ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Royal Boon Edam International B.V.
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BEN-20190098-IBA1-EN
Issue date	24-9-2019
Valid to	23-9-2024

LIFELINE SPEEDLANE SWING - 2 Lanes
BOON EDAM

Institut Bauen und Umwelt e.V.

www.ibu-epd.com / https://epd-online.com

1. General Information

Boon Edam B.V.

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-BEN-20190098-IBA1-EN

This declaration is based on the product category rules:
Automatic doors, automatic gates, and revolving door systems, 07.2014
(PCR checked and approved by the SVR)

Issue date
24-9-2019

Valid to
23-9-2024

Dipl. Ing. Hans Peters
(President of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Head of Board IBU)

LIFELINE - 2 lanes

Owner of the declaration
Royal Boon Edam International B.V.
Ambachtstraat 4
1135 GG Edam
The Netherlands

Declared product / declared unit
The declaration represents an entry management system, consisting of 2 lanes of in-line gates.

Scope:
The declaration and background LCA report represent an entry management system Boon Edam Lifeline Speedlane Swing.

Raw materials and components are provided by suppliers from around the globe and shipped to Boon Edam, where the gates are manufactured and assembled before being shipped and installed on a construction site in Europe. The energy use on site and maintenance during the 8 years of use are taken into account.

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.

Verification

The standard /EN 15804/ serves as the core PCR
Independent verification of the declaration and data according to /ISO 14025:2010/
☐ internally ☒ externally

Patricia Wolf
(Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

The Lifeline Speedlane Swing acts as a boundary between public and private environments. The steel and glass casing houses coloured LED lights that intuitively guide users along, while sensors detect tailgating. It is the narrowest security gate in the Lifeline family and the aesthetics can be adjusted to blend in or stand out.

For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply:
/Regulation (EC) No 42/2006/
/EMC directive 2014/30/EU/
/EN 16005/
/EN 60335/
/EN ISO 13849/
/EN 61000/
The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above.

For the application and use the respective national provisions apply.

2.2 Application

Suggested Segments:
- Corporate offices
- Multi-story tenant buildings
- Medical and pharmaceutical facilities
- Schools, universities and colleges
- Sports facilities
- Government and embassy buildings

2.3 Technical Data

Constructional data

Name	Value	Unit
Power input (Sleep mode)	80	W
Power input (Stationary)	120	W
Power input (Operating)	160	W

Performance data of the product according to the harmonised standards, based on provisions for harmonization.

- /EN 349/
- /EN ISO 12100:2010/

2.4 Delivery status

The Lifeline modelled for this study is delivered ready for installation with a cardboard packaging, for a total weight of 445kg.

2.5 Base materials / Ancillary materials

The constituent materials are distributed as follows (materials accounting for less than 1% of the total have been grouped in category 'others'):

Name	Value	Unit
Steel & stainless steel	55	%
Glass	22	%
Packaging	20	%
Plastics	1.6	%
Others	1.7	%

Royal Boon Edam International B.V. use substances on their own or in a preparation within its industrial or commercial activities, and is therefore a downstream user as defined in Article 3 No. 13 of /Regulation (EC) No. 1907/2006/. As a downstream user, Boon Edam has already requested that all suppliers provide confirmation regarding the correct implementation of /Regulation (EC) No 1907/2006/.

This product contains substances listed in the Candidate List of Substances of Very High Concern for Authorisation (SVHC) (date: 15th of January 2019) exceeding 0.1 percentage by mass: **no**

This product contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: **no**

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): **no**

2.6 Manufacture

All parts are shipped from suppliers to Boon Edam Manufacturing EMEA site in Edam, The Netherlands. The parts are assembled by Boon Edam.

The manufacturing site in Edam is /EN ISO 9001:2008/ certified.

2.7 Environment and health during manufacturing

Safety measures are implemented on site and employees are required to wear personal protective equipment.

Boon Edam's Manufacturing EMEA (Europe, Middle East and Africa) site in Edam, Netherlands, has set-up several take-back schemes, with customers in the Netherlands and with suppliers.
Metal cuttings from production (steel and aluminium alloys) are collected and sent back to suppliers to be reprocessed.
The site is /ISO 14001/ certified.

