

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	KONE Corporation
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-KON-20160136-IBA1-EN
Issue date	12/09/2016
Valid to	11/09/2021




KONE Gliding Door 10l KONE Door Business

www.bau-umwelt.com / <https://epd-online.com>



Picture may not represent the exact door configuration described in this EPD.

1. General Information

KONE Door Business Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	KONE Gliding Door 10I Owner of the Declaration KONE Corporation Keilasatama 3 02150 Espoo Finland
Declaration number EPD-KON-20160136-IBA1-EN	Declared product / Declared unit One KONE Gliding Door 10I manual building door, including: <ul style="list-style-type: none"> • manual magnetic rail system • single sliding panel • wall frame • packaging material
This Declaration is based on the Product Category Rules: Windows and doors, 11.2015 (PCR tested and approved by the SVR)	Scope: This EPD lists the environmental impacts of the KONE Gliding Door 10I, including packaging material. For this declaration, a single-panel gliding door was considered. The components are sourced from approved international suppliers and the door is manufactured at the KONE premises in Veenendaal, The Netherlands. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
Issue date 12/09/2016	Verification The CEN Norm /EN 15804/ serves as the core PCR Independent verification of the declaration according to /ISO 14025/ <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally
Valid to 11/09/2021	 Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)
 Dr. Burkhard Lehmann (Managing Director IBU)	 Dr.-Ing. Wolfram Trinius (Independent verifier appointed by SVR)

2. Product

2.1 Product description

KONE gliding doors are designed for use in building environments that require accessibility and space efficiency. The doors are available as manual or automatic versions and in a wide range of sizes and designs, depending on customer requirements. KONE gliding doors use a closed magnetic field to hold the door panel in place, removing the need for a number of mechanical components. This also means that the manual version of the door can be opened and closed smoothly and with minimum force. The panel can be suspended entirely within the door groove in order to save space. The KONE Gliding Door 10I is installed in the wall using a steel frame.

2.2 Application

KONE gliding doors are intended for a wide range of applications including public and commercial buildings such as hospitals, offices, and hotels, as well as

residential buildings such as those housing senior citizens.

2.3 Technical Data

Name	Value	Unit
Material used (door panel)	High-pressure laminate, wood and paper	-
Material used (door frame)	Steel	

2.4 Application rules

The door must be installed, used, and maintained in accordance with design specifications and instructions provided by KONE. For the application and use the respective national provisions apply.

2.5 Delivery status

The door set is delivered ready for installation on a wooden pallet. The total weight depends of the dimensions of the door panel.

2.6 Base materials / Ancillary materials

The composition of the product by percentage (%) of total mass per unit (excluding packaging) is as follows

Component	Percentage (%)
Steel	53.7%
Stainless Steel	0.1%
Ferrite	2.9%
Aluminum	0.5%
Plastics	3.0%
Wood/Pulp	39.8%
Total	100 %

2.7 Manufacture

The door components are sourced mainly from Europe and Asia. Prior to assembly, the metal components are surface treated with a powder coating by a third-party. The final assembly of the door is completed in the Netherlands. The manufacturing unit is /EN ISO 9001/ certified.

2.8 Environment and health during manufacturing

The manufacturing unit is /EN ISO 14001 certified/. Offcuts and scraps are directed to a recycling unit. Waste is sent for disposal. Preparation and manufacturing conditions do not require any special health and safety measures.

2.9 Product processing/Installation

KONE products are supplied ready for installation, which is performed on-site by trained technicians.

2.10 Packaging

Packaging, including corrugated cardboard, is provided to protect the door during transport. The door set is wrapped in plastic for delivery. The door is shipped to the destination site on a wooden pallet. All packaging materials are theoretically recyclable.

2.11 Condition of use

The door must be installed, used, and maintained in accordance with the design specifications and instructions provided by KONE.

2.12 Environment and health during use

No personal injury or damage to health or environment is expected if the door is used in accordance with the instructions provided by KONE.

2.13 Reference service life

Providing it is installed, maintained, and used in accordance with the instructions provided by KONE, the expected lifetime of the gliding door is typically a minimum of 20 years (manufacturer estimation.)

2.14 Extraordinary effects

Fire

Not applicable.

Water

No impact on the environment is expected from contact with water.

Mechanical destruction

No impact on the environment is expected in the event of mechanical destruction.

2.15 Re-use phase

The steel components can be recycled. The wood and the plastic components can be used for energy recovery within a waste incineration process.

