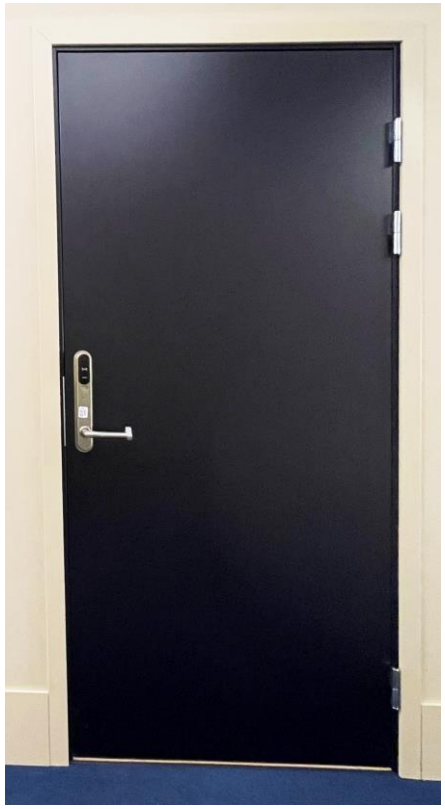
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Konstruktion 25
KaliDörren Group AB



EPD HUB, HUB-0165
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	KaliDörren Group AB
Address	Barnarpsgatan 24-26. 553 16 Jönköping. Sweden
Contact details	info@kali.se
Website	www.kali.se

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Byggprodukt
Category of EPD	Verifierad EPD från tredje part
Scope of the EPD	Cradle to gate with options, A4-A5 and modules C1-C4, D.
EPD author	Karl Andreen. KaliDörren Group AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	NH Lim as an authorized verifier acting for EPD Hub

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Konstruktion 25
Additional labels	
Product reference	25m2. 25a2
Place of production	Olsfors & Bottnaryd
Period for data	Calendar year 2021
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3	<-1%, <+1% %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 doorset. 2,069 m².
Declared unit mass	65.41 kg
GWP-fossil, A1-A3 (kgCO2e)	48.7
GWP-total, A1-A3 (kgCO2e)	-6.67
Secondary material, inputs (%)	0.854
Secondary material, outputs (%)	70.9
Total energy use, A1-A3 (kWh)	304.0
Total water use, A1-A3 (m3e)	0.304

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Within KaliDörren Group AB, interior doors made of wood are developed, manufactured and sold for professional and commercial use. Sales take place within Sweden and are shipped directly to the end customer. Kali has become a concept in the Swedish market when it comes to doors and glass partitions in public environments. Kali´s doors and glass partitions are manufactured within the Kali Group. Thanks to a close collaboration with architects and contractors, and through a well-adapted manufacturing process, flexibility and special solutions are allowed and thereby tailor-made products for each object.

PRODUCT DESCRIPTION

Shipped product is a solid door including the doorframe. The product provides a sound reduction of up to 28dB. Fire resistance class of EI30, and cold and hot smoke classification of Sa and S200. The door is built for professional demands and well suited for use in commercial buildings such as hospitals, schools and hotels. Depending on the environment and the frequency of the door use, lifespan is assumed to be 30+ years. The door can be equipped with a wide range of options to adapt to different functions and aesthetic requirements.

Further information can be found at www.kali.se.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	2,3	Asia
Minerals	0	
Fossil materials	9,7	Europe
Bio-based materials	88,1	Europe

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	14.892
Biogenic carbon content in packaging, kg C	1.7111

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 doorset. 2,069 m².
Mass per declared unit	65.41 kg
Functional unit	1 doorset. 2,069 m².

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product is made of wood materials. The materials are transported to company KaliDörren Group production facilities, where the main manufacturing processes include cutting, milling, and assembly. The manufacturing process requires electricity for the different equipment as well as heating. Certain ancillary materials are also included. The product frame is painted and the product door sash is laminated before being transported from the factory gate. It is packaged (excluded as per EPD Hub rules (less than 5% of GWP)) and sent to the installation site on a wooden pallet.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined according to the PCR. Average distance of transportation from production plant to building site is assumed as 261 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products.

