

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Wildeboer Bauteile GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-WIL-20230374-ICA1-EN
Issue date	04.12.2023
Valid to	03.12.2028

EKM90 smoke control damper Wildeboer Bauteile GmbH

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1. General Information

Wildeboer Bauteile GmbH

Programme holder

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

Declaration number

EPD-WIL-20230374-ICA1-EN

This declaration is based on the product category rules:

Fire dampers and fire protection valves and smoke control damper,
01.08.2021
(PCR checked and approved by the SVR)

Issue date

04.12.2023

Valid to

03.12.2028



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



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

EKM90 smoke control damper

Owner of the declaration

Wildeboer Bauteile GmbH
Marker Weg 11
26826 Weener
Germany

Declared product / declared unit

1 smoke control damper with electric drive motor

Scope:

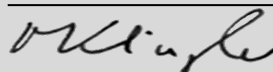
This document refers to the manufacture, transportation, installation, operation and disposal of smoke control dampers (EKM90, 200x200x220 mm, comprising a casing and a small drive) in systems for smoke extraction, for smoke protection, for air supply and in combined systems for ventilation of buildings. The smoke control dampers are produced exclusively in Germany at the factory in Weener in which the production data from the year 2022/2023 was collected.

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		
<input type="checkbox"/>	internally	<input checked="" type="checkbox"/> externally



Matthias Klingler,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The maintenance-free, corrosion-resistant EKM90 smoke control damper comprises a casing made of high temperature-resistant, abrasion-resistant calcium silicate with one or multiple internal break-proof damper blades. The drive shafts are made of stainless steel. Protective grilles, as an optional accessory for smoke control dampers without connecting ducts for protecting the flow-through openings, are made of galvanized sheet steel. The drive for closing and opening the smoke control damper is powered by an electric drive motor. Special seals without additional limit stops make for large free cross-sections, extremely low pressure drops and sound power levels. The smoke control damper can still be opened after 25 minutes of full exposure to fire. For marketing of the product in the EU/EFTA (with the exception of Switzerland), regulation (EU) no. 305/2011(CPR) applies. The product requires a declaration of performance in accordance with *EN 12101-8:2011-08, Smoke and heat control systems - Part 8: Smoke control dampers* and the CE mark. For use, the respective national regulations apply.

2.2 Application

The EKM90 smoke control damper is suitable for smoke protection, smoke extraction systems, air supply and in combined systems for ventilation of buildings. It is also suitable for use in systems with automatically or manually triggered opening or closing of the smoke control dampers. The operating positions "fully opened", "fully closed" and any intermediate positions have been verified and approved. The smoke control damper can be used for installation in rigid walls and metal stud walls with a thickness of ≥ 95 mm, in shaft walls with a thickness of ≥ 90 mm and in rigid ceilings with a thickness of ≥ 100 mm, on and between horizontal or vertical smoke extraction ducts. Smoke extraction ducts with fire resistance period can be connected to the smoke control damper on one side or both sides; the smoke extraction ducts without fire resistance period can only be connected on one side; the protective grilles on one side or both sides. Installation is performed on-site wet or dry. For further information see the *manufacturer's documents*.

2.3 Technical Data

The following chapter contains specifications of the sizes and performance in levels and classes in relation to the respective essential characteristics of *EN 12101-8*. Refer to the declaration of performance provided by **Wildeboer Bauteile GmbH** for the complete declared performance of the product in relation to all essential characteristics in accordance with *EN 12101-8*. Fire tests were performed according to *EN 1366-10* and *EN 1366-2*.

Construction data

Name	Value	Unit
Width	200 - 1200	mm
Height	200 - 2000	mm
Length	220	mm
Leak tightness class according to EN 1751	C	-
Classification of smoke control damper according to EN 13501-4	EI 90/120 (vedw - hodw, i<->o) S 1000 Cmod HOT400/30 MA multi	-

Performance values of the product in accordance with the declaration of performance in relation to the essential characteristics according to *EN 12101-8:2011-08, Smoke and heat control systems - Part 8: Smoke control dampers*.

2.4 Delivery status

Size variants of (W x H) 200 mm x 200 mm to 1200 mm x 2000 mm, lengths of 220 mm are supplied. In addition, the electric drive motor and, as an optional accessory, the protective grilles and connection or extension frames, and accessory kits for installation, e.g. terminal strip etc.