2.8 Product processing/Installation

Boon Edam's installation teams in Europe are following a strict safety process to define, together with the clients, safe access and work conditions during the installation. A list of personal protective equipment to be worn for each different task is defined as part of this process.

2.9 Packaging

The gates are delivered partially mounted for easier handling and transport.

The packaging consists mainly of wood pallets and cardboard covers, while smaller accessories may be grouped in smaller cardboard boxes with installation instructions.

Packaging materials should be discarded according to the regulations in place in the country of installation and can be recycled or incinerated (for energy recovery) once the product is installed.

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2.10 Condition of use

Maintenance instructions are provided by Boon Edam, and will ensure efficient operations of the gate. Annual maintenance checks are advised and should be carried out by Boon Edam or an approved agent.

The materials used in the composition of the gate are very stable, and their composition is not expected to change in the timeframe of use of the product, provided the advised maintenance procedures are respected.

2.11 Environment and health during use

The products manufactured by Boon Edam do not release any fluid, fumes, or chemical substances if used in accordance with the specifications provided and if proper maintenance checks are performed regularly.

Automatic gates are fitted with safety sensors and actuators that will prevent any physical damage in case of malfunction or improper use.

2.12 Reference service life

The actual use of in-line gates will highly depend on the environment, and on the traffic expected.

To calculate the indicators for potential impact during the use stage of a Lifeline, a service life of 8 years has been selected, as tests show.

Provided that proper maintenance procedures are followed, the characteristics of the installed product will remain stable over the years and will not suffer from ageing of materials or components.

2.13 Extraordinary effects

Fire

Fire classification according to /EN 13501/

Fire protection

Name	Value
Building material class	Class D
Burning droplets	Class d0
Smoke gas development	Class S1

Water
In-line gates contain electric and electronic equipment that may malfunction if in contact with water. Please refer to instructions regarding maintenance and cleaning.

No impact on the environment will occur in case of such malfunction.

Mechanical destruction
Mechanical destruction will never result from a malfunction of an in-line itself.

In case mechanical destruction is caused by an external event, no environmental damage will be caused. The damaged gates will need to be de-constructed with care and replaced.

2.14 Re-use phase
At the end-of-life of an in-line gate, Boon Edam Netherlands and several Boon Edam entities in other European countries, offer a take-back scheme.

Products that reached their end-of-life can be dismantled by Boon Edam, and transported to local recycling companies or to the headquarters in Edam for further processing.

Parts obtained from dismantled gates are not reused, for quality and safety reasons, but materials are separated and prepared for recycling.

2.15 Disposal
Waste materials are produced at the end-of-life of the product. They are listed below according to the European List of Waste /
/Regulation (EU) 955/2014/.

· /16 02 Wastes from electrical and electronic equipment/
· /17 02 02 Glass/
· /17 02 03 Plastic/
· /17 04 02 Aluminium/
· /17 04 05 Iron and steel/
· /17 04 11 Cables (with no hazardous substances)/

Products that reached their end-of-life can be collected on the building site by Boon Edam, and transported to Edam to be dismantled.
Metals and glass collected when dismantling are sent back to suppliers to be reprocessed.

2.16 Further information
See www.boonedam.com

3. LCA: Calculation rules

3.1 Declared Unit
The LCA study used to draft this EPD is based on a 2-lanes system of Boon Edam Lifeline Speedlane Swing, used in Europe for 8 years.

Declared Unit: 1 piece, consisting of 3 elements, for a total width of 1926mm, length of 1776 mm and a height of 1035mm.

Declared unit

Name	Value	Unit
Declared unit	1	piece
Number of lanes	2	lanes
Mass (total system)	369	kg
Conversion factor to 1 kg	0.0027	-

3.2 System boundary
The present EPD is declared as a "cradle-to-gate - with options"
The modules declared are:

Production stage
· *A1 - Raw material extraction and processing:* All materials and parts that are constituents of the final product are considered. All pre-processing that is applied to the material, prior to handling by Boon Edam, is part of A1.
· *A2 - Transport to the manufacturer:* Transports of all raw materials and packaging materials are accounted for.
· *A3 - Manufacturing:* All processes performed at Boon Edam are accounted for (incl. use of energy), as well as raw material extraction and pre-processing of packaging materials. Waste generated are accounted in A3.

