ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	KE Fibertec AS
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Valid to	20.12.2028

MultiWeave textile-based ventilation duct

KE Fibertec AS

Institut Bauen und Umwelt e.V.

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General Information

KE Fibertec AS

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-KEF-20230264-CBI1-EN

This declaration is based on the product category rules:

Ventilation ducts, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

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Valid to

20.12.2028

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

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

MultiWeave textile-based ventilation duct

Owner of the declaration

KE Fibertec AS
Industrivej Vest 21
6600 Vejen
Denmark

Declared product / declared unit

1 kg of MultiWeave ventilation duct including mounting equipment.

Scope:

This is a representative EPD describing the production of 1 kg KE Fibertec AS custom-made textile-based ventilation ducts of the MultiWeave (MW) line including mounting equipment. KE Fibertec AS have two production sites. One in Vejen in Denmark, which includes both a weaving mill, laser cutting and sewing room. The other production site is located in the Czech Republic and includes laser cutting and a sewing room. Both sites are included in the results of this EPD.

The main component of the textile duct is polyester and the mounting equipment is made of aluminium. The data represents the production of 2021.
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.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Ms Jane Anderson,
(Independent verifier)

Product

Product description/Product definition

This is a representative EPD representing the MultiWeave product group. The textile ducts made by KE Fibertec A/S are either round, semi-round or quarter-round ducts made of a light weight textile material. They are designed for delivery and distribution of cooled or heated air. The textile is suitable for ventilation purposes in schools, offices, shops, showrooms production facilities and food industry, and other types of rooms. The textile ducts primarily consist of two parts. One being the textile tube and the other the mounting equipment consisting of an aluminium rail. The textile used is manufactured at KE Fibertec's own weaving mill and is designed for air distribution. The mounting equipment is made of aluminium. Textile ducts can be equipped with nozzles to enhance good ventilation in large rooms.

The production of KE Fibertec's textile-based ventilation ducts have so far not been subject to EU harmonisation legislation. Hence, for the use and application of the products the respective national provisions at the place of use apply.

Application

KE Fibertecs MultiWeave textile-based ventilations ducts are custom-made to provide the optimal service in the specific room and under the specific conditions they are placed in. The ventilation ducts are made for blowing in and distributing air.

Technical Data

The main components - polyester and aluminium - of the ventilation duct covered by this EPD are tested in accordance with the following standards.

Polyester:

- *ISO 9001*
- *EN 779*
- *ISO 14644-1*
- *ISO 13937-2*
- *DS 428*
- *EN 13501-1*

Aluminium rail:

- *BS EN 573-3:2019+A1*
- *EN 515*
- *DIN EN 10204 2.2*

Technical data

Name	Value	Unit
Material textile duct	Polyester	-
Material used for mounting	Aluminium	-
Meter weight Duct incl. mounting material	1 - 3	kg/m
Operating Temperature (max. permitted)	80	°C
Operating Temperature (min. permitted)	-45	°C

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

Base materials/Ancillary materials

Name	Value	Unit
Textile Polyester	37	%
Aluminium Mounting equipment	54	%
Ancillary materials	9	%

This product/article/at least one partial article contains substances listed in *the candidate list* (date: 15.05.2023) exceeding 0.1 percentage by mass: **No**

Reference service life

No reference service life is declared since the complete use stage is not included. However, the expected lifetime of the product is 25 years. Some of the ventilation ducts are over 35 years and still in service. The lifetime of the product depends on the operation conditions and maintenance of the product.

LCA: Calculation rules

Declared Unit

The declared unit is 1 kg of MultiWeave ventilation duct including mounting equipment. This study describes the environmental impacts of a representative textile-based ventilation duct of the MultiWeave line manufactured at KE Fibertec. The input material represents a weighted average for all the products under the given product group. The data is based on the production in 2021 and the total production volume of the same period. The processing at the production site is almost identical for the different products. The only difference is the amount of clipping and the addition of nozzles for one type of ventilation duct. An average amount of clippings is applied in this study and an amount of nozzle is added in the modelling.