2.5 Base materials/Ancillary materials

All specifications are presented in percent by weight. The specifications are approximate values.

EKM90 (without motor, including standard accessory kit)

Steel, galvanized: 8 %
 Stainless steel: 6 %
 Brass: 0.6 %
 Calcium silicate: 83 % Plastic: < 0.1 %
 Miscellaneous (intumescent seal, adhesive etc.): 2.1 %

Electric drive motor for H = 200 mm

Steel: 49 %
 Brass: 1.8 %
 Plastic: 40 %
 Electronic components (circuit board and cables): 9.6 %

Electric drive motor for 200 < H < 800 mm

Steel: 51.6 %
 Brass: 1.6 %
 Plastic: 38.4 %
 Electronic components (circuit board and cables): 8.4 %

Electric drive motor for H \geq 800 mm

Steel: 83.5 %
 Brass: 1.5 % Plastic: 11 %
 Electronic components (circuit board and cables): 4.5 %

The product contains substances on the ECHA list of the substances of very high concern (SVHC) for approval (date 08/07/2021) above 0.1 wt.-%: no.

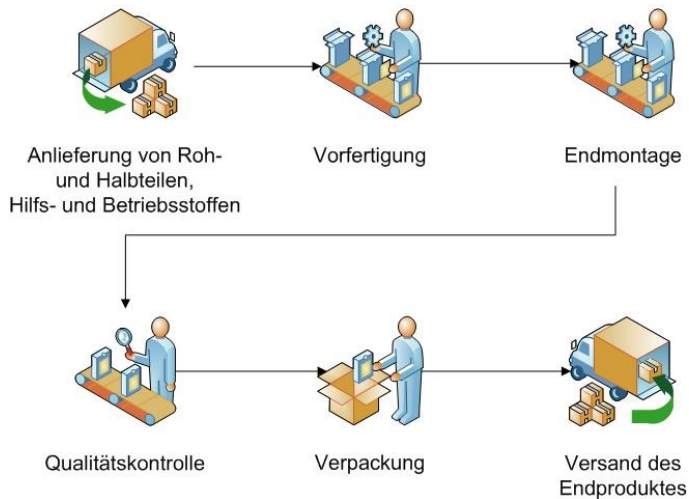
The product contains further CMR substances of category 1A or 1B which are not on the candidate list above 0.1 wt.-% in at least one subassembly: no.

Biocidal products were added to the construction product in question or it has been treated with biocidal products (it is thus classed as treated goods in accordance with the Biocidal Products Regulation (EU) no. 528/2012): no.

2.6 Manufacture

Production is performed at a single location in the factory in Weener. The necessary raw parts and semi-finished parts as well as auxiliary and operating materials are supplied by suppliers and enter into production. The production of semi-finished parts is performed in pre-fabrication with conventional production methods. Metal parts are punched and edged into shape and, if necessary, milled. Calcium silicate parts are sawn and milled. Cuts are optimised accordingly to prevent waste. Waste which is then still produced is collected and, wherever possible,

The parts from pre-fabrication are assembled in final assembly together with purchased parts to form the smoke control dampers, checked within the scope of quality assurance according to *ISO 9001*, packaged and dispatched.



2.7 Environment and health during manufacturing

At no time during the entire manufacturing process are occupational health and safety measures going beyond those stipulated by law required. Waste is prevented as far as possible using optimised cuts, lubricants are re-used using recycling measures.

2.8 Product processing/Installation

The manuals, installation instructions, operating instructions, declarations of performance and approvals provided by **Wildeboer Bauteile GmbH** must be adhered to. Moreover, the safety and processing specifications, for example for drywalling, bricklaying or electrical work, and the legal occupational health and safety regulations must be observed.

2.9 Packaging

The products are packaged on reusable pallets with the aid of support and securing elements made of corrugated cardboard, and in polyethylene (PE) films. Disposal, with the exception of the pallets, is performed by the local recycling companies. Pallets are re-used on an exchange basis. Only the genuinely necessary amount of packaging material is used, and packaging is performed in an optimised manner.

A table with a list of quantities of packaging materials can be found in chapter 4.

2.10 Condition of use

The material composition does not change during use. Extremely unusual effects which can bring about changes are the exception. Smoke control dampers are maintenance-free. The manufacturer's documents must be adhered to for regular functional inspections of the smoke control dampers.

