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ECO PLATFORM EPD EN 15804 VERIFIED

Owner: VOLA A/S
No.: MD-18008-EN
ECO EPD: 00000731
Issued: 13-06-2018
Valid to: 13-06-2023

3rd PARTY **VERIFIED**

EPD

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

Owner of declaration
VOLA A/S
Lunavej 2
8700 Horsens

Programme operator
Danish Technological Institute
www.dti.dk

Programme
EPD Danmark
www.epddanmark.dk

Declared products
080st – chromed brass
080st – stainless steel
FS1 – chromed brass
FS1 – stainless steel
FS3 – chromed brass
FS3 – stainless Steel

Production site
VOLA A/S
Lunavej 2
8700 Horsens
Denmark

Products use
VOLA fixtures are used in bathrooms etc.

Declared unit
1 fixture

Issued: 13-06-2018
Valid to: 13-06-2023

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

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
☐Cradle-to-gate with options
☐Cradle-to-grave

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

Henrik Fred Larsen
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	MND	MND	MND	MND	MND

Product information

Product description

The main product components are shown in the table below. Values are given as intervals covering the six declared product variations. Specific recipes and some input materials (0-2 mass-%) are not shown in this table due to reasons of confidentiality.

Material	**Weight-% of declared product**
Brass	30-86
Stainless steel	1-59
POM	1-7
Galvanized steel	3-5
Copper	2-3
PE foam	2-3
Packaging material	**kg per declared unit**
Cardboard	0,1-1,2
Paper	0,02-0,2
LDPE	0,001-0,02

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 fixture from VOLA on the production site located in Denmark. Product specific data are based on average values covering the period from 01.01.2016 to 31.12.2016. Background data are based on GaBi and are less than 10 years old. Only in a few cases are GaBi 8.2 data supplemented with data from Ecoinvent 3.3. Generally, the used background datasets are of high quality, and the majority of the datasets are only a few of years old.

Dangerous substances

Our products 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 (CE)

There is no harmonized specification but VOLA fixtures are covered by difference technical specification example EN 817.

VOLA produces according to relevant product standards. Components which are in contact with water are produced in lead-free brass, according to 4MS and California Assembly Bill AB1953.

Components in stainless steel are produced in material according to EN10088-3:2014 and AISI316 (American Iron and Steel Institute)

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

http://www.vola.com

Reference Service Life (RSL)

No RSL is declared. This EPD is based on a cradle-to-gate assessment.

Product illustrations

080st

FS1

FS3

LCA background

Declared unit

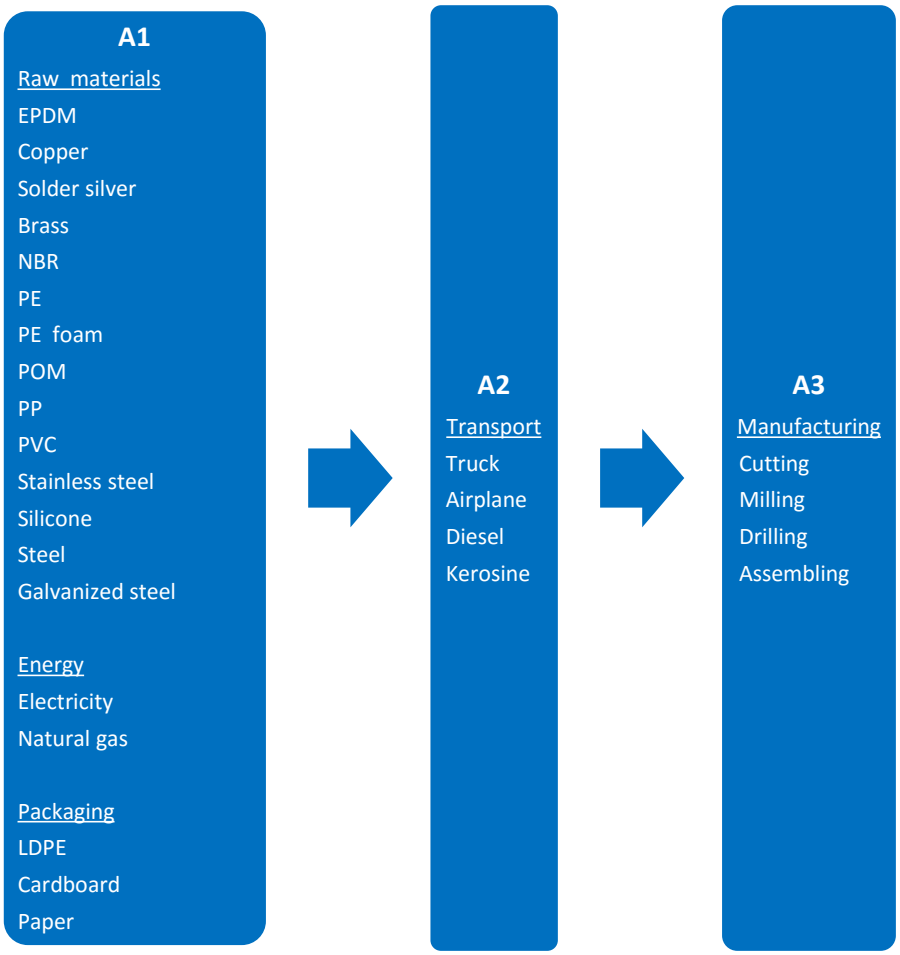
The LCI and LCIA results in this EPD relates to 1 fixture from VOLA for the types: 080st – chromed brass, 080st – stainless steel, FS1 – chromed brass,FS1 – stainless steel, FS3 – chromed brass and FS3 – stainless steel.