This EPD represents the MultiWeave product group. The differences within the MultiWeave ventilation ducts are the dimensions and permeability of the fabric. However, the production processes of the products within the MultiWeave line are the same. Therefore, a representative EPD is made to cover this product group. The representative product is compiled by using 5 solutions varying in size and calculating a weighted average of each component of the ventilation duct.

Declared unit

Name	Value	Unit
Declared unit	1	kg
Mass reference	1 - 3	kg/rm
Raw density Polyester	500	kg/m^3

This is a representative EPD representing an average Multiweave ventilation duct as these are always costum made. The representative product is compiles based on 5 cases. The main components of the ventilation duct are the aluminium rail for mounting and the polyester. The smaller the ducts (length and diameter) the higher the share of aluminium. The standard variation within the aluminium and polyester input is 4 and 5 %, respectively. This means that the environmental impact of smaller ventilation ducts where the share of aluminium is higher the environmental impact will be higher compared to larger ventilation ducts where the share of aluminium will be smaller.

System boundary

This is a cradle-to-gate EPD - with options, including the modules A1-A3, B2, C1-4 and D.

Production stage - Modules A1-3

The production stage includes:

- A1, raw material extraction and processing, processing of secondary material from previous product systems,

when applicable.
- A2, transport to factory gate and internal transport
- A3, manufacturing of products and packaging, as well as assembly and processing up to the end-of-waste state.

All of the above-mentioned are included in this study. Wastes and losses of the manufacturing processes are included in the processes in which they occur according to the polluter pays principle. The construction of the manufacturing facility is not taken into account.

For the environmental impact, the use of green electricity was calculated taking into account the residual electricity mix for the remaining electricity. The proportion of the electricity demand covered by green electricity in the total electricity demand in A3 is 90 %.

Use stage - Module B2 maintenance
The use stage includes:

- B2, maintenance

The permeability of the textile ducts will decrease over time due to depositions of dust and particles. Therefore, the ducts need to be washed regularly. KE Fibertec provides a washing service for their customers. The customer sends the ducts to KE Fibertec, who will then wash the ducts and deliver them back to the customer. The washing service included in this study includes transport, the use of water, electricity, detergent as well as the washing machine itself. The transport distance is not known and was assumed to be 300 km. The 300 km from the production site in Vejen in Denmark will cover the entire territory of Denmark. The washing service is primarily used by customers located relatively close to Vejen as the service should be viable. A sensitivity test was made for the transport distance by changing the distance to 600 km and the result showed, that it did not change the overall conclusion.
B2 is calculated based on 1 washing cycle. The amount of cycles during the lifetime of the ventilation duct varies between application type. They are maximum washed 2 times every year and minimum once every 10 years. On average the ventilation ducts are washed 1 time per year.
This EPD entails 2 B2 scenarios. B2 and B2/1.
B2 is a reference scenario using a European electricity mix
B2/1 is using Danish wind power representing the washing service provided by KE Fibertec.

End-of-life stage - Modules C1-C4
The end-of-life stage includes:
C1, deconstruction and demolition

- C2, transport to waste processing
- C3, waste processing for reuse, recovery and/or recycling
- C4, disposal

The deconstruction of the products is assumed to be done manually. As a result, no processes have been added to module C1. The ventilation ducts are sold on the global market. This means that transportation distance, technology and waste processing are modelled accordingly. End-of-life treatment of packaging material is not included as module A5 is not declared.
KE Fibertec have due to their cradle-to-cradle certification focus on recyclability of their produkt. KE Fibertec has established a takeback scheme to increase the amount of recycled material in their products. Hence, most of the material is send to recycling within their take back scheme. The waste processes in C3 include the sorting of aluminium, polyester, POM, nylon, and steel. The following sorting efficiencies have been used:

Aluminium - 98 % recycling and 2 % landfill
Polyester - 91.3 % recycling and 8.7 % incineration with energy recovery
POM - 90.5 % recycling and 9.5 % incineration with energy recovery
Steel - 96 % recycling and 4 % landfill
Other - 100 % recycling

C3 also includes the incineration of the above mentioned materials as well as regranulation of the polyester. After this all the material have entered the end-of-waste stage.

