epddanmark

ECO PLATFORM EPD VERIFIED

Owner: Mosbaek A/S
No.: MD-23001-EN
Issued: 31-03-2023
Valid to: 31-03-2028

3rd PARTY **VERIFIED**

EPD

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

Owner of declaration
Company name: Mosbaek A/S
Address: Værkstedsvej 20,
4600 Køge
+45 20968400

Mosbaek
Flow Regulators

Programme
EPD Danmark
www.epddanmark.dk

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☐ Industry EPD
☒ Product EPD

Declared product(s)
Flow regulator

Number of declared datasets/product variations: 1

Production site
Værkstedsvej 20, 4600 Køge, Denmark

Product(s) use
Mosbaeks flow regulators protect sewage systems and users, by controlling water flow. Systemic overload, as well as unhygienic and harmful overflows are reduced, and it is easy to adapt if weather conditions change in the future. The flow regulator works by gravitation, has no moving or electrical parts, and has a large inlet, which together gives operational security, and minimizes costs. The flow regulators are cyclone flow or centrifugal flow regulators. The regulators are applied in various pipes for drain, e.g. for rainwater or waste water, to control and reduce the flow of water. The particular flow regulator design defines the capacity and flow reduction and reduce/prevent flooding and unintended consequences from heavy rainfall and increased waterflow.

Declared/ functional unit
The declared product is 1 kg waterflow regulator.

Year of production site data (A3)
2021

EPD version
1st version

Issued: 31-03-2023

Valid to: 31-03-2028

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:

[Kim Christiansen]

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

Mosbaek produce waterflow regulators in specified dimensions according to customer demands. Depending om dimensions, the weight for the particular product varies from 4,5 to 620 kg.

A few variants are supplied together with rubber or plastic fittings. The fittings are amendment to the core product and not included in the declared product for this EPD.

The product components are stipulated in the table below.

Material	Weight-% of declared product
Stainless steel	100

The product variants covered by this EPD can be seen in the table below:

Declared product groups	
CEV	DBG
CYDV	EB
CYDX	FDE
CYE	CEH
CYC	TO
DB	Acid resistant stainless steel equipment, e.g. mounting plates, overflow walls, lifting rods

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below. The packaging is calculated as an average of all purchased packaging.

Material	Weight-% of packaging
Cardboard packaging	16
Plastic packaging	4
Wooden packaging	1
PVC packaging tape	1
Pallets	78
Zinc packaging clip	0

Representativity

This EPD is based on weighted average data from Mosbaeks production site in Køge. The data is from 2021.

Background data is from EcoInvent 3.8.

Hazardous substances

Mosbaeks flow regulators do not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(http://echa.europa.eu/candidate-list-table)

Essential characteristics

The CEV flow regulators are ETA certified, with the further option to get a CE label.

Mosbaek is certified according to ISO 9001 quality management.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

https://www.mosbaek.dk/gb

Reference Service Life (RSL)

The RSL of Mosbaeks flow regulators, is at least 50 years, unless placed in a strongly acidic, or highly degrading environment, according to their experiences.

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 kg flow regulator.

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg.	1	-

Functional unit

Not defined

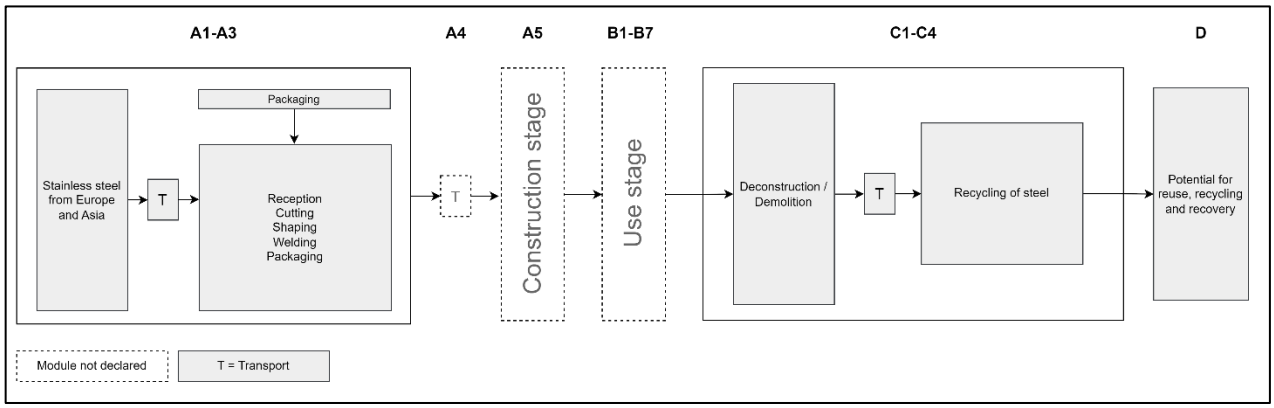
PCR

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

Guarantee of Origin - Certificates

The production in Køge uses Danish wind energy, with guarantee of origin.