2.11 Environment and health during use

During use, no negative effects on the environment or health are to be expected. The maintenance-free, enclosed electric drive motors are lubricated for the full service life, and are not situated in the air flow. There are no deposits of soiling thanks to the design.

2.12 Reference service life

If used properly, an average service life of approx. 20 years is to be expected for EKM90 smoke control dampers.

2.13 Extraordinary effects

Fire

In accordance with the stipulations of the model administrative regulation of technical building rules (MVV TB) of the Deutsche

Institut für Bautechnik (*DIBt*) (German Institute for Structural Engineering) in Berlin the following applies: "Smoke control dampers must be essentially made of non-combustible building materials". Refer to the table for minimum classes.

Fire protection

Name	Value
Building material class	A2
Burning droplets	s1
Smoke production	d0

Water

When exposed to extreme volumes of water, the materials become partially soaked. Smoke control dampers must then be repaired or replaced. Large quantities of water generally do not arise in ventilation and air conditioning systems. On construction sites, the smoke control dampers are protected by the packaging.

Mechanical destruction

Not relevant.

2.14 Re-use phase

As a result of the composition of the smoke control dampers, recycling is possible for the metal and electronic components. The other components (e.g. calcium silicate) can be disposed of as rubble.

2.15 Disposal

Disposal can be classified in accordance with the codes of the European List of Waste Regulation according to the Ordinance on the List of Waste (AVV): steel (17 04 05), concrete (17 01 01) and concrete mixtures (17 01 07), plastic (17 02 03), electrics (20 01 36).

2.16 Further information

www.wildeboer.de

3. LCA: Calculation rules

3.1 Declared Unit

The declaration relates to a single EKM90 smoke control damper produced by **Wildeboer Bauteile GmbH**, size 200 mm x 200 mm x 220 mm (total weight 14.7 kg) including a small electric drive motor (weight 0.86 kg) and standard accessory kit (weight approx. 0.3 kg)

The eco-balance results of variants of the declared product or products with varying dimensions can be provided by **Wildeboer Bauteile GmbH** on request.

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass reference	14.7	kg/pce

Other declared units are allowed if the conversion is shown transparently.

3.2 System boundary

The system boundary of the EPD of the type "from the cradle to the grave" follows the modular structure in accordance with EN 15804. The eco-balance of the assessed products takes into account modules A, B, C and D:

Product stage (A1–A3)

Provision of raw materials and transportation by truck of the raw materials to the factory. Production expenses including packaging material. Treatment of non-metallic production waste. Metallic production waste reaches the end of the waste characteristic immediately after creation, and is exported according to module D.

Construction stage (A4–A5)

Module A4: Transportation by truck to the construction site (100 km). The transportation distance can be adjusted at building level as necessary (e.g. in case of actual transportation distance of 200 km: multiplication of the eco-balance values by a factor of 2).

Module A5: Treatment of packaging. Resultant credit notes in module D as necessary. Power consumption for installation (use of hand-held power tools as necessary) was not taken into account.

Use stage (B1–B5):

No emissions are released during use of the product (B1). Servicing (B2) and repair (B3) or the replacement of individual components (B4) is not relevant during the assessed life span (maintenance-free). According to manufacturer information, the product does not need to be restored during the life span (B5). Modules B1 to B5 are therefore declared with a '0'.

Use stage – operation of the building (B6–B7):

The required electrical energy for operation of the product with electric drive motor and the electrical energy for set point adjustments.

Disposal stage (C1–C4)

C1: Manual demolition (unencumbered)

C2: Transportation by truck for waste treatment (50 km). The transportation distance can be adjusted at building level as necessary (e.g. in case of actual transportation distance of 100 km: multiplication of the eco-balance values by a factor of 2).

The end-of-waste status of motors is achieved after processing, or separation of the material fractions contained. The expenses

for processing were neglected in the product life cycle.

Module C3: thermal treatment of raw materials with calorific value.

Module C4: disposal of raw materials without calorific value.

Credits and debits outside the system boundaries (D)

Debits and credits from material recycling of metals (including processing) and credits for substituted thermal energy and power which have been exported from modules A1 – A3, A5 and C3.

3.3 Estimates and assumptions

For intumescence material (< 1% of overall mass), graphite has been used as an estimation in the LCA model. One supplier of an individual component declared "other plastics" in a manufacturer data sheet. These quantities were modelled as PBT.