Construction stage
· *A4 - Transport to building site:* Transport from Boon Edam Distribution & Support centre to a theoretical building in Europe is modelled, including the products and packaging.
· *A5 - Installation in the building:* The effort for installation is minimal since the main parts of the products are supplied pre-assembled, and (depending on the dimensions and option of the product) consist only in a couple of hours of use of electric screwdrivers and power drills. Disposal of packaging is also accounted for.

Use stage modules related to the building fabric
· *B2- Maintenance:* For the gates to be functional over a period of 8 years, some parts need to be replaced as preventive maintenance (mainly sensors and wear parts). The material needed for the production of these parts and the production effort in the upstream chain are included, as well as the transport to the construction site. When it comes to the replaced elements, their transport from the installation site back to Boon Edam and end of life treatment are taken into account.

Use stage modules related to the operation of the building
· *B6 - operational energy use:* The electricity used for powering the electrical components is computed in the model.

End-of-life stage
· *C1 - Deconstruction:* Electricity needed for the use of power drills is included.
· *C2 - Transport to waste processing:* Transport of the complete gate is computed.
· *C3 - Waste processing:* The processing of components which reach the end of waste state and

need conversion to secondary materials, and those which are incinerated, is included.
· *C4 - Disposal*: Final disposal of all the remaining materials is considered.

3.3 Estimates and assumptions
The product life span was set to equal the lowest estimated component lifetimes of the components that are not replaced during preventive maintenance.

3.4 Cut-off criteria
Production stage
All materials and energy inputs and outputs were considered, based on the nomenclature of the product considered, and on the energy inputs and waste flows from the factory.
To the best of our knowledge, no input or output having a significant impact on the indicators have been left aside.

Use stage
During the use stage, the only maintenance activities not included are the cleaning and technical checks. These would consist of: energy necessary to power the cleaning devices, water, soap and transport of personnel for the technical checks.
Given the predominance of the operational energy use (B6), these impacts will be negligible in comparison.

End-of-life
Due to the choice of system-model in the background data (cut-off approach), the end-of-life processes do not include benefits of the material recycling.

3.5 Background data
Background data processes were obtained from /ecoinvent Version 3/, with the Cut-off system model, as compiled for SimaPro Flow in October 2017 (version 3.4).

3.6 Data quality
The /ecoinvent Version 3/ database is used for every background datasets, ensuring consistency of the scope.
Global market data were used for all supplies that are procured on the market without a specific requirement for location, and more specific geographies were used otherwise (e.g. electricity used on site is representative of the Dutch electricity market).
All background data have been reviewed by the editor in 2017.

Primary data have been collected specifically for the product considered, at the time when the assessment has been made, and are representative of the current situation at Boon Edam.

3.7 Period under review
Data have been collected in 2019 and represents an average of the consumptions in 2018.

3.8 Allocation
The allocations of relevance for calculation:
· Manufacturing (A3) inputs (electricity) are allocated as the ratio of FTE (full-time equivalent employee) dedicated to the production of Lifeline to the total FTE in the Factory and per unit of Lifeline produced.
· The cut-off approach was applied consistently through the model. As a consequence, no benefit nor burden is considered for materials leaving the system after they have been separated from the main waste stream.

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.

Background data processes were obtained from /ecoinvent Version 3/, with the Cut-off system model, as compiled for SimaPro Flow in October 2017.

