ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH
EN 15804+A2+AC,
ISO 14025,
ISO 21930

GEBERIT SILENT-PP PIPE

Geberit International AG

EPD HUB, HUB-0938
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Created with One Click LCA



KNOW HOW INSTALLED

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Geberit International AG
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Contact details	sustainability@geberit.com
Website	www.geberit.com

EPD STANDARDS, SCOPE AND VERIFICATION

Programme operator	EPD Hub, hub@epdhub.com
Reference standards	EN 15804+A2:2019+AC:2021 ISO 14025 ISO 21930
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third-party-verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4 and D
EPD author	Georg Nauenburg
EPD verification	Independent verification of this EPD and data according to ISO 14025 ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorised verifier acting for EPD Hub Limited

The manufacturer retains the sole ownership of, liability and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Geberit Silent-PP pipe
Additional labels	-
Product reference	390.504.14.1
Place of production	Villadose, Italy
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg Geberit Silent-PP pipe
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1.86
GWP-total, A1-A3 ($kgCO_2e$)	1.76
Secondary material, inputs (%)	0.22
Secondary material, outputs (%)	72.7
Total energy use, A1-A3 (kWh)	10.3
Total water use, A1-A3 (m^3e)	0.02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Geberit wants to play a leading role in the transition towards a sustainable sanitary industry. Sustainability has formed an integral component of the corporate strategy for more than 30 years. The Geberit Group has a group ISO certificate in accordance with ISO 9001 (quality), ISO 14001 (environment) and ISO 45001 (occupational health and safety). The company prepared life cycle assessments for key products from an early stage, and eco-design has been an integral part of the product development process since 2007. You can find comprehensive information on sustainability in the current annual report or at https://www.geberit.com/company/sustainability

PRODUCT DESCRIPTION

The Geberit Silent-PP drainage system is a hydraulically and sound-optimised plug -in wastewater system. It consists of robust mineral-reinforced three-layer pipes.
Intended use:

- For draining off wastewater within buildings
- For central vacuum cleaner systems in single-family houses, use dimensions DN 40-50 exclusively.
- For pressure pipes of faeces lifting units according to EN 12050-2 and EN 12050-3, use dimensions DN 32-50 only.

Further information is available in the local online product catalogue.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	27	Europe
Fossil materials	73	Europe
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.026

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg Geberit Silent-PP pipe
Mass per declared unit	1 kg
Functional unit	-
Reference service life	50 years

REACH – SUBSTANCES OF VERY HIGH CONCERN (SVHC)

The product does not contain any REACH SVHC substances in amounts greater than 0.1 % (1,000 ppm).

PRODUCT LIFE CYCLE

SYSTEM BOUNDARY

This EPD covers the life cycle modules listed in the following table.

Product stage			Construction stage		Use stage							End-of-life stage				Beyond system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

MND = Modules not declared.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. The energy used by machines, and handling of waste formed in the production processes at the manufacturing facilities are also included in this stage. Furthermore, the study considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product is made of three layers. The outer layer contains extruded polypropylene (PP) and black carbon. The middle layer consists of PP. The inner layer contains PP and talcum. The pipe has a coupling with an EPDM sealing. The share of external secondary materials in the product is about 0 %. The product does not contain any volatile organic compounds (VOC) or formaldehyde. For the supply of raw materials, the total input of raw materials was mapped with corresponding European data. Further information on supply chain sustainability can be found in Geberit Annual Reports.

The transports from suppliers to Geberit are modelled based on material-class-specific transport distances. The individual transport distances of each supplier are averaged according to the corresponding sales volumes. All A2 transports are carried out by lorry. Transport by rail, air and sea freight is not considered due to lack of relevance. On average, the transport distance from suppliers of raw and semifinished materials is about 580 km.

The production and packaging of the Geberit Silent-PP pipe takes place at the production site in Villadose (IT). The Geberit plant is certified according to ISO 9001, ISO 14001 and ISO 45001. The current Group ISO certificate can be downloaded from https://www.geberit.com. A high share of production waste from plastic extrusion is recycled internally. The material and production-related waste going to external treatment is < 1 % of the material input. The sources of electricity consumed in the Villadose plant for the manufacturing process are modelled with Italian average. The consumption of additives is negligible, i.e. it falls under the cut-off rules.

The production and provision of packaging material are modelled in A3. The finished product is packaged with special wood pallets, straps and pipe holders.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts resulting from final products delivery to construction site (A4) cover direct fuel exhaust emissions and environmental impacts of fuel production, as well as related infrastructure emissions.

Transport from Geberit to customers within Europe is carried out by logistics partners via the modern, efficient Logistics Centre in Pfullendorf (DE) which is certified according to ISO 9001, ISO 14001 and ISO 45001. Distribution to countries outside Europe is not taken into account due to lack of relevance.

