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ECO PLATFORM EPD VERIFIED

Owner: Egernsund Wienerberger A/S
No.: MD-25056-EN
Issued: 30-04-2025
Valid to: 30-04-2030

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
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Programme
EPD Danmark
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☐ Industry EPD
☒ Product EPD

☒ Product specific
☐ Average
☐ Worst Case

Declared product(s)
Blue braising bricks at Vedstaarup Teglværk

Number of declared datasets/product variations: 1

Production site
Vedstaarup Teglværk
Bogyden 12
5610 Assens
Denmark

Use of Guarantees of Origin
☐ No certificates used
☒ Electricity covered by GoO
☒ Biomethane covered by GoO

Declared/ functional unit
Blue braising 1 tonne of bricks

Year of production site data (A3)
2023

EPD version
1

Issued: 30-04-2025
Valid to: 30-04-2030

Basis of calculation
This EPD is developed and verified 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:

Nana Lin Rasmussen, Sweco Danmark A/S

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	MD	ND	ND	ND

Product information

Product description

Blue braising alters the colour of bricks by firing them a second time in a low oxygen environment. This EPD covers the process of blue braising and repacking of the bricks.

Important notice: This EPD only covers the blue braising process. To obtain environmental impacts of a blue braised brick, this EPD must be combined with the EPD of the bricks.

Product packaging:

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

Material	Weight of packaging material (kg)	Weight-% of packaging
Foil	0,56	87,5
Straps	0,08	12,5
Total	**0,64**	**100**

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the blue braising of bricks at Vedstaarup Teglværk located in Assens Municipality. Product specific data are based on average values collected in the period of 2023. Background data are based on Ecoinvent version 3.9.1 and are less than 2 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

Blue braising does not use or create substances listed on the ”Candidate List of Substances of Very High Concern for authorisation”

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

Product(s) use

Blue braising does not alter the product use of the bricks. Bricks are commonly used with mortar for construction of both structural and non-structural applications, including load-bearing walls, partition walls, and facades.

Essential characteristics

There are no CE marking for the process and no technical standards for blue braising. The process does not change the technical specifications of the bricks.

Reference Service Life (RSL)

Blue braising does not alter the reference service life of the bricks.

Picture of product(s)

The blue braised brick products covered (partially) by this EPD can vary significantly in expression. The images in this document are examples. Information on which products are covered by this EPD can be obtained by contacting egernsund wienerberger or on the website:

www.egernsund.com

LCA Background

Declared unit

The LCI and LCIA results in this EPD relates to blue braising 1 tonne of bricks.

Name	Value	Unit
Declared unit	1	Tonne

Functional unit

Blue braising does not alter the functional unit of the bricks.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012 +A2:2019, and the Internal Guidance Document on TBE PCR for Clay Construction Products (2020).

Energy modelling principles

Foreground system:

The product is produced using a mix of renewable electricity and Biomethane, both of which are covered by GoOs.

Information about the energy mix in the foreground system:

Energy mix	EF	Unit
Wind/Solar/Hydro electricity GoO mix, 2023	2,54E-02	kg CO_2e/kWh
Biomethane GoO, 2023	1,39E-02	kg CO_2e/MJ

