Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

VOTEC Grey and Ductile Iron Manhole with Cover

from

Saint-Gobain Building Distribution (SGDS)

Program:	The International EPD® System, www.environdec.com
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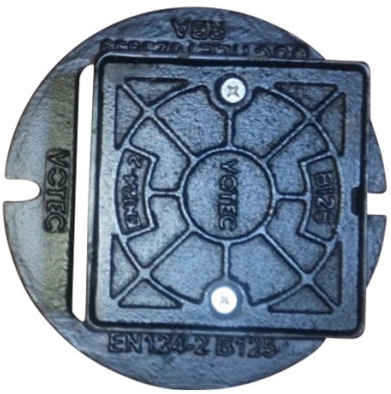

General information

Program information

Program:	The International EPD® System
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CEN standard EN 15804:2012 +A2 (2019) serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products (EN 15804: A2) (1.2.5)

PCR review was conducted by: *The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com*

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Third-party verifier: *Vladimir Koci, vladimir.koci@lcastudio.cz*

The procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

The EPD owner has sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. EPDs made according to EN15804+A1, and EN15804+A2 are not comparable, especially since a majority of the environmental indicators are based on different versions. For further information about comparability, see EN 15804 and ISO 14025.

Company information

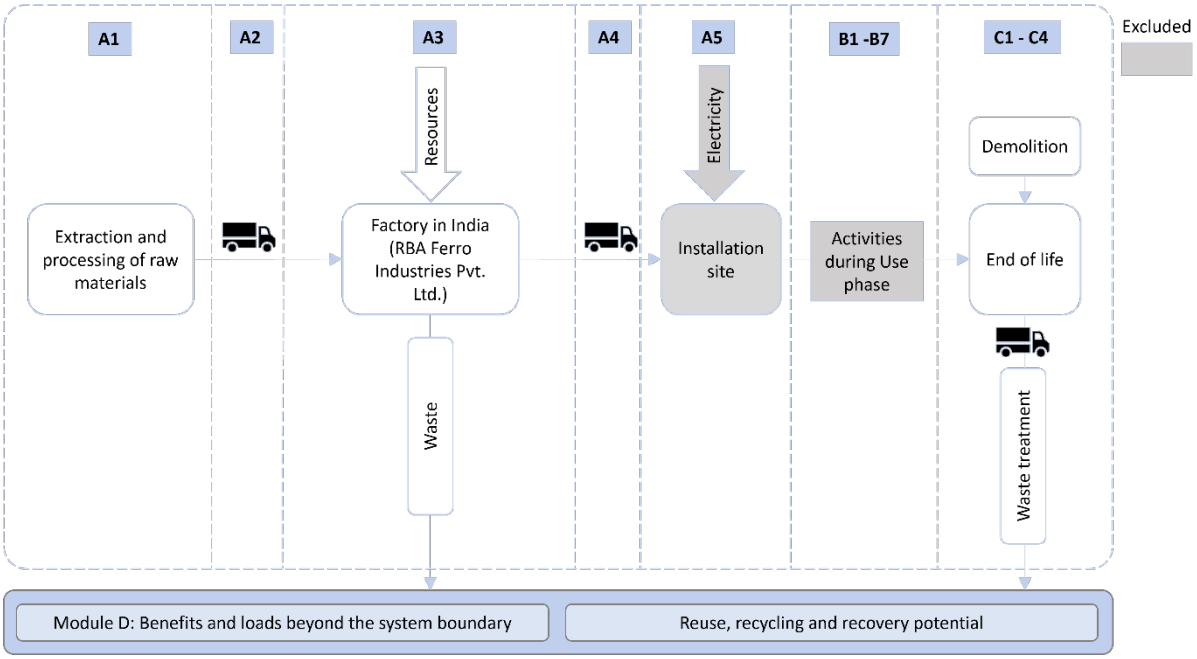
Owner of the EPD	Saint-Gobain Distribution Sweden
Contact	Beriar Maroof (beriar.maroof@sgdsgruppen.se)
Description of the organisation	SGDS Gruppen - specialists in collaboration for more efficient business in construction and installation. SGDS Gruppen AB is the head company of some of Sweden's leading trading companies in construction, sheet metal, tiles, and installation. All the companies have long and solid industry experience and provide most of Sweden's craftsmen with materials for various projects. Customers in different companies can also buy support items from the sister companies in the group. In selected cases, we take joint projects to facilitate the logistics of the supply of goods, which is then often critical for a smooth construction project. • Optimera - construction trade for professional carpenters • Dahl – heat, plumbing, and sanitary specialist • Bevego - building sheet metal, ventilation, and technical insulation • Kakelspecialisten and Konradsson's Tiles - tiles, tiling, and bathroom fittings The company focuses on sales and services, with direct contact with about 150,000 customers regularly. Saint-Gobain Distribution Sweden group (SGDS) is owned by Saint-Gobain with a presence in 64 countries and over 190 000 employees worldwide.
Location of production site	India

