

KLIK-KLIK™ Wall System EPD Declaration

In conformity with
EN 15804+A2 Standard



Manufacturer's Information

- KLIK-KLIK Wallsystem ApS
- CVR: 45781372
- Njalsgade 21F, 2, 2300 København S, Danmark

Product Information

- KLIK-KLIK™ Wall System

EPD Information

EPD Standard – EN15804+A2 un ISO 14025

EPD developer – Ēriks Meinarts

EPD verification – internal in conformity with ISO 14025 standard requirements

Product Description

KLIK-KLIK™ Wall System is a modular CLT panel system, which is intended for construction of one-storey building structures, providing structurally necessary and load-bearing and connection loads. Panels are made from ARCWOOD 5 layer, 100 mm CLT material products whose production process is determined in conformity with EPD requirements.

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Product Standards

KLIK-KLIK™ Wall System are made from ARCWOOD products which conform to:

- EN14080
- EN15425
- EN338
- EN1995-1-1
- FSC standard requirements

Product Dimensions

- panel density: 100 mm
- no. of panel layers: 5 units
- panel width up to 600 mm
- panel height up to 2900mm
- panel layer density: 20mm
- moisture contents in panels: 12+-2 %
- moisture contents in connecting wedges up to 12 %



Product Production Cycle

Semi-finished product production and supply in a processing plant (A1-A2)

Outsourced service EPD calculation made for the delivery of blanks at a distance of 300 km according to the outsourcer's declaration.

Product development A3

The development cycle includes the production of parts in the factory, integration of processing surpluses for the provision of transport materials and the recycling of by-products into thermal energy.

Product supply and assembly A4-A5

Transport estimates for delivery to the site factor in transport gas emissions, gas emissions that occur in the fuel production process, as well as emissions that are generated in infrastructure construction. It is planned to use a truck with fossil fuel for delivery. Installation calculations include the re-use use of materials that were formed as surplus during the product development cycle.

Product usage and maintenance B1-B7

Not included in these calculations.

Final processing (C1-C4,D)

When dismantling the product, 70% of the materials can be sorted as energy lumber and 30% as mixed construction waste. 97% of the sorted wood is intended to be used by the nearest energy generation company, while it is planned that 3% of the sorted wood and 30% of the mixed building materials will be deposited at the nearest waste recycling center, without being used in energy production.



Production Cycle

Product :

KLIK-KLIK™ Wall System

The period of information included in the production cycle is 2021

Basic production cycle units

• product measuring unit	1m3
• product density	460 kg/m3
• amount of molecularly attributable carbon	229 kg/m3
• amount of molecularly attributable carbon for packaging	0

Stages examined during the production cycle

• semi-finished product production and supply (A1-A2)	A1- A2
• product manufacturing	A3
• supply and assembly	A4 - A5 C1
• recycling and energy usage	- C4, D

B – usage cycle not included in these calculations.

Explanations of development cycle calculations

- The values included in the A1-A2 module are based on the ARCWOOD EPD declaration and the specified delivery distance of 300 km.
- The amount of energy consumed in A3 is determined for the production of 1 m3 relative KLIK-KLIK™ Wall System - the referred to value is variable based on the specification of each order, but not exceeding the limit of 10%.
- A2/A4/C2 transport emissions are determined based on the delivery of a full load, not including the return trip for empty transport. The assumption is based on the use of a standard transport solution.
- In the A5 module, the amount of energy is set at 8 MJ, for each m3 of KLIK-KLIK™ Wall System, metal fasteners 3 kg.
- In module C1, it is anticipated that energy consumption for dismantling will be 38 MJ, for each m3 of KLIK-KLIK™ Wall System, assuming that the panels are dismantled in full.
- In the C2 module, an identical amount of material is provided for processing, without taking into account the climatic effects that could affect the geometry and moisture of the structure. The recycling distance is assumed to be 200 km.
- In the C3 module, the use of 97% of the sorted fraction as energy lumber is provided.

Basic values included in cycle calculations

Electricity generation CO2 emission equivalent CO2e/kwh 0.56 kg
(based on the average value).

Transport calculation basic values

- CO2e emission equivalent CO2e/km 0.0901 kg
- average delivery distance 1300 km
- performance efficiency 100 %
- transport weight 465 kg/m3

B – the duty cycle is not included in these calculations

Recycling calculation basic values

- sorted mass volume per 1m3 of product 325 kg
- total construction debris 139 kg
- recyclable amount 161 kg
- energy lumber 154 kg
- deposited amount 149 kg