Benefits and loads beyond the system boundaries - Module D
The benefits and loads include:

- D, potential benefits from reuse, recycling and recovery outside the scope of the study
- D, potential loads related to processing to reach equivalent materials to virgin input material

In this EPD, the recycling of the main components - fabric and aluminium is credited. Credit is only given to the net production of primary material. Steel and polyoxymethylene (POM) from small mounting materials and nozzles are also credited in this module. Also, here the amount of secondary material is considered, and credit is only given to the avoidance of primary material. As described above module D includes the loads and benefits beyond system boundaries. To account for the loads required to achieve functional equivalence to the input material the processing of remelting aluminium and processing of fabric is accounted for. The same applies to the small fractions of steel. Since a small fraction of plastic products such as polyester and nylon is incinerated heat and electricity are recovered and a credit for this is given in this module.

Geographic Representativeness
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Denmark

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. The system model *EN15804* - cut-off available in the LCI database *Ecoinvent v. 3.9* is used in this EPD

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon
The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate. Both the biogenic content of the product and the accompanying packaging are declared.

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging Cardboard	0.035	kg C

The following technical scenario information can be used for the declared modules and optional modules for non-declared modules. The following technical scenario information covers the disposal of the accompanying packaging material, produced in module A3, on the construction site as module A5 is not declared in this EPD, B2 maintenance, end-of-life and loads and benefits beyond the system boundaries.

Assembly (A5)

Name	Value	Unit
Cardboard packaging for recycling	0.07	kg

Maintenance (B2)

This module includes the washing service of KE Fibertec. A sensitivity analysis was made on the transportation distance and showed that doublling the distance does not change the overall conclusion of the EPD. Module B2 represents 1 the input for 1 washing cycle and a ventilation ducts is an average washed once a year.
Two scenarios are made for the washing service. One using European power mix as describes in PCR part 1 (B2/1) and one representing KE Fibertec washing service at their facilities in Denmark. For the second scenario at KE Fibertecs facility transport is included (B2/2).

Name	Value	Unit
Water consumption per cycle	0.24	m^3
Detergent per cycle	0.05	L
Washing load per cycle	12	kg
Electricity consumption per cycle	0.15	kWh
Transport distance	300	km

End of life (C1-C4)

The following table shows the technical information scenario regarding waste module C stating the different waste fractions and their collection form and waste processing steps. The transportation distances have been assumed as no data on average distances to waste treatment facilities have been found. However, a sensitivity analysis was conducted doubling the transportation distances. The test showed, that changing the distances did not have a significant influence on the overall results and did not change the overall conclusion.
KE Fibertec has established a takeback scheme, hence a large part of the products are recycled. This has been done as a part of KE Fibertecs Cradle-to-cradle certifikation.

Name	Value	Unit
Collected separately waste type	1	kg
Polyester	0.40	kg
Aluminium	0.54	kg
POM	0.03	kg
Steel	0.02	kg
Other material	0.01	kg
Recycling Polyester	0.36	kg
Recycling Aluminium	0.53	kg
Recycling POM	0.03	kg
Recycling Steel	0.02	kg
Energy recovery Polyester	0.04	kg
Energy recovery POM	0.002	kg
Energy recovery Other material	0.01	kg
Landfilling Aluminium	0.01	kg
Landfilling Steel	0.001	kg
Transport Sorting	200	km
Transport Recycling	100	km
Transport Incineration	100	km
Transport Landfil	150	km

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

The following values in the table are amounts contributing to the loads and benefits included in module D.

Name	Value	Unit
Recycling of polyester From module C3	0.30	kg
Recycling of aluminium From module C3	0.14	kg
Recycling of POM From module C3	0.03	kg
Recycling of steel From module C3	0.0004	kg
Incineration of polyester From module C3	0.02	kg
Incineration of POM From module C3	0.002	kg
Incineration of other material From module C3	0.01	kg

Credits are only given to the net amount leaving the product system that has passed the end-of-waste state. In the LCA calculation loads related to obtaining equivalent functions as the original virgin material are included as well as the benefits of avoided production of the given virgin material.