Installation includes the energy use and material consumption. There is no loss on site during construction activities.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

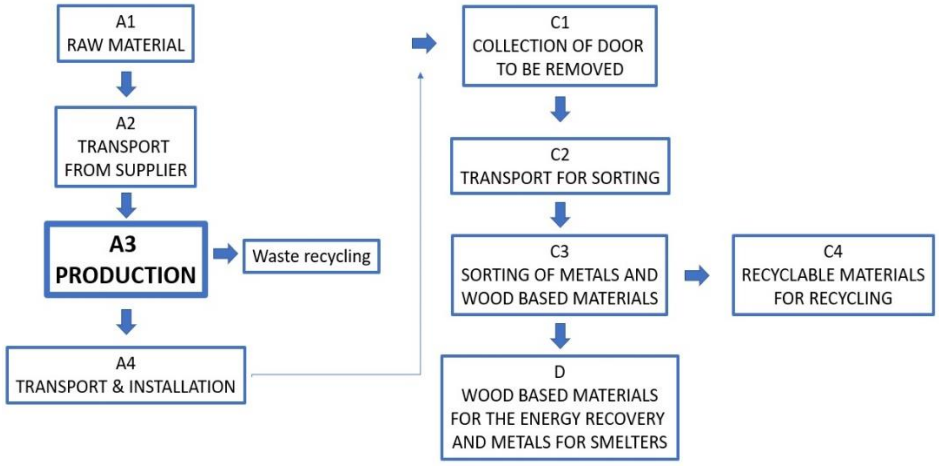
PRODUCT END OF LIFE (C1-C4, D)

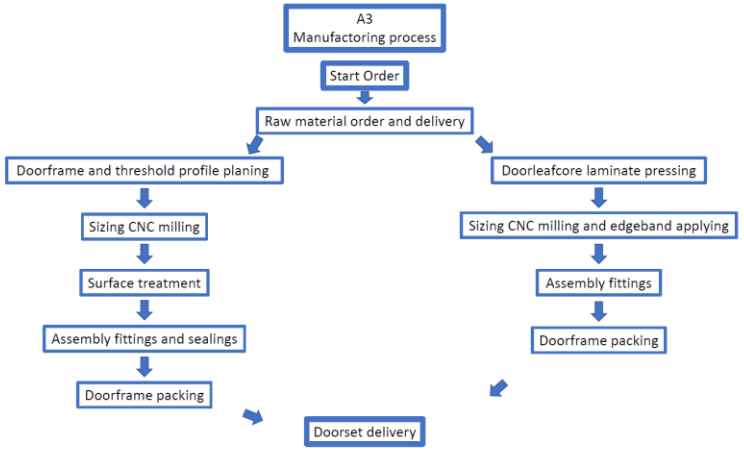
Consumption of energy and natural resources in demolition process is assumed to be related with the electricity used for the deconstruction of the product. It is assumed that the waste is collected as mixed construction waste and transported to the waste treatment center. Transportation distance to treatment is assumed as 40 km and the transportation method is assumed to be lorry (C2). Per the data from Sweden construction waste

statistics website, the wood and metals are sorted. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery.

Additionally, hazardous waste that is incinerated is included in Module C4 while the flow not included in Module D for benefits. The benefits and loads of incineration and recycling are included in Module D.

