9,09E+01	3,65E+00	0,00E+00	5,38E+02	4,03E+00	8,36E-01	0,00E+00
HTP-c	CTUh	1,39E-08	2,74E-09	4,71E-10	0,00E+00	2,71E-08	9,60E-10	6,44E-11	0,00E+00
HTP-nc	CTUh	2,36E-07	1,05E-07	1,49E-08	0,00E+00	8,30E-07	1,92E-08	1,47E-09	0,00E+00
SQP	Dimension less	7,16E+02	1,00E+02	6,39E+00	0,00E+00	4,75E+02	1,65E+01	1,75E+00	0,00E+00

PM: Particulate matter emissions; **IRP**: Ionising radiation, human health; **ETP-fw**: Ecotoxicity (freshwater); **ETP-c**: Human toxicity, cancer effects; **HTP-nc**: Human toxicity, non-cancer effects; **SQP**: Land use related impacts / soil quality

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
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	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
ILCD type / level 3	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

Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	2,75E+01	1,53E+00	3,19E-01	0,00E+00	1,33E+01	1,50E+01	9,58E-02	0,00E+00
RPEM	MJ	9,60E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,23E+02	1,53E+00	3,19E-01	0,00E+00	1,33E+01	1,50E+01	9,58E-02	0,00E+00
NRPE	MJ	5,15E+02	1,85E+02	7,58E+00	0,00E+00	1,07E+03	7,93E+00	1,95E+00	0,00E+00
NRPM	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
TRPE	MJ	5,15E+02	1,85E+02	7,58E+00	0,00E+00	1,07E+03	7,93E+00	1,95E+00	0,00E+00
SM	kg	1,00E+03	0,00E+00	0,00E+00	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	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	0,00E+00	0,00E+00
W	m ³	1,61E-01	1,70E-02	1,76E-03	0,00E+00	1,47E-01	1,06E-01	8,51E-04	0,00E+00

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	A4	A5	C1	C2	C3	C4	D
HW	kg	8,26E-03	2,92E-03	2,67E-02	0,00E+00	2,16E-02	5,63E-04	4,86E-05	0,00E+00
NHW	kg	1,15E+01	8,27E+00	5,48E+00	0,00E+00	3,79E+01	1,25E-01	1,18E+01	0,00E+00
RW	kg	1,26E-04	3,56E-05	9,16E-06	0,00E+00	2,74E-04	2,36E-05	2,87E-06	0,00E+00

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

End of life – output flow

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	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
MR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,90E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	4,96E+00	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
ETE	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

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

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

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	0
Biogenic carbon content in the accompanying packaging	kg C	1,1E+01

Additional requirements

Location based electricity mix from the use of electricity in manufacturing

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 (foreground/core) per functional unit.

National electricity grid	Data source	Foreground / core [kWh]	GWP _{total} [kg CO ₂ - eq/kWh]	SUM [kg CO ₂ - eq]
Norwegian electricity, low voltage	ecoinvent v3.8	3,89	0,039	1,52E-01

Additional environmental impact indicators required in NPCR Part A for construction products

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ eq.	2,41E+01	1,32E+01	4,80E-01	0,00E+00	8,25E+01	5,87E-01	1,26E-01	0,00E+00

GWP-IOBC Global warming potential calculated according to the principle of instantaneous oxidation.

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- ✓ The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment






No tests have been carried out on the product concerning indoor climate - not relevant.

Carbon footprint

Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2007	Sustainability in building construction - Environmental declaration of building products
PCR PART A	Construction products and services Ver 2
Steen-Olsen (2023)	Life cycle assessment (LCA) report for Reclaimed bricks
Tiles & Bricks Europe (2014)	TBE PCR for Clay Construction Products
Utomhus Østfold Gress AS	Bill of materials – data collection

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