4. LCA: Scenarios and additional technical information

The distance is calculated as an average of Boon Edam's actual delivery, and is modelled as a freight truck transport.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	4.5	l/100km
Transport distance	3500	km
Capacity utilisation (including empty runs)	49	%

Installation into the building (A5)

Name	Value	Unit
Electricity consumption	6	kWh
Output substances following waste treatment on site (paper and pallet packaging)	90	kg

Maintenance (B2)

Name	Value	Unit
Other resources	4	kg
Maintenance cycle	1	Number/Life span

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	8	a

Operational energy use (B6)

The electricity consumption of the 2-lanes Lifeline is divided into 3 ranges of use: operating stationary sleep
· A gate is in sleep mode (20 minutes after last use)
· A gate is stationary
· A gate is operating (i.e. opening or closing)

It is estimated that the time during which a gate is actually opening or closing is negligible compared to the time where it will be on standby.

Name	Value	Unit
Electricity consumption	5610	kWh

End of life (C1-C4)
Boon Edam Netherlands offers their customers a recycling scheme, in which the materials recovered from deconstruction are delivered to recycling stations, which are also the suppliers of Boon Edam. Their exact recycling rate is not known, therefore average Dutch percentage of recycled steel and aluminium was used in the model. They are based on the data from Dutch waste scenario in ecoinvent 3.4. For glass, which is used in the product but not included as recyclable in the ecoinvent dataset, the collection rate of 25% was used. The remaining, not recycled materials are treated according to the same ecoinvent waste scenario, based on Eurostat 2012 data.

A survey from Boon Edam in 2016 shown that all their subcontractors providing recycling services are local companies that will have facilities in the vicinity of any Boon Edam's customer. We used a distance of 100 km covered by truck to model this aspect.

Name	Value	Unit
Recycling (iron, steel, aluminium, glass)	216	kg
Energy recovery	133	kg
Landfilling	10	kg

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5. LCA: Results

LCA results for a 2-lanes Boon Edam Lifeline Speedlane Swing.

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	X	MNR	MNR	MNR	X	MND	X	X	X	X	MND

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 2 lanes of LIFELINE SPEEDLANE SWING

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4
GWP	[kg CO_2-Eq.]	4.75E+3	3.35E+1	1.79E+0	3.72E+1	2.94E+3	1.17E-1	5.98E+0	2.96E+1	1.05E+0
ODP	[kg CFC11-Eq.]	3.91E-4	6.25E-6	1.76E-7	7.89E-6	2.94E-4	1.09E-8	1.12E-6	4.52E-7	2.30E-7
AP	[kg SO_2-Eq.]	2.73E+1	1.51E-1	1.02E-2	3.72E-1	1.48E+1	2.63E-4	2.69E-2	1.85E-2	7.94E-4
EP	[kg $(PO_4)^{3-}$-Eq.]	1.55E+1	2.34E-2	2.28E-3	8.55E-2	2.21E+0	3.92E-5	4.18E-3	3.41E-3	8.71E-4
POCP	[kg ethene-Eq.]	1.45E+0	5.47E-3	3.72E-4	2.09E-2	5.52E-1	1.79E-5	9.78E-4	1.01E-3	2.03E-4
ADPE	[kg Sb-Eq.]	1.12E+0	1.03E-4	1.89E-6	1.98E-3	4.44E-3	9.49E-8	1.83E-5	4.98E-6	1.05E-7
ADPF	[MJ]	4.98E+4	5.07E+2	1.55E+1	4.12E+2	3.10E+4	1.59E+0	9.06E+1	4.12E+1	2.06E+0

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: 2 lanes of LIFELINE SPEEDLANE SWING

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4
PERE	[MJ]	5.81E+3	3.35E+1	1.79E+0	3.72E+1	2.94E+3	1.17E-1	5.98E+0	2.96E+1	1.05E+0
PERM	[MJ]	1.58E+3	0.00E+0	-1.58E+3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	7.39E+3	7.51E+0	8.10E-1	5.58E+1	1.11E+4	2.06E-1	1.34E+0	1.97E+0	6.72E-2
PENRE	[MJ]	5.61E+4	5.19E+2	1.66E+1	5.04E+2	5.85E+4	1.60E+0	9.27E+1	5.87E+2	2.13E+0
PENRM	[MJ]	5.43E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-5.43E+2	0.00E+0
PENRT	[MJ]	5.67E+4	5.19E+2	1.66E+1	5.04E+2	5.85E+4	1.60E+0	9.27E+1	4.42E+1	2.13E+0
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	2.20E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	[m^3]	3.52E+1	1.06E-1	3.43E-2	4.38E-1	5.03E+1	7.08E-4	1.90E-2	1.72E-2	2.51E-3

