epddanmark

ECO PLATFORM EPD VERIFIED

Owner: VELTEK Ventilation
No.: MD-23022-EN
Issued: 28-04-2023
Valid to: 28-04-2028

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
Veltek Ventilation
Smedeholm 13A
DK-2730 Herlev
VAT: 27767923

Programme
EPD Danmark
www.epddanmark.dk

☒ Industry EPD
☐ Product EPD

Declared product(s)
The declared product is listed below
- Circular ventilation ducts

Number of declared datasets: 1

Production site
Various production sites, both in Denmark and in Germany.

The companies within the industry association VELTEK Ventilation produce ventilation ducts primarily for the indoor climate in residential, industrial, and commercial construction. The main purpose of the ventilation ducts is as air ducts used actively to remove pollutants and improve the indoor climate which can help promote and increase safety, efficiency, well-being, and health of people in workplaces, institutions, and at home etc.

Product description
This EPD is applicable for spiral folded rigid circular cross-section ventilation ducts (a duct is in a general way the envelope of the space in which the air is carried) with integrated sealing solution made of galvanized steel in various lengths, and diameters depending on the application (as defined in standard EN 12792:2003 and EN 1506:2007), designed to provide, extract, or circulate air in residential, commercial, and industrial buildings.

Declared/ functional unit
1 kg of ventilation duct

Year of data
2021 first version

Issued: 28-04-2023
Valid to: 28-04-2028

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☒Cradle-to-gate with modules C1-C4 and D
☐Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Ninkie Bendtsen

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and 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	MND	MND	MND	MND	MND	MND	X	X	X	X	X

Product information

Product description

Ventilation ducts are used for ductwork systems (distribution network) which refers to the assembly of the ducts and fittings of an HVAC (Heating, Ventilation and Air-Conditioning) installation that are used for ventilation and air conditioning purpose to supply or extract or circulate the air from the conditioned spaces in the building,

The EPD does not cover other types of ventilation ductwork elements like, flexible ducts, double-wall ductwork or ductwork made of insulation and does not include components such fittings, air handlers, heat recovery units, air terminal devices, coils etc.

The main product components are shown in the table below.

Material	Circ. duct
Steel	100%

The packaging composition is listed in the table below.

Mate-rial	Circ. duct
Cardboard	0,24%
Plastic, PE	0,22%
Recycled plastic	0,08%
Wooden pallets	2,71%
Tape	0,002%

Representativity

This declaration, including data collection and the modelled foreground system including results, represents the production of circular ventilation ducts in Denmark. Data for LCA is based on annual averages to produce selected types of ventilation ducts from the manufacturers AIR2TRUST, Lindab A/S, Venti A/S, Øland A/S, Ørbæk Ventilation A/S in the industry association VELTEK Ventilation. Product specific data are based on average values collected in the year 2021. Background data are based on the GaBi LCA software and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

The ventilation ducts do not contain substances listed in the "Candidate List of Substances of Very High Concern for authorisation" (http://echa.europa.eu/candidate-list-table)

Essential characteristics

The ventilation ducts are covered by technical specifications in DS/EN 1506, DS/EN 12237 for the circular ventilation ducts and EN 12792, EN 14239, EN 15727 and for the EPD it follows EN 15804. Declaration of performance is available for all circular ventilation duct variations.

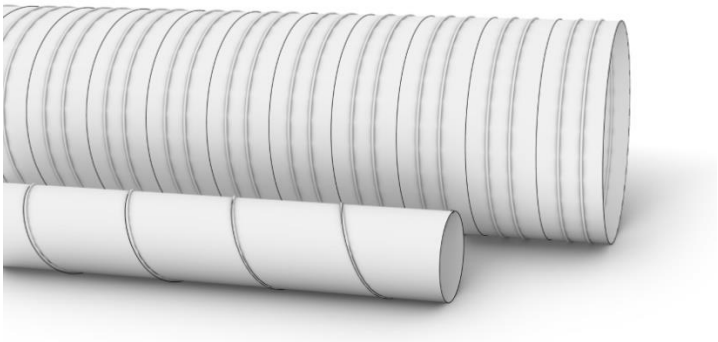
Further technical information can be obtained by contacting the manufacturer or on the manufacturers website listed at VELTEK Ventilation website:

https://www.veltek.dk/medlemsliste/

Reference Service Life (RSL)

The lifetime of the ventilation duct is 50 years.

Pictures of products



Schematic of circular ventilation ducts

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 kg of ventilation duct

Name	Circular ventilation duct
Declared unit, kg	1
Conversion factor to 1 kg	1

Functional unit

The functional unit is not defined as the use stages B1-B7 are not declared

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 version A2:2019.