3.4 Cut-off criteria

1.1 Cut-off rules

All the data from the capture of operating data, i.e. all raw materials used according to the recipe, and the power and water requirement were taken into account in the balance. The transportation expenses were taken into account for all assessed inputs with the exception of packaging materials. The end-of-waste status of motors is achieved after processing, or separation of the material fractions contained. The expenses for processing were neglected in the product life cycle. Thus, in accordance with PCR part A, material and energy flows with a percentage of < 1 % were also taken into account.

3.5 Background data

For the calculation of the eco-balance, Sphera MLC databases (formerly "GaBi") of version CUP 2022.2 were used.

3.6 Data quality

The data quality can be regarded as high. The manufacture of the products was modelled with primary data from Wildeboer Bauteile GmbH.

The respective background datasets were available in the Sphera MLC database for all relevant used primary products. The most recent version of the data used dates back a maximum of 5 years.

3.7 Period under review

The data capture for the smoke control dampers was performed at **Wildeboer Bauteile GmbH**, at the Weener (Germany) location, in the period 2022/2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Germany

3.9 Allocation

No coproducts or by-products are generated during production. Therefore, no allocation was used.

3.10 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

Characteristic product properties of biogenic carbon

Information on the description of the content of biogenic carbon at the factory gate

The product does not contain any bio-based raw materials, the content of biogenic carbon thus amounts to 0 kg.

Name	Value	Unit
Biogenic carbon in the product	-	kg C
Biogenic carbon in the corresponding packaging	0.71	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg CO₂.

The following technical information is the basis for the declared modules or can be used for the development of specific scenarios in the context of a building evaluation.

The eco-balance results of variants of the declared product or products with varying dimensions can be provided by **Wildeboer Bauteile GmbH** on request. The declared products are maintenance-free. Therefore, no scenario specifications are made for modules B1–B5.

Transportation to the construction site (A4)

Name	Value	Unit
Transportation distance	100	km
Utilisation (including unladen journeys)	61	%

Installation in the building (A5)

The quantities listed in the following table represent the packaging materials used.

Name	Value	Unit
Output materials as a result of waste treatment at the construction site (sum of packaging waste)	1.81	kg
Cardboard packaging	0.51	kg
PE film	0.15	kg
Wooden pallet	1.15	kg

Reference service life

Name	Value	Unit
Reference service life	20	a

Operational energy (B6)

Name	Value	Unit
Power consumption, at rest	0.4	W
Operation time, at rest	8760	h/year

The environmental impacts due to use of energy during the service life (module B6) are specified in relation to a year, and, if necessary, must be multiplied by the scheduled service life (in years) at building level.

End of the life span (C1–C4)

Name	Value	Unit
Collected separately, waste type waste type	14.7	kg
For recycling	2.5	kg
For energy reclamation	0.44	kg
For waste disposal	11.76	kg

5. LCA: Results

The following shows the results of the indicators concerning the estimated impact, the use of resources and waste and other output flows based on a single EKM90 smoke control damper [14.7 kg/pc.] including electric drive motor and standard accessory pack. For calculation (scaling) to other volumes, accessories used and frames, the data can be requested from the manufacturer.

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	X	X	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 x EKM90 smoke control damper including electric drive motor with 14.7 kg/pc