The following information has been considered:

- The majority of transports within Europe are carried out by lorry. Therefore, intercontinental transport by sea and air is not considered.

- The majority of vehicles in use are > 32 t Euro 6 class (> 85 %).
- The average transport distance in Europe from the production site to the Logistics Centre and to the consumer is approximately 580 km.

Further information on logistics and how we consider ecological aspects of transport can be found in the Geberit Annual Report.

In A5, there are no relevant environmental impacts during installation. Therefore, only the preparation of the waste treatment of packaging materials is taken into account in A5. Wooden pallets are assumed to be disposed of in the municipal waste incineration plant. Plastics are assumed to be disposed of in the municipal waste incineration plant.

PRODUCT USE AND MAINTENANCE (B1-B7)

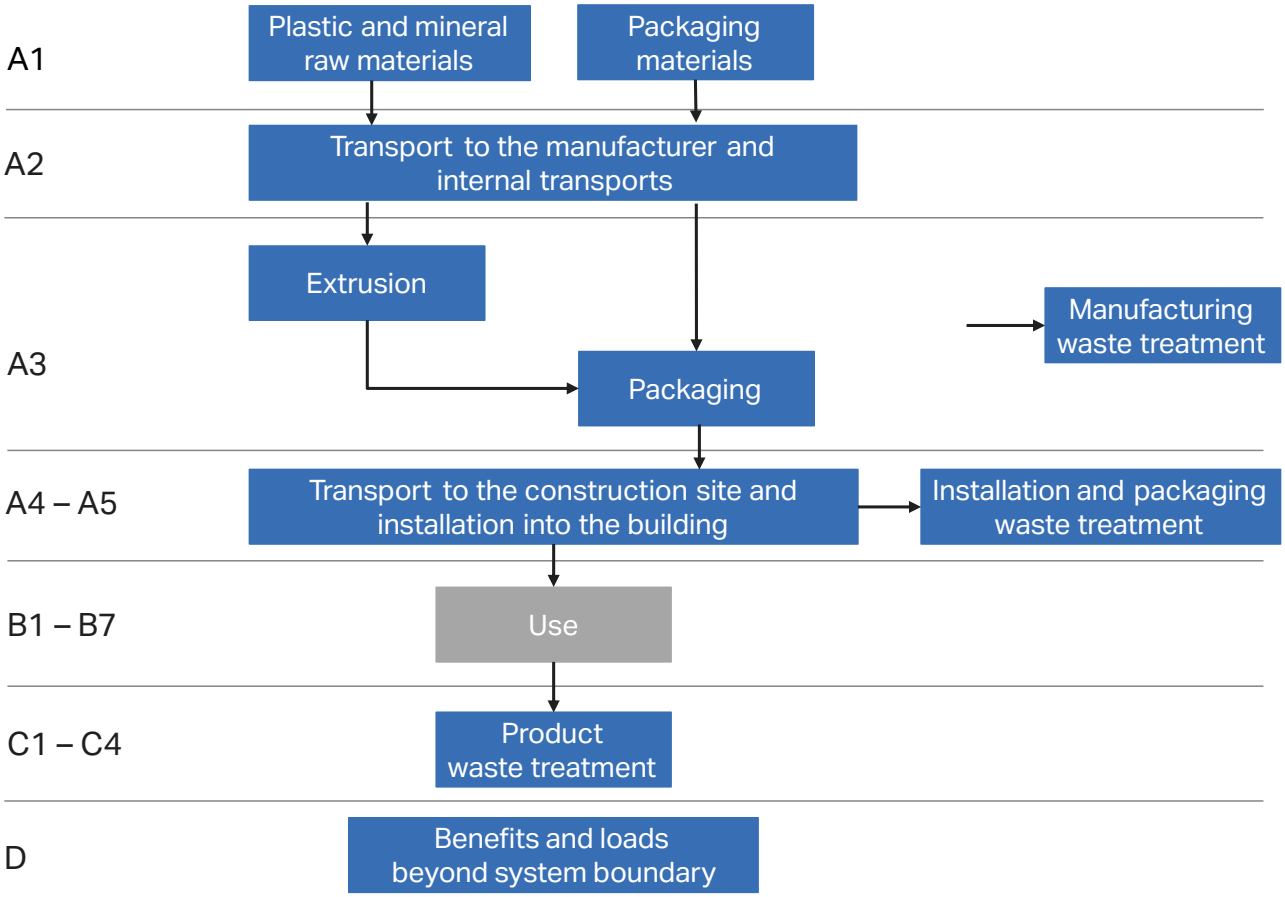
The product use and maintenance phases are not considered. Air, soil and water impacts during the use phase have not been studied.
The product does not consume any electricity in use and has no moving parts. Periodic maintenance is not necessary.
The resistance to aging depends on the strength of the mechanical, thermal and chemical stress, the resistance of the material and the wall thickness of the pipe and its proper functioning. Under conditions normally encountered in wastewater pipes in buildings, Geberit Silent-PP has a service life of at least 50 years.