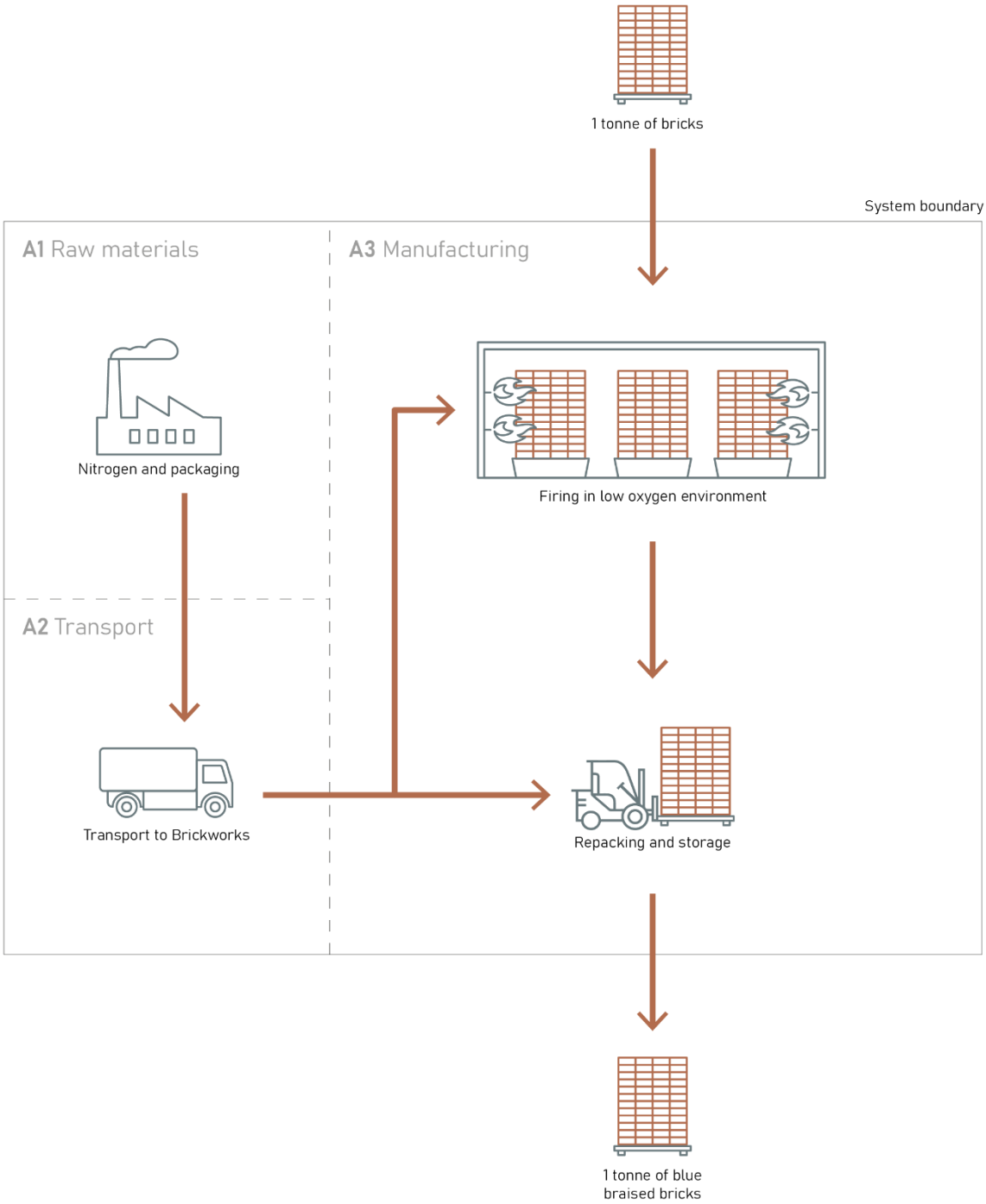
Background system:

The database, ecoinvent 3.9.1 is utilized for the background system. As a result, both upstream- and downstream activities are based on average supply mixes for the specific country or region depending on the given dataset.

Geographical area

The blue braising process is performed in Denmark primarily applied to products for the Danish market. The blue braised products are also exported to other countries, such as Norway and Sweden. Therefore GWP-GHG is included under additional information.

Flowdiagram



System boundary

This EPD is based on a *cradle-to-grave and module D* LCA, in which >99 weight-% has been accounted for. The excluded processes in this study are the packaging from materials in A1, auxiliary materials, capital goods for the clay pits and also the factory, and transport of excavators to the clay pits.

The LCA was conducted using the Ecoinvent 3.9.1 database with the system model 'Allocation, cut-off by classification', in accordance with the EN 15804+A2 standard. This approach excludes recycling benefits of secondary materials and energy beyond the system boundary and assigns all upstream burdens to the producer of the primary material.

Characterisation factors from the Environmental Footprint 3.1 (EF 3.1) method were used, as recommended by the EN 15804+A2 standard for midpoint impact assessment.

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:

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging 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 on site allocation is based on mass.

Blue braising is a process altering the color of the products. This EPD must always be used in combination with a brick EPD.