Basic calculation in accordance with EU I5804+A2

Category	Unit	A12	A3	a123	a4	a5	C1	C2	C3	C4	D
GWP - total	kg CO2e	-5.49E+02	-6.17E+01	-6.10E+02	5.42E+01	6.06E+00	3.86E+00	2.07E+01	8.25E+02	5.55E+01	-4.34E+02
GWP - fossil	kg CO2e	2.12E+02	2.19E+01	2.33E+02	5.46E+01	6.02E+00	3.86E+00	2.07E+01	2.68E+00	5.55E+01	-2.31E+02
GWP - biogenic	kg CO2e	-7.82E+02	-8.60E+01	-8.68E+02	3.96E-02	3.33E-02	1.05E-03	1.13E-02	8.47E+02	3.20E-03	-2.84E+02
GWP - LULUC	kg CO2e	2.19E+01	2.41E+00	2.43E+01	1.65E-02	3.52E-03	3.18E-04	7.55E-03	6.04E+01	1.28E-03	6.03E+01
Ozone depletion pot.	kg CFC-11e	2.43E-05	2.34E-06	2.66E-05	1.28E-05	3.98E-07	7.36E-07	4.70E-06	2.54E-07	5.54E-07	-2.00E-05
Acidification potential	mol H+e	1.35E+00	1.43E-01	1.50E+00	2.30E-01	3.64E-02	3.57E-02	8.46E-02	1.68E-02	3.83E-02	-4.40E-01
EP-freshwater	kg Pe	1.07E-02	1.17E-03	1.19E-02	4.43E-04	1.84E-04	1.52E-05	1.57E-04	3.08E-04	7.94E-05	-1.34E-03
EP-marine	kg Ne	3.50E-01	3.67E-02	3.87E-01	6.90E-02	8.32E-03	1.74E-02	2.28E-02	2.19E-03	1.65E-02	-9.41E-02
EP-terrestrial	mol Ne	3.85E+00	4.04E-01	4.25E+00	7.63E-01	9.31E-02	1.72E-01	2.78E-01	2.42E-02	1.67E-01	-1.17E+00
POCP ("smog")	kg NMVOCe	1.15E+00	1.20E-01	1.27E+00	2.46E-01	2.84E-02	4.75E-02	8.50E-02	6.31E-03	4.23E-02	-4.20E-01
ADP-minerals & metals	kg Sbe	2.65E-03	2.67E-04	2.91E-03	9.32E-04	1.51E-04	5.73E-06	5.08E-04	1.14E-05	6.63E-05	-3.64E-04
ADP-fossil resources	MJ	3.37E+03	3.49E+02	3.71E+03	8.49E+02	5.92E+01	5.17E+01	2.83E+02	5.96E+01	4.07E+01	-4.01E+03
Water use	m3e depr.	4.64E+01	5.03E+00	5.15E+01	3.16E+00	5.01E+00	8.75E-02	1.01E+02	6.76E-01	4.68E+00	-1.25E+01

Resources used

Category	Unit	A12	A3	a123	a4	a5	CI	C2	C3	C4	D
Renew. PER as energy	MJ	4.95E+03	5.45E+02	5.50E+03	1.07E+01	1.23E+01	2.87E-01	4.41E+00	-9.10E+00	-1.25E+00	-1.03E+03
Renew. PER material	MJ	1.10E+04	1.21E+03	1.22E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.30E+03	-3.80E+03	-7.30E+03
Total use of renew. PER	MJ	1.59E+04	1.75E+03	1.77E+04	1.07E+01	1.23E+01	2.80E-01	4.53E+00	-8.05E+03	-3.46E+03	-6.45E+03
Non-re. PER as energy	MJ	3.19E+03	3.29E+02	3.51E+03	8.49E+02	5.92E+01	5.17E+01	3.21E+02	5.96E+01	-4.07E+01	-4.01E+01
Non-re. PER as material	MJ	1.78E+02	1.96E+01	1.98E+02	0.00E+00	-1.53E+01	0.00E+00	0.00E+00	0.00E+00	-1.13E+02	0.00E+00
Total use of non-re. PER	MJ	3.37E+03	3.49E+02	3.71E+03	8.49E+02	4.38E+01	4.69E+01	3.12E+02	6.13E+01	-1.59E+02	-3.64E+01
Secondary materials	kg	5.81E-02	6.39E-03	6.45E-02	0.00E+00	1.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renew. secondary fuels	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	0.00E+00	0.00E+00
Non-ren. secondary fuels	MJ	6.19E+01	6.81E+00	6.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m3	6.23E-01	5.91E-02	6.82E-01	3.73E-01	2.29E-02	0.00E+00	5.34E-02	1.70E-02	1.85E-01	1.02E+00

Recycled resources

Category	Unit	A12	A3	a123	a4	a5	CI	C2	C3	C4	D
Hazardous waste	kg	8.62E+00	9.27E-01	9.55E+00	8.25E-01	4.36E+00	5.72E-02	3.16E-01	0.00E+00	3.87E+00	-1.15E+00
Non-hazardous waste	kg	3.08E+02	3.16E+01	3.40E+02	9.13E+01	1.02E+01	6.12E-01	2.18E+01	0.00E+00	1.56E+02	1.18E+02
Radioactive waste	kg	1.55E-02	1.56E-03	1.71E-02	5.82E-03	1.75E-04	3.62E-04	2.20E-03	0.00E+00	1.68E-04	-1.26E-03

Parallel recycling flows

Category	Unit	A12	A3	a123	a4	a5	CI	C2	C3	C4	D
Components for re-use	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	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E+02	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E+02	0.00E+00	0.00E+00
Exported energy	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	0.00E+00	0.00E+00

Resource consumption per 1 kg of product

Category	Unit	A12	A3	a123	a4	a5	CI	C2	C3	C4	D
Components for re-use	kg	-1.19E+00	-1.34E+02	-1.33E+00	1.19E-01	1.32E-02	8.40E-03	4.50E-02	1.79E+00	1.21E-01	-9.44E-01
Materials for recycling	kg	5.75E-06	5.81E-07	6.33E-06	2.02E-06	3.28E-07	1.29E-08	1.22E-06	2.25E-08	1.59E-07	-7.18E-07
Materials for energy rec	kg	7.32E+00	7.58E-01	8.07E+00	1.85E+00	1.29E-01	1.12E-01	6.97E-01	1.30E-01	8.85E-02	-8.70E+00
Exported energy	MJ	1.01E-01	1.09E-02	1.12E-01	6.86E-03	1.09E-02	2.10E-04	2.24E-03	1.62E-03	9.22E-03	-3.01E-02
Non-re. PER as material	MJ	1.26E-04	1.39E-05	1.40E-04	0.00E+00	3.56E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00