

Owner: Gamle Mursten ApS
No.: MD-16007-EN
ECO EPD: 00000503
Issued: 27-03-2017
Valid to: 27-03-2022

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Gamle Mursten ApS
 Skotlandsvej 16,
 5700 Svendborg
 VAT No.: DK-10134412



Issued:
27-03-2017

Valid to:
27-03-2022

Programme operator

Danish Technological Institute
 www.dti.dk



Basis of calculation

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

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.

Programme

EPD Danmark
 www.epddanmark.dk



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.

Declared products

Used bricks (whole and half), machine cleaned and hand sorted

EPD type

- Cradle-to-gate
- Cradle-to-gate with options
- Cradle-to-grave

Production site

Svendborg and Hedehusene, Denmark

Products use

The used bricks are used in new buildings and renovations. The bricks are used in brick-built walls, columns and partition walls.

CEN standard EN 15804 serves as the core PCR
Independent verification of the declaration and data, according to EN ISO 14025 <input type="checkbox"/> internal <input checked="" type="checkbox"/> external
Third party verifier: _____ David Palm

Declared unit

1 tonne used bricks (whole and half), which are machine cleaned and hand sorted at Gamle Mursten

 Mathias Hoeg
 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	MND	MND	MND	MND	MND

Product information

Product description

The main product components are shown in the table below. These amounts to 100 weight % of the declared product.

Material	Weight-% of declared product
Used bricks	100
Packaging	Kg pr. deklareret enhed
Wooden pallets	11,7
Plastic film	0,1

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 tonne used bricks (whole and half), which are machine cleaned and hand sorted at Gamle Mursten on the production site located in Svendborg and Hedehusene, Denmark. Machine cleaned bricks are bricks which go through cleaning in Gamle Murstens patented vibration facility. After machine cleaning in the form of shaking and rasping, the bricks are hand cleaned and sorted before packing. Product specific data are based on annual average values for year 2015, provided by Gamle Mursten (as well as from year 2013 (cf. MST, 2013) for internal transport types og fuel consumption pr. received tonne of brick waste, which according to Gamle Mursten has not changed since year 2013¹. Thus, these data are also valid for year 2015). Background data are based on GaBi databases 2016 and are less than 10 years old.

Dangerous substances

The products do not contain substances listed in the "Candidate List of Substances of Very High Concern for authorisation" with a content exceeding 0,1 weight % (<http://echa.europa.eu/candidate-list-table>). Absence of these substances is declared by the producer, Gamle Mursten.

Essential characteristics (CE)

The products are, according to the producer Gamle Mursten, not legally covered by the harmonised technical specification BS EN 771-1:2011+A1:2015 Specification for masonry units. Clay masonry units, but Gamle Mursten complies with this standard and supply bricks according to current legislation and building regulations.

Product sheet for machine cleaned bricks can be found at Gamle Murstens website: <http://gamlemursten.dk/>

Reference Service Life (RSL)

The reference service life is in accordance with EN 15804 not declared, as this environmental product declaration is based on a cradle-to-gate life cycle assessment.

¹ An LCA report was conducted in 2013 (MST, 2013), where listings of internal transport etc. have been conducted. Transport types and fuel consumption for internal transport pr. received tonne of brick waste has not changed. The total internal transport has been calculated based on received amounts of bricks in 2015.

LCA background

Declared unit

The declared unit is 1 tonne used bricks (whole and half), which are machine cleaned and hand sorted at Gamle Mursten in Svendborg og Hedehusene.