2.16 Disposal

Waste codes according to the /European Waste Catalogue/

Manufacturing

EWC 12 01 01 Ferrous metal filings and turnings
EWC 12 01 03 Non-ferrous metal filings and turnings
EWC 12 01 05 Plastics shavings and turnings

Packaging

EWC 15 01 01 Paper and cardboard packaging
EWC 15 01 02 Plastic packaging
EWC 15 01 03 Wooden packaging

End of Life

EWC 17 02 01 Wood
EWC 17 02 03 Plastics
EWC 17 04 02 Aluminium
EWC 17 04 05 Iron and steel

2.17 Further information

KONE Deursystemen B.V.
ACCUSTRAAT 21
3903 VEENENDAAL
Netherlands
Phone: +31 88 844 4777
Fax: +31888444799
Email: DSU.Sales@KONE.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the declared unit of 1 piece of KONE Gliding Door 10I (W x H (of door panel)= 1140x 2300mm) including packaging, as specified in Part B requirements on the EPD for doors, windows, shutters, and related products /IBU PCR Part B/.

Declared unit

Name	Value	Unit
Declared unit	1	Piece
Mass (total system incl. packaging)	135.12	kg
Conversion to 1kg	0.007	Piece/kg
Area	2.62	m ²
Ratio to reference door	0.98	Measuring

		1.23 m x 2.18 m = 2.68 sqm/pc (reference door based on /EN1435 1-1/)
--	--	--

3.2 System boundary

Type of the EPD: cradle to gate - with options

The following life cycle phases were considered:

A1-A3 Production phase:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing.

A4-A5 Construction phase:

- A4 – Transport from the gate to the site
- A5 – Packaging waste processing

End-of-life phase:

- C2 – Transport to waste processing
- C3 – Waste processing
- C4 – Disposal (landfill)

These information modules include provision and transport of all materials, products, as well as energy and water provisions, waste processing up to the end-of-waste status or disposal of final residues.

Module D:

Declaration of all benefits or recycling potential from EOL and A5

3.3 Estimates and assumptions

Transport:

For all raw materials including product transportation before and after use road transport over an average distance of 600km has been considered.

EOL:

In the End-of-life phase a recycling scenario with 100% collection rate was assumed.

3.4 Cut-off criteria

In the assessment, all available data from production process were considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available).

3.5 Background data

For life cycle modeling of the considered products, the GaBi ts Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi ts 2016/. The GaBi-database contains consistent and documented datasets which are documented in the online

GaBi-documentation /GaBi ts 2016D/.

To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.

thinkstep AG performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the GaBi ts software database. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2014 (12 month average).

3.8 Allocation

Regarding incineration, the software model for the waste incineration plant is adapted according to the material composition and heating value of the material. Following specific life cycle inventories for the waste incineration plant are considered:

- Waste incineration of plastic from packaging
- Waste incineration of paper from packaging
- Thermal treatment of plastic parts
- Waste incineration of particle board
- Waste incineration of electronic scraps (printed wiring boards)

Regarding the recycling material of metals, the metal parts in the EOL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within each background dataset used is available in the GaBi dataset documentation.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

4. LCA: Scenarios and additional technical information

Transport to the building site (A4)

Name	Value	Unit
------	-------	------

Litres of fuel	0.21	l/100km
Transport distance	600	km
Capacity utilisation (including empty runs)	85	%

Installation into the building (A5)

Name	Value	Unit
Packaging waste (Paper/Cardboard, Plastics, Pallets) to be treated	43.56	kg

Reference service life

Name	Value	Unit
Reference service life	20	a

End of life (C1-C4)

Name	Value	Unit
Collected as mixed construction waste	91.56	kg
Recycling	49.7	kg
Energy recovery	39.26	kg
Landfilling	2.6	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste (incl. packaging)	135.12	kg
Recycling (metals, glass)	63	%
Energy recovery (Plastics, Paper/Wood)	35	%
Landfill (inert material)	2	%

5. LCA: Results

The table below shows the LCA results for the declared unit - 1 Piece of KONE Gliding Door 10l

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of KONE Gliding Door 10l

Parameter	Unit	A1-A3	A4	A5	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	1.36E+2	3.70E+0	1.63E+1	2.51E+0	6.07E+1	6.72E+0	-9.36E+1
ODP	[kg CFC11-Eq.]	1.08E-8	1.70E-11	5.56E-11	1.15E-11	2.37E-10	3.08E-11	-7.50E-9
AP	[kg SO ₂ -Eq.]	6.11E-1	9.12E-3	1.57E-3	6.18E-3	8.26E-3	8.63E-3	-3.48E-1
EP	[kg (PO ₄) ³⁻ -Eq.]	7.67E-2	2.11E-3	3.21E-4	1.43E-3	1.62E-3	1.17E-3	-2.75E-2
POCP	[kg ethene-Eq.]	8.66E-2	-2.56E-3	1.48E-4	-1.74E-3	6.91E-4	3.54E-4	-4.65E-2
ADPE	[kg Sb-Eq.]	5.84E-3	2.47E-7	1.41E-7	1.67E-7	7.50E-7	1.57E-6	3.93E-7
ADPF	[MJ]	2.75E+3	5.10E+1	2.84E+0	3.46E+1	1.28E+1	8.00E+0	-8.98E+2