MANUFACTURING PROCESS





LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	Not applicable
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple factories
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	<-1%, <+1% %

The declered product can be produced in two different factories situated in two different cities. Olsfors and Bottnaryd. The products content, production process and machinery are the same and are governed by type approval certificates. The differences will then only be the distances for transport of material deliveries to the factories and the transport of waste material to waste facilities. There is also a slight difference in where the electricity is produced from.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	-1,37E1	5,37E-1	6,51E0	-6,67E0	1,54E0	2E-1	MND	MND	MND	MND	MND	MND	MND	3,35E-4	4,28E-1	5,46E1	3,43E0	5,8E1
GWP – fossil	kg CO_2e	4,64E1	5,37E-1	1,79E0	4,87E1	1,55E0	2E-1	MND	MND	MND	MND	MND	MND	MND	3,04E-4	4,27E-1	2,73E0	3,03E0	-2,21E1
GWP – biogenic	kg CO_2e	-6,02E1	3,9E-4	4,71E0	-5,55E1	1,13E-3	-1,71E-4	MND	MND	MND	MND	MND	MND	MND	1,2E-5	2,3E-4	5,19E1	3,97E-1	8,01E1
GWP – LULUC	kg CO_2e	1,03E-1	1,62E-4	2,16E-4	1,03E-1	4,67E-4	1,01E-4	MND	MND	MND	MND	MND	MND	MND	1,97E-5	1,54E-4	2,23E-3	5,18E-4	-5,88E-2
Ozone depletion pot.	kg $CFC_{-11}e$	6,62E-6	1,26E-7	2,02E-8	6,77E-6	3,65E-7	9,52E-9	MND	MND	MND	MND	MND	MND	MND	1,49E-10	9,72E-8	1,91E-7	1,86E-7	-2,16E-6
Acidification potential	mol H^+e	3,22E-1	2,26E-3	3,11E-3	3,28E-1	6,52E-3	1,02E-3	MND	MND	MND	MND	MND	MND	MND	1,98E-6	1,23E-3	8,97E-3	1,11E-2	-2,5E-1
EP-freshwater[2)]	kg Pe	2,61E-3	4,37E-6	1,45E-5	2,63E-3	1,26E-5	1,23E-5	MND	MND	MND	MND	MND	MND	MND	2,65E-8	3,63E-6	8,7E-5	7E-5	-1,6E-3
EP-marine	kg Ne	5,34E-2	6,8E-4	4,38E-4	5,45E-2	1,96E-3	1,99E-4	MND	MND	MND	MND	MND	MND	MND	3,38E-7	2,44E-4	2,01E-3	1,32E-3	-2,62E-2
EP-terrestrial	mol Ne	8,57E-1	7,51E-3	9,97E-3	8,75E-1	2,17E-2	2,27E-3	MND	MND	MND	MND	MND	MND	MND	4,44E-6	2,72E-3	2,25E-2	1,64E-2	-3,15E-1
POCP ("smog")[3)]	kg NMVOCe	2,36E-1	2,41E-3	1,27E-3	2,39E-1	6,97E-3	9,92E-4	MND	MND	MND	MND	MND	MND	MND	1,01E-6	1,04E-3	7,12E-3	8,35E-3	-9,44E-2
ADP-minerals & metals[4)]	kg Sbe	1,77E-3	9,16E-6	1,06E-5	1,79E-3	2,65E-5	3,55E-6	MND	MND	MND	MND	MND	MND	MND	1,22E-8	1,18E-5	2,85E-5	1,29E-5	-7,24E-5
ADP-fossil resources	MJ	8,33E2	8,35E0	2,48E0	8,44E2	2,41E1	2,02E0	MND	MND	MND	MND	MND	MND	MND	3,56E-2	6,46E0	2,93E1	1,69E1	-4,16E2
Water use[5)]	m^3e depr.	5,53E1	3,11E-2	1,33E-1	5,55E1	8,98E-2	9,61E-2	MND	MND	MND	MND	MND	MND	MND	4,66E-4	2,11E-2	6,49E-1	3,16E-1	-4,37E0