Name	Value	Unit
Declared unit	1	tonne
Conversion factor to 1 kg.	0,001	-

Product illustration

Whole and half machine cleaned and hand sorted used brick

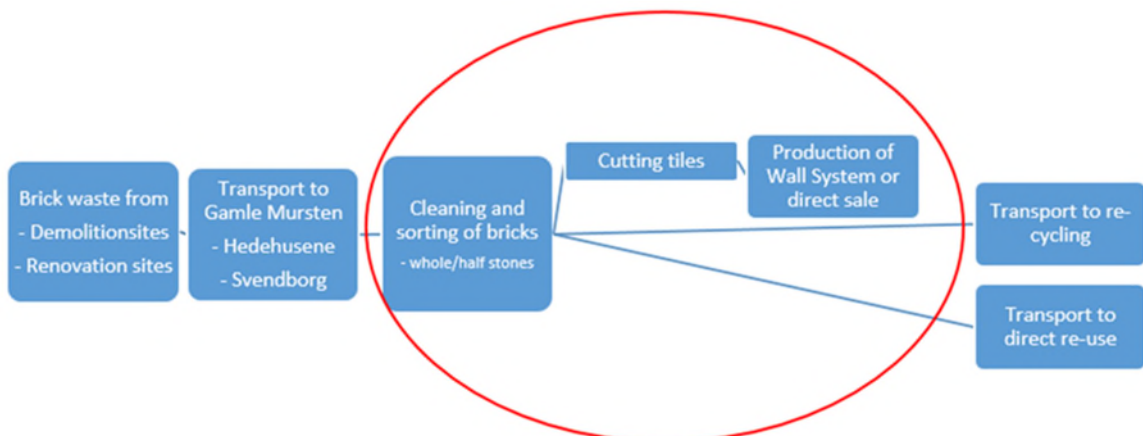


PCR

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

Flow diagram

Flow diagram for the product fase of used bricks. Activities within the circle takes palce at Gamle Mursten in Hedehusene and in Svendborg.



System boundaries

This EPD is based on a cradle-to-gate LCA, 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 renewable and non-renewable primary energy usage and mass for unit processes.

The used bricks which go into the finished product come from brick waste from demolitions and renovation sites. Environmental impacts from the production of the original bricks, as well as handling of the remaining residual products they appear together with, is not included. Transport of both are however included, for production and disposal, respectively. This approach is in accordance with EN 15804.

Economic allocation has been carried out between the used bricks and bricktiles, which is another output from the production process at Gamle Mursten, in accordance with EN 15804.

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 and internal transport, packaging and waste processing of waste generated in the production 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.

LCA results

ENVIRONMENTAL IMPACTS PER TONNE USED BRICKS		
Parameter	Unit	A1-A3
GWP	[kg CO ₂ -eq.]	2,70
ODP	[kg CFC11-eq.]	1,34E-09
AP	[kg SO ₂ -eq.]	0,0617
EP	[kg PO ₄ ³⁻ -eq.]	0,0135
POCP	[kg ethene-eq.]	-0,00749
ADPE	[kg Sb-eq.]	3,35E-06
ADPF	[MJ]	274
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential of soil and water; EP = Eutrophication potential; POCP = Photochemical ozone creation potential; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources	

RESOURCE USE PER TONNE USED BRICKS		
Parameter	Unit	A1-A3
PERE	[MJ]	49,9
PERM	[MJ]	474,6*
PERT	[MJ]	524,5
PENRE	[MJ]	290,2
PENRM	[MJ]	5*
PENRT	[MJ]	295,2
SM	[kg]	1000
RSF	[MJ]	-
NRSF	[MJ]	-
FW	[m ³]	29,9
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 = Use of net fresh water	

*Approximate energy content in packaging

WASTE CATEGORIES AND OUTPUT FLOWS PER TONNE USED BRICKS		
Parameter	Unit	A1-A3
HWD	[kg]	1,58E-05
NHWD	[kg]	2,65E-01
RWD	[kg]	8,48E-03

CRU	[kg]	-
MFR	[kg]	-
MER	[kg]	-
EEE	[MJ]	-
EET	[MJ]	-
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	

Additional information


Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

References

Publisher	 http://www.epddanmark.dk
Programme operator	Danish Technological Institute Sustainable Construction Kongsvang Allé 29 DK-8000 Aarhus C http://www.teknologisk.dk
LCA-practitioner	Susanne Vedel Hjuler Linda Høiby COWI A/S Parallelsvej 2, 2800 Kongens Lyngby E-mail: suvj@cowi.com
LCA software / background data	GaBi 7.3 2016 incl. databases
3rd party verifier	David Palm, Ramböll Sverige AB

General programme instructions

Version 1.7
www.epddanmark.dk

EN 15804

DS/EN 15804 + A1:2013 - "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"

MST, 2013

LCA af genbrug af mursten (report in Danish). Miljøprojekt nr. 1512, 2013. Editing: Jacob Møller, Anders Damgaard, Thomas Astrup, DTU Miljø