LCA results

ENVIRONMENTAL IMPACTS PER BLUE BRAISING 1 TONNE		
Parameter	**Unit**	**A1-A3**
GWP-total	[kg CO_2 eq.]	6,53E+01
GWP-fossil	[kg CO_2 eq.]	5,86E+01
GWP-biogenic	[kg CO_2 eq.]	6,60E+00
GWP-luluc	[kg CO_2 eq.]	1,03E-01
ODP	[kg CFC 11 eq.]	1,75E-06
AP	[mol H^+ eq.]	3,11E-01
EP-freshwater	[kg P eq.]	1,23E-02
EP-marine	[kg N eq.]	5,37E-02
EP-terrestrial	[mol N eq.]	6,10E-01
POCP	[kg NMVOC eq.]	2,14E-01
ADPm[1]	[kg Sb eq.]	3,49E-04
ADPf[1]	[MJ]	8,02E+02
WDP[1]	[m^3 world eq. deprived]	2,96E+01
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 = Acidifcation; 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 BLUE BRAISING 1 TONNE		
Parameter	**Unit**	**A1-A3**
PM	[Disease incidence]	2,67E-06
IRP[2]	[kBq U235 eq.]	5,22E+00
ETP-fw[1]	[CTUe]	1,74E+02
HTP-c[1]	[CTUh]	3,27E-08
HTP-nc[1]	[CTUh]	7,52E-07
SQP[1]	-	4,20E+02
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 BLUE BRAISING 1 TONNE		
Parameter	**Unit**	**A1-A3**
PERE	[MJ]	3,14E+02
PERM	[MJ]	0,00E+00
PERT	[MJ]	3,14E+02
PENRE	[MJ]	8,59E+02
PENRM	[MJ]	0,00E+00
PENRT	[MJ]	8,59E+02
SM	[kg]	0,00E+00
RSF	[MJ]	0,00E+00
NRSF	[MJ]	0,00E+00
FW	[m^3]	1,66E+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 BLUE BRAISING 1 TONNE		
Parameter	**Unit**	**A1-A3**
HWD	[kg]	2,00E-03
NHWD	[kg]	5,66E+00
RWD	[kg]	1,76E-03
CRU	[kg]	0,00E+00
MFR	[kg]	0,00E+00
MER	[kg]	0,00E+00
EEE	[MJ]	0,00E+00
EET	[MJ]	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 TONNE		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	0,00E+00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

GWP-GHG

GHG IMPACT PER BLUE BRAISING 1 TONNE		
Parameter	**Unit**	**A1-A3**
GWP-GHG	[kg CO_2 eq.]	6,56E+01

LCA interpretation

The largest contribution to nearly all impacts indicators originates in module A3, primarily due to CO_2 emissions from fuel combustion. The use of PET Straps for repacking has the highest impact on Ozone Depletion (OPD). Detailed values for each impact indicator are provided in the table below.

Impact indicator	Most contributing processes	Percentage
GWP-total	Blue Braising (biomethane)	96,2%
GWP-fossil	Blue Braising (biomethane)	95,6%
GWP-biogenic	Blue Braising (biomethane)	99,9%
GWP-luluc	Blue Braising (biomethane)	97,4%
ODP	PET Straps	68,4%
AP	Blue Braising (biomethane)	96,5%
EP-freshwater	Blue Braising (biomethane)	99,5%
EP-marine	Blue Braising (biomethane)	96,0%
EP-terrestrial	Blue Braising (biomethane)	96,1%
POCP	Blue Braising (biomethane)	95,2%
ADPm[1]	Blue Braising (biomethane)	97,6%
ADPf[1]	Blue Braising (biomethane)	91,6%
WDP[1]	Blue Braising (biomethane)	95,2%

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+A1 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+A1 chapter 7.4.2.

References

Publisher	epddanmark www.epddanmark.dk Template version 2024.2
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	*Mando Kort* Ecochain Technologies BV H.J.E. Wenckebachweg 123, 3B 1096 AM Amsterdam, Netherlands
LCA software /background data	Ecochain Helix v3.4.1. Ecoinvent v3.9.1 EN 15804 reference package 3.1
3rd party verifier	*Nana Lin Rasmussen* Sweco Danmark A/S Verified according to Verification Checklist 1 v. 2.7

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"

Tiles & Bricks Europe (2020)
Internal Guidance Document on TBE PCR for Clay 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”