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.75E+01	8.81E-02	3.11E+00	0	0	0	0	0	1.45E+00	0	0	4.43E-02	8.3E-01	1.76E-01	-6.69E+00
GWP-fossil	kg CO ₂ eq	2E+01	8.68E-02	5.07E-01	0	0	0	0	0	1.44E+00	0	0	4.37E-02	8.3E-01	1.75E-01	-6.7E+00
GWP-biogenic	kg CO ₂ eq	-2.49E+00	9.73E-04	2.6E+00	0	0	0	0	0	8.53E-04	0	0	4.08E-04	6.86E-05	0	9.44E-03
GWP-luluc	kg CO ₂ eq	7.83E-03	3.27E-04	5.47E-06	0	0	0	0	0	9.37E-05	0	0	2.45E-04	3.56E-06	3.24E-04	-3.51E-03
ODP	kg CFC11 eq	3.05E-10	1.25E-14	2.17E-13	0	0	0	0	0	1.43E-11	0	0	2.63E-15	9.31E-14	4.12E-13	-6.96E-12
AP	mol H ⁺ eq	9.35E-02	7.55E-05	4.18E-04	0	0	0	0	0	2.12E-03	0	0	4.18E-05	6.4E-04	1.24E-03	-2.95E-02
EP-freshwater	kg P eq	4.99E-05	1.81E-07	5.18E-08	0	0	0	0	0	6.48E-07	0	0	1.31E-07	2.8E-08	2.97E-07	-4.2E-06
EP-marine	kg N eq	1.35E-02	2.4E-05	1.31E-04	0	0	0	0	0	5.8E-04	0	0	1.3E-05	3.16E-04	3.18E-04	-3.91E-03
EP-terrestrial	mol N eq	1.45E-01	2.9E-04	1.99E-03	0	0	0	0	0	6.2E-03	0	0	1.57E-04	3.58E-03	3.49E-03	-4.26E-02
POCP	kg NMVOC eq	4.19E-02	6.52E-05	3.59E-04	0	0	0	0	0	1.64E-03	0	0	3.64E-05	8.11E-04	9.66E-04	-1.26E-02
ADPE	kg Sb eq	1.19E-03	9.05E-09	5.3E-09	0	0	0	0	0	1.72E-07	0	0	3.67E-09	2.46E-09	1.8E-08	-2.47E-04
ADPF	MJ	2.65E+02	1.16E+00	5.99E-01	0	0	0	0	0	3.06E+01	0	0	5.87E-01	2.95E-01	2.3E+00	-7.59E+01
WDP	m ³ world eq deprived	3.88E+00	3.45E-04	3.16E-01	0	0	0	0	0	1.08E-01	0	0	3.94E-04	9E-02	1.92E-02	-1.22E+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 x EKM90 smoke control damper including electric drive motor with 14.7 kg/pc

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5.3E+01	6.92E-02	2.63E+01	0	0	0	0	0	4.43E+00	0	0	3.34E-02	5.39E-02	3.45E-01	-9.35E+00
PERM	MJ	2.62E+01	0	-2.62E+01	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	7.92E+01	6.92E-02	1.39E-01	0	0	0	0	0	4.43E+00	0	0	3.34E-02	5.39E-02	3.45E-01	-9.35E+00
PENRE	MJ	2.48E+02	1.17E+00	7.5E+00	0	0	0	0	0	3.06E+01	0	0	5.89E-01	1.14E+01	2.3E+00	-7.62E+01
PENRM	MJ	1.8E+01	0	-6.9E+00	0	0	0	0	0	0	0	0	0	-1.11E+01	0	0
PENRT	MJ	2.66E+02	1.17E+00	6E-01	0	0	0	0	0	3.06E+01	0	0	5.89E-01	2.95E-01	2.3E+00	-7.62E+01
SM	kg	1.29E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	1.65E+00
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	1.05E-01	6.03E-05	7.42E-03	0	0	0	0	0	6.71E-03	0	0	3.78E-05	2.12E-03	5.84E-04	-4.14E-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 x EKM90 smoke control damper including electric drive motor with 14.7 kg/pc**

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.79E-06	5.39E-12	5.77E-11	0	0	0	0	0	2.19E-09	0	0	2.82E-12	3.97E-11	1.18E-10	-1.54E-09
NHWD	kg	3.7E+00	1.85E-04	2.07E-02	0	0	0	0	0	6.51E-03	0	0	8.44E-05	2.75E-02	1.18E+01	-3.43E-01
RWD	kg	6.86E-03	1.17E-06	3.55E-05	0	0	0	0	0	5.09E-03	0	0	7.25E-07	1.13E-05	2.56E-05	-1.7E-03
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	4.39E-01	0	0	0	0	0	0	0	0	0	0	0	2.5E+00	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	4.8E+00	0	0	0	0	0	0	0	0	0	1.51E+00	0	0
EET	MJ	0	0	8.61E+00	0	0	0	0	0	0	0	0	0	2.72E+00	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 x EKM90 smoke control damper including electric drive motor with 14.7 kg/pc**