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: 2 lanes of LIFELINE SPEEDLANE SWING

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4
HWD	[kg]	1.74E-1	3.03E-4	2.09E-5	2.28E-3	8.89E-2	8.08E-7	5.41E-5	6.95E-5	2.50E-6
NHWD	[kg]	9.97E+2	2.46E+1	9.50E+0	5.32E+0	1.93E+2	3.22E-3	4.40E+0	2.51E+0	1.10E+1
RWD	[kg]	1.68E-1	3.56E-3	7.95E-5	1.43E-3	4.14E-1	1.26E-6	6.37E-4	2.47E-4	1.30E-5
CRU	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	3.99E-1	0.00E+0	0.00E+0	0.00E+0	2.16E+2	0.00E+0
MER	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	[MJ]	0.00E+0	0.00E+0	1.39E+0	4.79E+0	0.00E+0	0.00E+0	0.00E+0	4.81E+1	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	2.85E+0	9.83E+0	0.00E+0	0.00E+0	0.00E+0	9.81E+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

The environmental impacts of this product are mainly attributed to the Product Stage (A1- A3), followed by the operational energy use (B6). This is applicable for all Environmental Impact and Resource Use indicators, and for Hazardous and Non-hazardous Waste Disposed indicators. The impact of Radioactive Waste Disposed mainly results from electricity consumption, due to the average European mix used in the model. The two last output flows indicators are naturally dominated by the Disposal step at End-of-Life Stage.

Out of the materials used in the production, steel and electronics have the highest contributions in all impact categories.

At the end-of-life 60% of the materials in the product are recycled, 37% is sent to incineration, and the remainder is sent to landfill.

7. Requisite evidence

Not applicable for this product. Speedlanes rely on electric energy for functioning and no emissions will be released under normal conditions.

8. References

/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. Version 1.6 - April 2017
www.bau-umwelt.de

/IBU PCR Part B/
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 Automatic doors, automatic gates, and revolving door systems. Version 1.5 - April 2017
www.bau-umwelt.com

/IBU 2016/
IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 1.1 Institut Bauen und Umwelt e.V., Berlin.
www.ibu-epd.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

/EN 349/
/NEN-EN 349:1994+A1:2008/ Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

/EN ISO 9001:2008/
/EN ISO 9001:2008/: Quality management systems - Requirements (ISO 9001:2008)

/ISO 14001:2015/
/ISO 14001:2015/: Environmental management systems - Requirements with guidance for use

/EN ISO 12100/
/EN ISO 12100:2010/ Safety of machinery -- General principles for design -- Risk assessment and risk reduction

/EN ISO 13849/
Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

/EN 13501/
/EN 13501-1:2007+A1:2009/ - Fire classification of construction products and building elements. Classification using test data from reaction to fire test

/EN 16005/
/EN 16005:2012/: Power operated pedestrian doorsets - Safety in use - Requirements and test methods

/EN 60335/
/EN 60335-1: 2014/: Household and similar electrical appliances - Safety - Part 1: General requirements
/EN 60335-2-103: 2011/ Household and similar electrical appliances Safety Part 2-103: Particular requirements for drives for gates, doors and windows

/EN 61000/
/EN-IEC 61000-3-2: 2009/: Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16A per phase)
/EN-IEC 61000-3-3: 2008/: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16A per phase and not subject to conditional connection
/EN 61000-6-2: 2005/: Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

/EMC directive 2014/30/EU/
Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

/Regulation (EC) No 42/2006/
Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery

/Regulation (EU) 955/2014/
/2014/955/EU/ Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council Text with EEA relevance

/Regulation (EC) No 1907/2006/
/Regulation (EC) No 1907/2006/ of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACh)

Also referred to as /REACh/ or the /REACh regulation/ in the document.

/ecoinvent Version 3/
Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <http://link.springer.com/10.1007/s11367-016-1087-8> [Accessed 16th November 2017].

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