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: One piece of KONE Gliding Door 10l

Parameter	Unit	A1-A3	A4	A5	C2	C3	C4	D
PERE	[MJ]	1.17E+3	IND	IND	IND	IND	IND	IND
PERM	[MJ]	6.75E+2	IND	IND	IND	IND	IND	IND
PERT	[MJ]	1.84E+3	2.90E+0	4.29E-1	1.96E+0	1.91E+0	1.20E+0	-4.78E+1
PENRE	[MJ]	2.84E+3	IND	IND	IND	IND	IND	IND
PENRM	[MJ]	6.82E+1	IND	IND	IND	IND	IND	IND
PENRT	[MJ]	2.91E+3	5.12E+1	3.38E+0	3.47E+1	1.51E+1	8.77E+0	-9.64E+2
SM	[kg]	5.81E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m³]	9.88E-1	7.26E-3	3.79E-2	4.92E-3	1.57E-1	1.52E-2	-2.03E-1

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

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

One piece of KONE Gliding Door 10l

Parameter	Unit	A1-A3	A4	A5	C2	C3	C4	D
HWD	[kg]	1.53E-4	3.87E-6	2.92E-9	2.62E-6	2.54E-8	9.36E-8	-1.16E-6
NHWD	[kg]	5.60E+0	4.30E-3	3.59E-2	2.91E-3	5.91E-1	4.80E+0	-2.19E+0
RWD	[kg]	6.18E-2	7.32E-5	2.16E-4	4.96E-5	9.34E-4	3.06E-4	-2.61E-2
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	3.49E+1	0.00E+0	4.97E+1	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	8.60E+0	0.00E+0	3.65E+1	2.76E+0	0.00E+0
EEE	[MJ]	2.69E+1	0.00E+0	1.95E+1	0.00E+0	7.69E+1	8.78E+0	0.00E+0
EET	[MJ]	6.41E+1	0.00E+0	4.54E+1	0.00E+0	1.80E+2	2.03E+1	0.00E+0

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; EEE = Exported thermal energy

6. LCA: Interpretation

It can be stated that the result of almost every environmental indicator in scope is clearly dominated by the production and supply of the raw materials. As the doors are operated manually no electricity consumption during the use phase occurs. To a much lesser degree the manufacturing of the products plays a role. **GWP** (Global Warming Potential) additionally is

also notably affected by the (biogenic) emissions resulting from waste treatment (incineration of the wooden/paper door parts). Only the indicator **ADP** (Abiotic Depletion Potential) elements is almost only influenced by the production of the raw materials as the production of energy is not affected by the extraction and consumption of abiotic elements. The

given credits for metal recycling and produced energy through the incineration of contained plastics are displayed as negative environmental.

Transports (modules A2,A4,C2) as well as the product installation (A5) play an insignificant role.

7. Requisite evidence

7.1 Formaldehyde Measurement

The product itself is not tested for formaldehyde emissions, the only component of the product which might emit formaldehyde is the door panel which has been tested by the supplier. The Product Data Sheet

reports emissions of < 0.05 ppm (tested according to /EN 717-1/).

8. References

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.):
Generation of Environmental Product Declarations (EPDs);

General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013/04
www.bau-umwelt.de

ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

ISO 9001

EN ISO 9001:2008 Quality management systems – Requirements

ISO 14001

EN ISO 14001:2004 Environmental management systems - Requirements with guidance for use

EN 717-1

EN 717-1: 2004 Wood-based Panels - Determination of Formaldehyde Release - Formaldehyde emission by the chamber method

EWC

European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002, Environmental Protection Agency

GaBi ts

GaBi ts dataset documentation for the software-system and databases, LBP, University of Stuttgart and thinkstep, Leinfelden-Echterdingen, 2016
(<http://documentation.gabi-software.com/>)

IBU PCR Part A

Institut Bauen und Umwelt e.V., Berlin (pub.):
Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013
www.bau-umwelt.de

IBU PCR Part B

PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B:Requirements on the EPD for windows and doors, 2015.
www.bau-umwelt.com

**Publisher**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@bau-umwelt.com
Web www.bau-umwelt.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@bau-umwelt.com
Web www.bau-umwelt.com

**Author of the Life Cycle Assessment**

thinkstep AG
Hauptstraße 111
70771 Leinfelden-Echterdingen
Germany

Tel +49 711 341817-0
Fax +49 711 341817-25
Mail info@thinkstep.com
Web www.thinkstep.com

**Owner of the Declaration**

KONE Corporation
Keilasatama 3
02150 ESPOO
Finland

Tel +358(0)204 75 1
Fax +358(0)204 75 4496
Mail contact@kone.com
Web www.kone.com