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1,57E2	1,05E-1	5,32E1	2,11E2	3,04E-1	2,25E-1	MND	MND	MND	MND	MND	MND	MND	1,71E-2	9,25E-2	2,66E0	6,36E-1	-1,27E2
Renew. PER as material	MJ	8,51E2	0E0	-4,76E1	8,03E2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,01E3	1,05E-1	5,67E0	1,01E3	3,04E-1	2,25E-1	MND	MND	MND	MND	MND	MND	MND	1,71E-2	9,25E-2	2,66E0	6,36E-1	-1,27E2
Non-re. PER as energy	MJ	8,33E2	8,35E0	2,48E0	8,44E2	2,41E1	2,02E0	MND	MND	MND	MND	MND	MND	MND	3,56E-2	6,46E0	2,93E1	1,69E1	-4,16E2
Non-re. PER as material	MJ	1,43E-1	0E0	0E0	1,43E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	8,33E2	8,35E0	2,48E0	8,44E2	2,41E1	2,02E0	MND	MND	MND	MND	MND	MND	MND	3,56E-2	6,46E0	2,93E1	1,69E1	-4,16E2
Secondary materials	kg	5,59E-1	0E0	0E0	5,59E-1	0E0	1,16E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,08E0
Renew. secondary fuels	MJ	0E0	0E0	4,07E1	4,07E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	2,96E-1	1,74E-3	6,07E-3	3,04E-1	5,02E-3	1,31E-3	MND	MND	MND	MND	MND	MND	MND	9,46E-6	1,12E-3	1,28E-2	1,06E-2	-6,31E-2

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,5E0	8,12E-3	4,82E-2	3,56E0	2,35E-2	7,51E-2	MND	MND	MND	MND	MND	MND	MND	2,89E-5	6,65E-3	0E0	5,09E-1	-3,06E0
Non-hazardous waste	kg	7,59E1	8,98E-1	1,03E0	7,78E1	2,59E0	6,52E-1	MND	MND	MND	MND	MND	MND	MND	1,09E-3	4,58E-1	0E0	3,81E0	-5,08E-1
Radioactive waste	kg	2,33E-3	5,73E-5	7,19E-6	2,4E-3	1,66E-4	4,01E-6	MND	MND	MND	MND	MND	MND	MND	4,99E-7	4,42E-5	0E0	4,43E-5	-2,2E-3

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1,42E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	4,49E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,5E1	5,32E-1	1,81E0	4,74E1	1,54E0	1,92E-1	MND	MND	MND	MND	MND	MND	MND	3,18E-4	4,24E-1	2,67E0	3,09E0	-2,11E1
Ozone depletion Pot.	kg $CFC_{-11}e$	5,79E-6	1E-7	2,19E-8	5,91E-6	2,9E-7	8,67E-9	MND	MND	MND	MND	MND	MND	MND	2,4E-10	7,74E-8	1,78E-7	2,36E-7	-2,1E-6
Acidification	kg SO_2e	2,38E-1	1,09E-3	2,11E-3	2,42E-1	3,16E-3	8,13E-4	MND	MND	MND	MND	MND	MND	MND	1,6E-6	8,62E-4	6,38E-3	9,54E-3	-2,21E-1
Eutrophication	kg PO_4^3e	7,91E-2	2,21E-4	7,5E-4	8,01E-2	6,38E-4	5,48E-4	MND	MND	MND	MND	MND	MND	MND	8,59E-7	1,78E-4	6,53E-3	1,01E-2	-4,36E-2
POCP (“smog”)	kg C_2H_4e	1,8E-2	6,92E-5	1,84E-4	1,83E-2	2E-4	1,21E-4	MND	MND	MND	MND	MND	MND	MND	6,83E-8	5,16E-5	5,68E-4	2,88E-3	-1,05E-2
ADP-elements	kg Sbe	1,77E-3	9,16E-6	1,06E-5	1,79E-3	2,65E-5	3,55E-6	MND	MND	MND	MND	MND	MND	MND	1,22E-8	1,18E-5	2,85E-5	1,29E-5	-7,24E-5
ADP-fossil	MJ	8,33E2	8,35E0	2,48E0	8,44E2	2,41E1	2,02E0	MND	MND	MND	MND	MND	MND	MND	3,56E-2	6,46E0	2,93E1	1,69E1	-4,16E2

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Nohyun Lim as an authorized verifier acting for EPD Hub Limited
28.10.2022

Noh-hyun Lim

VERIFIED ISO 14025