Name	Value	Unit
Declared unit	1	piece
080st – chromed brass	1,96	kg/piece
080st – stainless steel	1,92	kg/piece
FS1 – chromed brass	11,9	kg/piece
FS1 – stainless steel	12,0	kg/piece
FS3 – chromed brass	19,0	kg/piece
FS3 – stainless steel	19,0	kg/piece
Conversion factor to 1 kg.	0,053-0,52	-

PCR

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

Flow diagram



System boundary

This EPD is based on a cradle-to-gate LCA, in which >99 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. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

Virtually all components are manufactured in Denmark. The raw material and few purchased components are mostly from Europe. From solid brass/stainless steel rods or pipes, components are rotated, drilled or milled on CNC machines.

Subsequently, the components are ground/polished to create a unique surface, either by manual or automatic processes. Some components are hand-soldered or soldered by induction.

The finished polished components are treated with a surface finish depending on the finish the customer wishes.

Production is based on LEAN-production, where stocks are minimized and where products are put into production as soon as they are sold (Make to order, MTO).

Each fixture is tested individually before it is packaged and shipped to the world.

VOLA A/S is certified according to the quality standards ISO 9001:2015, ISO 14001:2015 (environment) and OHSAS 18001:2008 (work environment).

LCA results

ENVIRONMENTAL IMPACTS PER FIXTURE							
Parameter	**Unit**	**080st chromed brass**	**080st stainless steel**	**FS1 chromed brass**	**FS1 stainless steel**	**FS3 chromed brass**	**FS3 stainless steel**
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
GWP	[kg CO_2-eq.]	4,64E+01	2,26E+01	2,24E+02	1,25E+02	3,74E+02	1,80E+02
ODP	[kg CFC11-eq.]	1,72E-06	2,37E-07	8,51E-06	1,65E-06	1,47E-05	1,79E-06
AP	[kg SO_2-eq.]	7,43E-01	3,00E-01	4,18E+00	2,13E+00	6,87E+00	2,46E+00
EP	[kg PO_4^{3-}-eq.]	4,69E-01	1,82E-01	2,68E+00	1,34E+00	4,38E+00	1,44E+00
POCP	[kg ethene-eq.]	3,52E-02	1,44E-02	1,97E-01	1,01E-01	3,23E-01	1,19E-01
ADPE	[kg Sb-eq.]	7,33E-03	3,99E-03	4,35E-02	2,81E-02	7,02E-02	3,53E-02
ADPF	[MJ]	4,93E+02	2,51E+02	2,40E+03	1,41E+03	3,99E+03	2,04E+03
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential of soil and water; EP = Eutrophication potential; POCP = Photochemical ozone creation potential; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources						

RESOURCE USE PER FIXTURE							
Parameter	**Unit**	**080st chromed brass**	**080st stainless steel**	**FS1 chromed brass**	**FS1 stainless steel**	**FS3 chromed brass**	**FS3 stainless steel**
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
PERE	[MJ]	1,40E+02	1,11E+02	6,90E+02	6,36E+02	1,10E+03	8,97E+02
PERM*	[MJ]	2,13E+00	2,13E+00	1,40E+01	1,40E+01	2,34E+01	2,34E+01
PERT	[MJ]	1,53E+02	1,24E+02	7,03E+02	6,49E+02	1,12E+03	9,10E+02
PENRE	[MJ]	5,50E+02	2,58E+02	2,72E+03	1,51E+03	4,55E+03	2,19E+03
PENRM**	[MJ]	6,70E+00	6,70E+00	1,69E+01	1,69E+01	3,58E+01	3,58E+01
PENRT	[MJ]	5,64E+02	2,72E+02	2,74E+03	1,53E+03	4,56E+03	2,21E+03
SM	[kg]	-	-	-	-	-	-
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]	3,76E-01	1,57E-01	1,90E+00	9,11E-01	3,17E+00	1,23E+00
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water						

** Contribution from packaging material per product type: All ** Contribution from packaging material per product type: 0,041 MJ (080st); 0,61MJ (FS1) and 0,80 MJ (FS3)*

OUTPUT FLOWS AND WASTE CATEGORIES PER FIXTURE							
Parameter	**Unit**	**080st chromed brass**	**080st stainless steel**	**FS1 chromed brass**	**FS1 stainless steel**	**FS3 chromed brass**	**FS3 stainless steel**
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
HWD	[kg]	5,83E-07	5,01E-07	3,36E-06	3,10E-06	5,27E-06	4,51E-06
NHWD	[kg]	3,42E-01	1,47E+00	1,95E+00	7,93E+00	2,83E+00	1,55E+01
RWD	[kg]	5,38E-03	7,17E-03	2,36E-02	3,68E-02	3,51E-02	5,60E-02
CRU	[kg]	-	-	-	-	-	-
MFR	[kg]	-	-	-	-	-	-
MER	[kg]	-	-	-	-	-	-
EEE	[MJ]	-	-	-	-	-	-
EET	[MJ]	-	-	-	-	-	-
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						

Additional information

Indoor air

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

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 harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

References

Publisher	http://www.epddanmark.dk
Program operator	Danish Technological Institute Sustainable Construction Kongsvang Allé 29 DK-8000 Aarhus C http://www.teknologisk.dk
LCA-practitioner	Danish Technological Institute Sustainable Construction Gregersensvej DK-2630 Taastrup http://www.teknologisk.dk
LCA software /background data	Thinkstep GaBi 8.2 2017 incl. databases + Ecoinvent 3.3 2017 http://www.gabi-software.com http://www.ecoinvent.org
3rd party verifier	Kim Christiansen – kimconsult.dk

General program instructions
Version 1.9
www.epddanmark.dk

EN 15804
DS/EN 15804 + A1:2013 - "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"