Product information

Product name	VOTEC Grey and Ductile Iron Manhole with Cover by SGDS Gruppen
Product Identification	VOTEC Manholes / Votec Brunnsbetäckningar
Product Description	The manhole cover or maintenance hole cover is a removable plate forming the lid over the opening of a manhole. The manholes are made from grey cast iron via the sand-casting process.
UN CPC code	412 - Rolled, drawn, and folded products of iron and steel
Use	Frame and cover for maintenance inlets and manholes

LCA information

Functional unit	1 kg of Grey and Ductile Iron Manhole with Cover
Reference service life	30 years
Database(s) and LCA software used	Calculation completed in MLC Professional Database (formerly GaBi) v10.7.0.183 with an integrated Ecoinvent database 3.9.1
System boundaries	Cradle to Gate with options (A1-A3, A4, C1-C4, D).



The manufacturers procure the raw materials and manufacture products at their Kolkata manufacturing plant in India. The finished products are then shipped to SGDS Gruppen's distribution centre in Stockholm, Sweden to be distributed locally. Environmental impact data for the product stage, A1-A3 sub-modules are adopted from the manufacturer-provided data, and the transport to the SGDS Gruppen's distribution centre and local distribution in Sweden from the manufacturing unit was associated with A4.

The end-of-life reflects the Swedish market, where 1% of ferrous metallic waste is landfilled, and 99% recycled, a wastage of 10 % is considered during the recycling process. For the credit for recovered material (module D), EU datasets were used.

Further information

This EPD uses 1 kg weight of the VOTEC Grey and Ductile Manhole with Cover as the functional unit for the life cycle assessment as it covers products with varying dimensions but manufactured with the same material composition.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, and/or risks. It is advised not to use the results of modules A1-A3 (A1-A5 for services) without considering the results of module C.

Modules declared

X = modules included, ND = not declared

	Product stage			Assembly stage		Use stage							End-of-life stage				Benefits & loads beyond system boundary
	Raw materials	Transport	Manufacturing	Transport	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
Declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	IN	IN	IN	EU	-	-	-	-	-	-	-	-	GLO	EU	EU	EU	EU
Specific data used	Factory-specific data for A1- A3																
Variation-Products	0 %																
Variation-Sites	0 %																

Data

Generic database data was used for the production of raw materials, energy, transportation, packaging, and end-of-life. Specific data was collected from the manufacturing facility.

Time representativeness

The primary data (foreground data) used for the product manufacturing corresponds to the period from 1st April 2021 to 31st March 2022. The age of data from generic databases varies from 2013 – 2021.

Data quality

All datasets used came from reputable databases Sphera Managed LCA Content (MLC) (formerly known as GaBi database) and Ecoinvent, with good technological representativeness and which represent either India for product stages, Sweden, EU28 or Global average for the rest of the life cycle stages. Therefore, it could be considered good.

Allocation

No co-product allocation has been applied since no co-products are generated, and therefore allocation has not been relevant.

Cut-off Criteria

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804+A2.

Content Declaration

Content

Content Declaration	Weight
Grey cast iron	100 %
Total	1 kg

For confidentiality reasons, the precise specification is not given here but was used in the calculations.

Packaging

Individual items are sold without any packaging whereas large orders are shipped on wooden pallets. In this EPD, items are assumed sold with no packaging.

Information on the biogenic carbon content

Biogenic carbon content	Unit per FU	Amount
Biogenic carbon content in the product	kg C	0,0E+00
Biogenic carbon content in packaging	kg C	0,0E+00