Flowdiagram



System boundary

This EPD is based on a cradle-to-gate LCA, 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 product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the ”end-of-waste” state or final disposal.

Mosbaek receives steel produced primarily in Europe, but also in South Africa, and Taiwan. At Mosbaek, the steel is shaped and welded into flow regulators, generating a fraction of waste that is either incinerated, or recycled.

End of Life (C1-C4) includes:

The flow regulators do not need to be removed separately. They are removed as part of the deconstruction of the sewage system they are placed in. Once deconstructed, the flow regulator is transported to a facility for separation and recycling. 100 weight-% of the flow regulator is recycled.

Re-use, recovery and recycling potential (D) includes:

The global net content of recycled steel in new steel products is 30% (Worldsteel, 2022). With a 100% recycling rate of Mosbaeks product, the net benefit of recycling is equal to the displacement of 700 grams of virgin stainless steel.

LCA results

ENVIRONMENTAL IMPACTS PER 1 KG OF FLOW REGULATOR									
Parameter	**Unit**	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	4,25E+00	3,62E-01	-1,06E+00	0,00E+00	1,63E-02	5,32E-01	0,00E+00	-6,13E+00
GWP-fossil	[kg CO_2 eq.]	4,12E+00	3,61E-01	-1,09E+00	0,00E+00	1,63E-02	5,19E-01	0,00E+00	-5,93E+00
GWP-biogenic	[kg CO_2 eq.]	1,21E-01	5,55E-04	3,72E-02	0,00E+00	2,90E-05	1,17E-02	0,00E+00	-1,96E-01
GWP-luluc	[kg CO_2 eq.]	4,29E-03	1,61E-04	-9,29E-04	0,00E+00	6,52E-06	7,84E-04	0,00E+00	-5,80E-03
ODP	[kg CFC 11 eq.]	1,94E-07	8,21E-08	-4,57E-08	0,00E+00	3,77E-09	3,03E-08	0,00E+00	-2,66E-07
AP	[mol H^+ eq.]	2,39E-02	2,52E-03	-7,06E-03	0,00E+00	4,62E-05	2,20E-03	0,00E+00	-3,49E-02
EP-freshwater	[kg P eq.]	1,62E-03	2,22E-05	-3,71E-04	0,00E+00	1,07E-06	3,68E-04	0,00E+00	-2,11E-03
EP-marine	[kg N eq.]	4,09E-03	5,82E-04	-1,09E-03	0,00E+00	9,41E-06	4,33E-04	0,00E+00	-5,86E-03
EP-terrestrial	[mol N eq.]	4,23E-02	6,42E-03	-1,22E-02	0,00E+00	1,02E-04	4,17E-03	0,00E+00	-6,23E-02
POCP	[kg NMVOC eq.]	1,29E-02	1,88E-03	-3,81E-03	0,00E+00	3,82E-05	1,10E-03	0,00E+00	-1,93E-02
ADPm[1]	[kg Sb eq.]	1,06E-04	1,12E-06	-3,60E-05	0,00E+00	5,54E-08	1,40E-06	0,00E+00	-1,70E-04
ADPf[1]	[MJ]	3,58E+01	3,95E-01	-1,11E+01	0,00E+00	1,88E-02	3,73E+00	0,00E+00	-5,29E+01
WDP[1]	[m^3 world eq. deprived]	2,09E+00	2,45E-02	-3,78E-01	0,00E+00	1,20E-03	5,42E-01	0,00E+00	-2,31E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; 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								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
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.								

Additional environmental impacts, as declared in the project report of this EPD.

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 KG OF FLOW REGULATOR									
Parameter	**Unit**	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2,96E-07	2,12E-08	-9,60E-08	0,00E+00	1,03E-09	1,34E-08	0,00E+00	-4,57E-07
IRP[2]	[kBq U235 eq.]	4,44E-01	2,72E-02	-6,20E-02	0,00E+00	1,27E-03	1,85E-01	0,00E+00	-4,71E-01
ETP-fw[1]	[CTUe]	2,30E+00	1,65E-01	-5,93E-01	0,00E+00	8,26E-03	2,91E-01	0,00E+00	-3,30E+00
HTP-c[1]	[CTUh]	8,94E-08	1,28E-10	-2,66E-08	0,00E+00	5,25E-12	1,31E-08	0,00E+00	-1,30E-07
HTP-nc[1]	[CTUh]	2,55E-07	6,17E-09	-4,92E-08	0,00E+00	3,06E-10	6,46E-08	0,00E+00	-3,22E-07
SQP[1]	-	1,22E+01	4,02E+00	-3,00E+00	0,00E+00	2,09E-01	9,99E-01	0,00E+00	-1,78E+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)								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
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.								