LCA: Results

The following table shows the LCA results obtained in this study.
For calculation of the results, characterization was used on a model created of individual inputs from different LCIA methods to comply with *EN15804+A2* which is yet to be fully implemented in the *SimaPro* software. As a result, the LCIA has been calculated in Excel using the following methods from *EcoInvent v.3.9*:

- EF v.3.1 *EN 15804*
- *EN 15804* inventory indicators according to *ISO 21930*

The additional indicators are retrieved by using E*coinvent* cumulative LCIA results for the system model *EN15804*, cut-off. It follows *ISO 21930* for all the datasets; hence the results include all the background processes as well as foreground processes.

C1 is declared as 0 since manual deconstruction is assumed.
The estimated impact results are only relative statements which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins or risks.

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

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	MND	MND	MND	X	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg MultiWeave ventilation duct incl. mounting equipment

Parameter	Unit	A1-A3	B2	B2/1	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	6.1E+00	8.49E-01	7.71E-01	0	1.48E-01	6.9E-01	1.82E-04	-2.26E+00
GWP-fossil	kg CO_2 eq	6.07E+00	8.71E-01	7.93E-01	0	1.48E-01	5.86E-01	1.68E-04	-2.23E+00
GWP-biogenic	kg CO_2 eq	2.23E-02	0	0	0	1.29E-04	1.04E-01	1.42E-05	-3.39E-03
GWP-luluc	kg CO_2 eq	3.07E-02	5.34E-02	5.34E-02	0	7.3E-05	4.15E-04	5.02E-08	-2.49E-02
ODP	kg CFC11 eq	7.63E-06	1.7E-08	1.54E-08	0	3.22E-09	1.23E-08	4.45E-12	-4.59E-06
AP	mol H^+ eq	3.29E-02	2.8E-03	2.39E-03	0	3.23E-04	1.36E-03	1.1E-06	-1.34E-02
EP-freshwater	kg P eq	2.16E-03	1.32E-04	9.34E-05	0	1.05E-05	1.43E-04	2.03E-08	-6.96E-04
EP-marine	kg N eq	6.89E-03	1.16E-03	1.09E-03	0	8.2E-05	1.04E-03	4.49E-07	-1.93E-03
EP-terrestrial	mol N eq	6.42E-02	7.15E-03	6.49E-03	0	8.28E-04	3.8E-03	4.9E-06	-1.96E-02
POCP	kg NMVOC eq	2.61E-02	3.34E-03	3.11E-03	0	5.01E-04	1.25E-03	1.73E-06	-7.43E-03
ADPE	kg Sb eq	6.38E-05	3.57E-06	3.52E-06	0	4.94E-07	2.4E-06	7.71E-10	2.29E-05
ADPF	MJ	1.01E+02	1.37E+01	1.23E+01	0	2.11E+00	4.51E+00	3.56E-03	-3.93E+01
WDP	m^3 world eq deprived	5.62E+00	4.77E-01	4.61E-01	0	1.05E-02	1.13E-01	9.1E-05	-1.96E+00

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; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg MultiWeave ventilation duct incl. mounting equipment

Parameter	Unit	A1-A3	B2	B2/1	C1	C2	C3	C4	D
PERE	MJ	2.03E+01	2.19E+00	2.19E+00	0	3.3E-02	6.81E-01	6.26E-04	-6.55E+00
PERM	MJ	0	0	0	0	0	0	0	0
PERT	MJ	2.03E+01	2.19E+00	2.19E+00	0	3.3E-02	6.81E-01	6.26E-04	-6.55E+00
PENRE	MJ	9.03E+01	1.38E+01	1.38E+01	0	2.12E+00	2.12E+00	3.56E-03	-3.09E+01
PENRM	MJ	8.26E+00	0	0	0	0	-8.16E+00	0	0
PENRT	MJ	9.85E+01	1.38E+01	1.38E+01	0	2.12E+00	-6.04E+00	3.56E-03	-3.09E+01
SM	kg	2.5E-01	0	0	0	0	0	0	6.26E-01
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	1.3E-01	3.31E-02	3.2E-02	0	2.55E-04	2.97E-03	4.87E-06	-3.78E-02