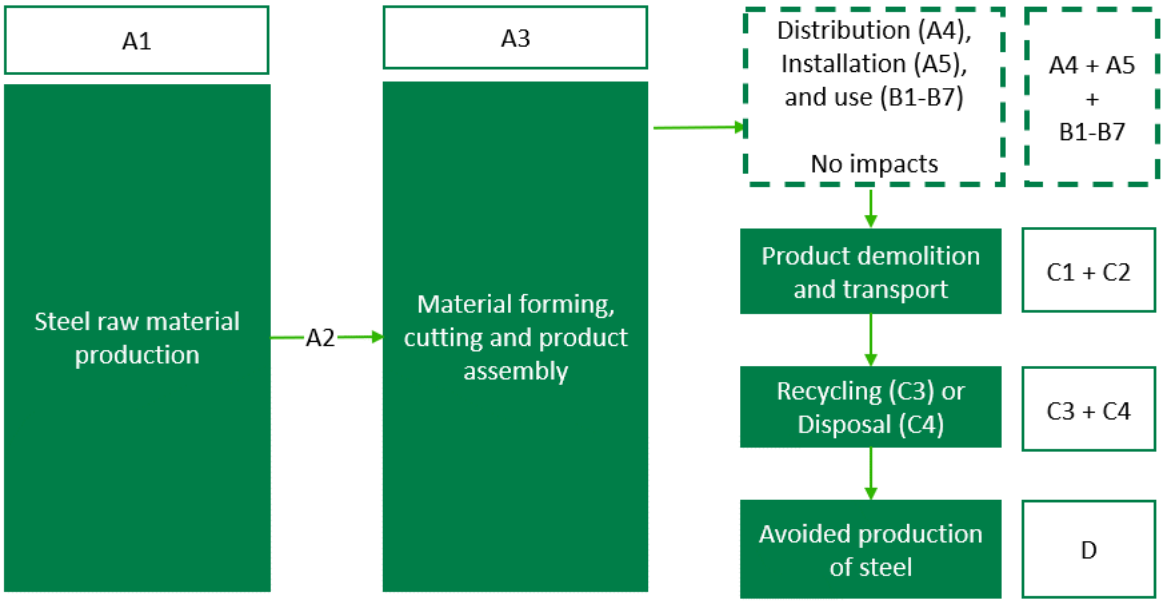
Guarantee of Origin – certificates

No guarantees of origin or certificated are used for green electricity or energy in the production phase calculated in the foreground system.

Background system: For modelling energy production, the country specific residual mix is used, in accordance with the recommendations from EPD Denmark.

Flowdiagram

The process diagram below represents the life cycle of a circular ventilation duct product from VELTEK Ventilation members.



System boundary

This EPD is based on a cradle-to-grave LCA with modules C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:
A1 – Extraction and processing of raw materials
A2 – Transport to the production site
A3 – Manufacturing processes

The steel is received as metal coils and folded into final figure and length at the factory.

Construction process stage (A4-A5) includes:
Installation on construction site is not included in this EPD.

Use stage (B1-B7) includes:
The use phase has not been included in this EPD.

End of Life (C1-C4) includes:
The ventilation ducts are assumed disposed of in Northern Europe. The ventilation ducts are assumed dismantled using hand tools (C1) and transported 50 km to a local recycling (C2).

The product is then dismantled in an industrial shredder assuming average recovery of materials (C3). The fluff sorted from the shredded metal is landfilled (C4).

Re-use, recovery and recycling potential (D) includes:
The recycled metals are credited an avoided production of primary steel.

LCA results

Circular ventilation ducts

Circular ventilation ducts

ENVIRONMENTAL EFFECTS PER PRODUKT PER KG							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	3,82E+00	0,00E+00	8,48E-03	5,35E-02	1,20E-03	-1,49E+00
GWP-fossil	[kg CO_2 eq.]	3,46E+00	0,00E+00	8,39E-03	5,31E-02	1,22E-03	-1,49E+00
GWP-bio	[kg CO_2 eq.]	3,64E-01	0,00E+00	3,52E-05	3,60E-04	-2,12E-05	7,59E-04
GWP-luluc	[kg CO_2 eq.]	1,27E-03	0,00E+00	5,76E-05	1,12E-05	4,45E-06	-3,07E-05
ODP	[kg CFC 11 eq.]	2,65E-12	0,00E+00	8,40E-16	9,61E-13	1,87E-15	-3,25E-15
AP	[mol H^+ eq.]	8,75E-03	0,00E+00	1,01E-05	5,90E-05	6,05E-06	-3,19E-03
EP-fw	[kg P eq.]	2,55E-06	0,00E+00	3,05E-08	1,27E-07	2,91E-09	-2,70E-07
EP-mar	[kg N eq.]	2,20E-03	0,00E+00	3,36E-06	1,97E-05	1,59E-06	-5,61E-04
EP-ter	[mol N eq.]	2,37E-02	0,00E+00	4,00E-05	2,08E-04	1,76E-05	-4,93E-03
POCP	[kg NMVOC eq.]	7,28E-03	0,00E+00	8,77E-06	5,04E-05	4,75E-06	-2,28E-03
ADP-mm[1]	[kg Sb eq.]	1,37E-05	0,00E+00	8,62E-10	1,90E-08	1,25E-10	-3,70E-06
ADP-fos[1]	[MJ]	3,87E+01	0,00E+00	1,12E-01	7,74E-01	1,61E-02	-1,37E+01
WDP[1]	[m^3]	1,59E+00	0,00E+00	9,57E-05	9,84E-04	9,04E-05	-2,76E-01
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