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.34E-06	4.7E-10	2.1E-09	0	0	0	0	0	1.9E-08	0	0	2.53E-10	2.12E-09	1.53E-08	-4.05E-07
IR	kBq U235 eq	7.75E-01	1.14E-04	5.82E-03	0	0	0	0	0	7.45E-01	0	0	1.06E-04	1.74E-03	2.84E-03	-3.06E-01
ETP-fw	CTUe	1.06E+02	9.23E-01	2.66E-01	0	0	0	0	0	9.38E+00	0	0	4.08E-01	1.27E-01	1.29E+00	-3.07E+01
HTP-c	CTUh	1.7E-06	1.83E-11	1.94E-11	0	0	0	0	0	1.73E-10	0	0	8.22E-12	8E-12	1.96E-10	-9.08E-09
HTP-nc	CTUh	6.08E-07	9.1E-10	6.65E-10	0	0	0	0	0	8.79E-09	0	0	4.25E-10	4.98E-10	2.18E-08	-5.19E-08
SQP	SQP	3.01E+02	3.66E-01	1.78E-01	0	0	0	0	0	2.81E+00	0	0	2.02E-01	6.05E-02	4.78E-01	-8.87E+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.

6. LCA: Interpretation

The most important stages of the life cycle from an environmental point of view are the stages of manufacture and use.

In relation to the manufacturing stage, the two upstream chain processes of control electronics (circuit board) and the galvanized sheet steel dominate above all environmental indicators. These two materials together have an influence of at least 70 % on the individual indicator results. The influence of these two materials is to be classified as relevant to significant in most indicators.

The upstream chain of the calcium silicate used has a relevant influence on the indicator of the eutrophication potential of freshwater. For all other indicators, the influence of the calcium

silicate is low or negligible.

The plastics PA6 and PBT and the intumescence material used have a low to certain influence for most indicators.

All other processes and materials show a low to negligible relevance for the product system.

When assessing a typical service life of 20 years, the environmental impacts identified in relation to one piece and year for operation (energy consumption) of the products add up accordingly. The associated environmental impacts as a result of this energy consumption are accordingly significant for a series of indicators, for example the global warming potential (GWP total).

7. Requisite evidence

Evidence according to PCR: Fire dampers and fire protection valves and smoke control dampers are not relevant for the declared product.

8. References

Standards

EN 15804

DIN EN 15804:2012+A1 2013, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

EN 15804

DIN EN 15804:2012+A2 2019+AC2021, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

ISO 14025

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

Further sources

AVV

Ordinance on the List of Wastes (AVV) of 10 December 2001 (Federal Law Gazette I page 3379) which was last amended by article 1 of the regulation of 30 June 2020 (Federal Law Gazette I page 1533)

ISO 9001

DIN EN ISO 9001: 2015-11, Quality management systems.

EN 1366-2

DIN EN 1366-2: 2015-09, Fire resistance tests for service installations - Fire dampers.

EN 1366-10

DIN EN 1366-10: 2022-12, Fire resistance tests for service installations - Smoke control dampers.

EN 13501-4

DIN EN 13501-4: 2016-12, Fire classification of construction products and building elements - Classification using data from fire resistance tests on components of smoke control systems

EN 1751

DIN EN 1751:2014-06, Ventilation for buildings - Air terminal devices - Aerodynamic testing of dampers and valves.

EN 12101-8

DIN EN 12101-8: 2011-08, Smoke and heat control systems:

Smoke control dampers

Manufacturer's documents

The respective current version of the manufacturer's documents on the EKM90, user manual 5.33, EKM90 operating instructions.

Declaration of performance

Declaration of performance for the EKM90 from Wildeboer Bauteile GmbH, available at www.wildeboer.de.

ECHA

ECHA list of the substances of very high concern relevant for approval (published in accordance with Article 59 Par. 10 of the REACH regulation): 2022-06.

European Chemicals Agency (ECHA), Helsinki.

Spheras

LCA software (LCA FE) and LCA database (MLC) (formerly GaBi): MLC database version CUP 2022.2: Sphera Solutions GmbH: Software system and database for integrated balancing. Copyright, TM, Stuttgart, Leinfelden-Echterdingen, 1992-2022

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General EPD programme instructions of the Institut Bauen und Umwelt e.V. (IBU). Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com

PCR Part A

Product category calculation rules for building-related products and services. Part A: Calculation rules for the eco-balance and requirements for the background report, version 1.3 Institut Bauen und Umwelt e.V., www.ibu-epd.com, 2022.

PCR: Fire dampers and fire protection valves and smoke control dampers

Product category calculation rules for building-related products and services. Part B: Requirements for the EPD for fire dampers and fire protection valves and smoke control dampers, version 1.6, Institut Bauen und Umwelt e.V., www.ibu-epd.com, 2017.



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