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 – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg MultiWeave ventilation duct incl. mounting equipment

Parameter	Unit	A1-A3	B2	B2/1	C1	C2	C3	C4	D
HWD	kg	3.52E-01	1.65E-02	1.21E-02	0	1.44E-03	1.25E-02	1.42E-04	-1.38E-01
NHWD	kg	9.03E+00	5.64E-01	3.78E-01	0	4.37E-02	7.66E-01	1.19E-02	-3.12E+00
RWD	kg	4.72E-05	3.18E-06	1.43E-06	0	1.69E-07	4.82E-06	1.3E-09	-1.27E-05
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	9.2E-02	0	0	0	0	8.76E-01	0	0
MER	kg	9.28E-06	0	0	0	0	8.9E-02	0	0
EEE	MJ	0	0	0	0	0	3.02E-01	0	0
EET	MJ	0	0	0	0	0	5.29E-01	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg MultiWeave ventilation duct incl. mounting equipment

Parameter	Unit	A1-A3	B2	B2/1	C1	C2	C3	C4	D
PM	Disease incidence	3.11E-07	6.05E-08	5.88E-08	0	1.1E-08	1.24E-07	2.43E-11	-1.47E-07
IR	kBq U235 eq	7.52E-01	5.45E-02	2.3E-02	0	2.84E-03	8.33E-02	2.96E-05	-1.84E-01
ETP-fw	CTUe	3.76E+01	9.82E+00	9.66E+00	0	1.03E+00	1.8E+00	8.88E-02	2.33E+00
HTP-c	CTUh	8.52E-09	7.25E-10	6.86E-10	0	7.04E-11	6.72E-10	3.21E-13	-3.87E-09
HTP-nc	CTUh	1.04E-07	9.99E-09	9.38E-09	0	1.5E-09	5.55E-09	2.83E-12	-3.55E-08
SQP	SQP	2.08E+01	1.14E+01	1.11E+01	0	1.27E+00	2.02E+00	7.01E-03	-2.17E+00

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

References

Standards

BS EN 573-3:2019+A1
BS EN 573-3:2019+A1:2022, Aluminium and aluminium alloys. Chemical composition and form of wrought products Chemical composition and form of products

DIN EN 10204 2.2
DIN EN 10204 2.2, Metallic products - Types of inspection documents (non-specific inspections)

DS 428
DS 428:2019, Fire protection of ventilation systems

EN 515
EN 515:2017, Aluminium and aluminium alloys - Wrought products - Temper designations

EN 779
EN 779:2012, Particulate air filters for general ventilation – Determination of the filtration performance

ISO 9001
ISO 9001:2015, Quality management systems – Requirements

EN 15804
EN 15804 EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

EN 13501-1
EN 13501-1:2018, Fire classification of construction products and building elements – Part 1: Classification
using data from reaction to fire tests Fire class B-s1-d0

ISO 13937-2
ISO 13937-2:2000, Textiles — Tear properties of fabrics — Part 2: Determination of tear force of trouser-shaped test specimens (Single tear method)

ISO 14025
ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO 14040
ISO 14040:2006, Environmental management –Life cycle assessment - Principles and framework; English version

ISO 14044
ISO 14044:2006, Environment Management – LifeCycle Assessment – Requirements and Instructions; English version EN ISO 14044:2006.

ISO 14644-1
ISO 14644-1:2015, Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness by

particle concentration

ISO 21930
ISO 21930:2017, Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

Further References
ECHA candidate list
Candidate List of substances of very high concern for Authorisation
https://echa.europa.eu/candidate-list-table [Accessed 25-05-2023]

EcoInvent 3.9
EcoInvent database version 3.9, cut-off, EN15804model. LCIA methodology EF v3.1 EN15804.Wernet, G., Baue,., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part pp.1218–1230. [Accessed 25-05-2023]

IBU 2021
Product Category Rules for Building-Related Products and Services, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, Version 1.3

IBU 2023
PCR Guidance-Text for Building-Related Products and Services, Part B: Requirements on the EPD for Ventilation ducts, Version 1.0

SimaPro 2023
LCA software SimaPro version 9.5.

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