Circular ventilation ducts

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER KG							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	3,04E-07	0,00E+00	6,73E-11	5,29E-10	7,15E-11	-4,51E-08
IRP[2]	[kBq U235 eq.]	1,04E-01	0,00E+00	3,16E-05	8,51E-03	1,42E-05	3,34E-02
ETP-fw[1]	[CTUe]	7,67E+00	0,00E+00	7,95E-02	2,35E-01	9,93E-03	-8,41E-01
HTP-c[1]	[CTUh]	2,34E-09	0,00E+00	1,64E-12	2,19E-11	9,58E-13	-6,07E-10
HTP-nc[1]	[CTUh]	7,47E-08	0,00E+00	8,88E-11	2,93E-10	1,01E-10	-2,00E-08
SQP[1]	-	2,97E+02	0,00E+00	4,75E-02	2,08E-01	4,60E-03	1,65E-01
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)						
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	[2] 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

Circular ventilation ducts

RESSOURCE CONSUMPTION PER PRODUKT PER KG							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2,01E+01	0,00E+00	7,78E-03	3,91E-01	1,94E-03	8,60E-01
PERM	[MJ]	4,01E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,05E+01	0,00E+00	7,78E-03	3,91E-01	1,94E-03	8,60E-01
PENRE	[MJ]	3,87E+01	0,00E+00	1,13E-01	7,74E-01	1,61E-02	-1,37E+01
PENRM	[MJ]	3,60E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,87E+01	0,00E+00	1,13E-01	7,74E-01	1,61E-02	-1,37E+01
SM	[kg]	8,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	3,95E-02	0,00E+00	8,99E-06	1,77E-04	3,06E-06	-6,24E-03
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 = Net use of fresh water						

Circular ventilation ducts

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER KG							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,37E-08	0,00E+00	5,96E-13	5,75E-11	5,56E-13	-1,05E-10
NHWD	[kg]	1,25E-01	0,00E+00	1,84E-05	5,04E-04	5,23E-02	2,07E-01
RWD	[kg]	4,11E-04	0,00E+00	2,09E-07	8,02E-05	1,24E-07	1,70E-06
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	3,20E-01	0,00E+00	0,00E+00	9,38E-01	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	2,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	4,95E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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; EET = Exported thermal energy						

Circular ventilation ducts

BIOGENIC CARBON CONTENT PER PRODUKT PER KG		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	3,32E-02

Additional information

LCA interpretation

The results show that the production of steel (A1) is the dominating process in most of the environmental impact categories. Additionally, the steel has the largest contribution in the corresponding avoided production of materials beyond the system boundary (D). This stems especially from the steel content that is costly to produce but which, even combined with the other sealant materials, can be recycled at the end-of-life. The packaging materials (pallets and cardboard) contribute to a biogenic CO_2 uptake.

Technical information on scenarios

Reference service life

RSL information	Unit
Reference service Life	50 years
Declared product properties	Technical specifications and guidance can be obtained from direct contact to VELTEK Ventilation at +45 2423 3261 or los@veltek.dk
Design application parameters	
Assumed quality of work	
Outdoor environment	
Indoor environment	
Usage conditions	
Maintenance	

End of life (C1-C4)

Scenario information	Circular ventilation duct	Unit
Collected separately	1	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	1	kg
For energy recovery	0	kg
For final disposal	0,06	kg
Secondary steel sheets	0,94	kg
Assumptions for scenario development	Assumed dismantled using hand tools	

Re-use, recovery and recycling potential (D)

Avoided production	Circular ventilation duct	Unit
Steel	0,858	kg

The avoided production is only calculated on the virgin fraction of the input material in A1-A3

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

References

Publisher	www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Maria Preilev Hansen Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA software /background data	Thinkstep GaBi 10.6 Database version 2021.2 www.gabi-software.com
3rd party verifier	Ninkie Bendtsen NIRAS A/S Sortemosevej 19 DK-3450 Allerød www.niras.dk

General programme instructions
Version 2.0
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040
DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044
DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"