RESOURCE USE PER 1 KG OF FLOW REGULATOR									
Parameter	**Unit**	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	9,64E+00	5,37E-02	8,52E+00	0,00E+00	2,65E-03	1,03E+00	0,00E+00	-1,41E+01
PERM	[MJ]	2,04E+00	1,80E-02	3,97E-02	0,00E+00	8,71E-04	1,90E-01	0,00E+00	-2,84E+00
PERT	[MJ]	1,17E+01	7,17E-02	8,56E+00	0,00E+00	3,52E-03	1,22E+00	0,00E+00	-1,70E+01
PENRE	[MJ]	4,26E+01	4,98E-01	-1,19E+01	0,00E+00	2,40E-02	6,87E+00	0,00E+00	-5,99E+01
PENRM	[MJ]	1,94E+01	4,89E+00	-4,54E+00	0,00E+00	2,24E-01	2,78E+00	0,00E+00	-2,70E+01
PENRT	[MJ]	6,21E+01	5,39E+00	-1,64E+01	0,00E+00	2,48E-01	9,65E+00	0,00E+00	-8,69E+01
SM	[kg]	1,23E+00	5,28E-03	-3,93E-02	0,00E+00	2,53E-04	9,46E-02	0,00E+00	-4,17E-01
RSF	[MJ]	8,43E-02	1,48E-03	-7,74E-03	0,00E+00	7,53E-05	4,92E-02	0,00E+00	-7,11E-02
NRSF	[MJ]	1,16E-01	5,92E-03	-2,29E-02	0,00E+00	3,06E-04	3,28E-02	0,00E+00	-1,43E-01
FW	[m^3]	5,02E-02	5,85E-04	-9,19E-03	0,00E+00	2,86E-05	1,27E-02	0,00E+00	-5,59E-02
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								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 KG OF FLOW REGULATOR									
Parameter	**Unit**	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,31E+01	1,14E-01	-3,76E+00	0,00E+00	5,54E-03	1,79E+00	0,00E+00	-1,87E+01
NHWD	[kg]	6,07E-01	2,46E-01	1,22E-01	0,00E+00	1,28E-02	2,07E-01	0,00E+00	-6,86E-01
RWD	[kg]	4,33E-03	1,02E-04	-5,24E-04	0,00E+00	4,95E-06	1,96E-03	0,00E+00	-4,40E-03
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,63E-01	4,41E-03	-7,58E-03	0,00E+00	2,10E-04	9,22E-02	0,00E+00	-1,41E-01
MER	[kg]	6,69E-03	1,36E-03	8,85E-04	0,00E+00	5,78E-05	7,80E-04	0,00E+00	-9,51E-03
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	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 electric energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

BIOGENIC CARBON CONTENT PER 1 KG OF FLOW REGULATOR		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0 kg C
Biogenic carbon content in accompanying packaging	[kg C]	0,08 kg C
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation

The production of stainless steel has a significant impact on the product. The production and transportation of the product is insignificant.

Technical information on scenarios

Reference service life

RSL information		Unit
Reference service Life	50	Years
Declared product properties	See Mosbaeks website for information regarding use, and environment. https://www.mosbaek.dk/gb	
Design application parameters		
Assumed quality of work		
Outdoor environment		
Indoor environment		
Usage conditions		
Maintenance		

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	0	kg
Collected with mixed waste	1	kg
For reuse	0	kg
For recycling	1	kg
For energy recovery	0	kg
For final disposal	0	kg
Assumptions for scenario development	It is assumed that the flow regulator is separated for recycling	

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Average global content of recycled material	30	%
Stainless steel for recycling	1	kg
Displaced virgin stainless steel	0,7	kg

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+A1 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 the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	epddanmark www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	*Tomas Sander Poulsen* *Matias Lund Pedersen* *Provice ApS* *Havnevej 45A, 4000 Roskilde*
LCA software /background data	*OpenLCA 1.11.0* *EN15804 Add-on* *EcoInvent 3.8*
3rd party verifier	*Kim Christiansen* *kimconsult.dk* *Marienborg Alle 91C* *2860 Søborg*

General programme instructions
General Programme Instructions, version 2.0, spring 2020
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"

Worldsteel (2022) *Content of recycled steel in new steel products*. Available at: https://worldsteel.org/about-steel/steel-facts?fact=32