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

Information on energy content

Energy content	Unit per FU	Amount
Energy content in the product	MJ	0,0E+00

Environmental Information

Potential environmental impact – indicators according to EN 15804+A2

	Results per functional unit: 1 kg of Grey and Ductile Manhole with Cover							
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO2 eq	2,70E+00	3,72E-01	5,24E-04	5,81E-03	0,00E+00	4,68E-04	-1,13E+00
GWP-biogenic	kg CO2 eq	3,20E-03	-2,18E-04	2,73E-05	-8,60E-05	0,00E+00	-5,79E-06	-3,90E-03
GWP-luluc	kg CO2 eq	2,09E-03	3,39E-04	0,00E+00	5,38E-05	0,00E+00	4,75E-07	-1,11E-04
GWP-total	kg CO2 eq	2,71E+00	3,72E-01	5,51E-04	5,78E-03	0,00E+00	4,62E-04	-1,13E+00
ODP	kg CFC-11 eq	6,68E-12	2,61E-14	0,00E+00	5,08E-16	0,00E+00	7,71E-16	-8,14E-12
AP	mole H+ eq	2,60E-02	1,18E-02	2,68E-06	1,02E-05	0,00E+00	1,50E-06	-1,19E-03
EP-freshwater	kg P eq	2,23E-06	2,08E-07	0,00E+00	2,12E-08	0,00E+00	4,23E-10	-1,89E-06
EP-marine	kg N eq	3,02E-03	2,79E-03	1,36E-06	4,13E-06	0,00E+00	3,77E-07	-3,47E-04
EP-terrestrial	mole N eq	3,31E-02	3,06E-02	1,49E-05	4,73E-05	0,00E+00	4,14E-06	-3,71E-03
POCP	kg NMVOC eq	9,32E-03	7,95E-03	3,75E-06	9,03E-06	0,00E+00	1,18E-06	-1,03E-03
ADP-minerals & metals	kg Sb eq	1,61E-07	5,41E-09	0,00E+00	3,77E-10	0,00E+00	1,28E-11	-6,64E-08
ADP-fossil	MJ	2,97E+01	4,59E+00	0,00E+00	7,90E-02	0,00E+00	6,99E-03	-1,08E+01
WDP	m3	2,80E-01	9,75E-04	0,00E+00	6,69E-05	0,00E+00	-6,35E-06	-1,76E-02
Acronyms	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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

Use of resources

	Results per functional unit: 1 kg of Grey and Ductile Manhole with Cover							
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,88E-02	5,26E-02	0,00E+00	5,59E-03	0,00E+00	6,28E-04	-3,98E+00
PERM	MJ	2,58E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	3,88E-02	5,26E-02	0,00E+00	5,59E-03	0,00E+00	6,28E-04	-3,98E+00
PENRE	MJ	2,09E-01	4,60E+00	0,00E+00	7,92E-02	0,00E+00	6,99E-03	-1,09E+01
PENRM	MJ	1,25E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,10E-01	4,60E+00	0,00E+00	7,92E-02	0,00E+00	6,99E-03	-1,09E+01
SM	kg	1,93E-03	0,00E+00	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	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,95E-05	6,19E-05	0,00E+00	6,16E-06	0,00E+00	7,87E-08	-1,67E-03
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

Waste and output flows

Waste

	Results per functional unit: 1 kg of Grey and Ductile Manhole with Cover							
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	3,94E-09	1,48E-11	0,00E+00	2,93E-13	0,00E+00	5,77E-13	5,40E-10
NHWD	kg	1,96E-01	4,47E-04	0,00E+00	1,14E-05	0,00E+00	1,00E-02	-2,13E-01
RWD	kg	6,20E-04	5,47E-06	0,00E+00	1,02E-07	0,00E+00	8,13E-08	-4,16E-04
Acronyms	HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed							

Output flows

	Results per functional unit: 1 kg of Grey and Ductile Manhole with Cover							
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,90E-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	0,00E+00
EEE	MJ	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
Acronyms	CRU Components for reuse; MFR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy							

Disclaimers

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals & metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil Quality Index (SQP)	2
Disclaimer 1 – This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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, from radon, and from some construction materials is also not measured by this indicator.		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.		

References

EN 15804:2012+A2	Sustainability of construction works – Environmental product declaration – Core rules for the product category of constructions products
EPD International (2021)	General Programme Instructions of the International EPD® System, version 4.0
SCB (2023)	https://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__MI__MI0305/MI0305T003/table/tableViewLayout1/ Accessed 2023-08-03
ISO 14025:2006	International Standard ISO 14025 – Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14040:2006	International Standard ISO 14040: Environmental Management – Life cycle assessment – Principles and framework. Second edition 2006-07-01.
ISO 14044:2006	International Standard ISO 14044: Environmental Management – Life cycle assessment – Requirements and Guidelines.
PCR 2019:14	PCR 2019:14. v1.2.5. Construction products (EN 15804: A2)

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