PRODUCT END-OF-LIFE (C1-C4, D)

As the consumption of energy and natural resources is negligible for disassembling the end-of-life product, the impacts of demolition are assumed to be zero (C1). The end-of-life product is assumed to be sent to the closest waste disposal facilities by lorry, which is estimated to be 50 km away (C2). It is generally assumed that all waste is collected and professionally separated after demolition on the construction site. The type of waste treatment is determined on the basis of the material class. Plastics are disposed of in the municipal waste incineration plant. Although the plastic components of the product are basically suitable for recycling due to their material properties, they are conservatively modelled with thermal energy recovery. The mineral material of the product is assumed to be disposed of in the inert material landfill. The product is not biodegradable.

In module D, the thermal treatment of plastics generates benefits. This covers energy and heat produced from the incineration in a waste incineration plant. Waste of packaging materials in A5 have benefits and loads that are also considered.

MANUFACTURING PROCESS



LIFE CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes that are stated as mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes for which data is available are included in the calculation. There is no neglected unit process with more than 1 % of total mass or energy flows. The module-specific total neglected input and output flows also do not exceed 5 % of energy use or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are made as per the reference standards and the applied PCR. In this study, allocations have been made in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	-
Variation in GWP-fossil for A1-A3	-

This EPD is product and factory-specific and does not contain average calculations. Primary data refers to the manufacturing site in Villadose (IT). The data of a Geberit Silent-PP pipe d110 with a length of 1 m (article number 390.504.14.1) was chosen as a reference product. The results can be scaled linearly for articles listed in Annex.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using the One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards, ISO 14040 and ISO 14044. Ecoinvent 3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP[1]–total	kg CO_2e	1,48E+00	5,31E-02	2,29E-01	1,76E+00	5,65E-02	2,07E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,60E-03	1,99E+00	1,44E-03	-1,36E+00
GWP–fossil	kg CO_2e	1,48E+00	5,31E-02	3,24E-01	1,86E+00	5,64E-02	1,12E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,60E-03	1,99E+00	1,44E-03	-1,36E+00
GWP–biogenic	kg CO_2e	1,81E-03	0,00E+00	-9,45E-02	-9,27E-02	0,00E+00	9,45E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,77E-03	-1,41E-06	0,00E+00
GWP–luluc[2]	kg CO_2e	3,90E-04	1,99E-05	1,37E-04	5,47E-04	2,12E-05	5,03E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,70E-06	8,07E-05	1,36E-06	-8,88E-04
Ozone depletion pot.	kg CFC_{-11}e	4,66E-08	1,32E-08	3,39E-08	9,37E-08	1,41E-08	4,48E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,08E-09	4,08E-09	5,82E-10	-7,30E-08
Acidification potential	mol H^+e	5,26E-03	1,72E-04	1,44E-03	6,87E-03	1,80E-04	5,22E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,82E-05	4,45E-04	1,35E-05	-1,06E-02
EP[3]-freshwater	kg Pe	1,99E-05	3,82E-07	8,33E-06	2,87E-05	4,03E-07	1,20E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,64E-08	1,80E-06	1,51E-08	-7,43E-05
EP-marine	kg Ne	8,74E-04	3,86E-05	2,41E-04	1,15E-03	3,97E-05	2,21E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,13E-06	1,73E-04	4,68E-06	-1,23E-03
EP-terrestrial	mol Ne	9,58E-03	4,28E-04	2,75E-03	1,28E-02	4,40E-04	2,45E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,66E-05	1,85E-03	5,15E-05	-1,44E-02
POCP[4] ('smog')	kg NMVOCe	4,57E-03	1,66E-04	9,03E-04	5,64E-03	1,73E-04	6,45E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,88E-05	4,87E-04	1,50E-05	-3,98E-03
ADP-minerals & metals	kg Sbe	1,02E-05	1,30E-07	1,19E-06	1,15E-05	1,38E-07	4,86E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,09E-08	7,78E-07	3,30E-09	-1,03E-06
ADP[5]-fossil resources	MJ	5,28E+01	8,46E-01	6,55E+00	6,02E+01	9,02E-01	4,67E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,02E-02	5,42E-01	3,94E-02	-1,64E+01
Water use	m^3e depr.	6,14E-01	3,90E-03	1,81E-01	7,99E-01	4,16E-03	6,08E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,17E-04	7,88E-02	1,25E-04	-2,33E-01

1) GWP = Global warming potential; 2) luluc = land use and land use change; 3) EP = Eutrophication potential; 4) POCP = Photochemical ozone creation potential; 5) ADP = Abiotic depletion potential

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,79E-08	6,16E-09	8,83E-09	7,29E-08	6,55E-09	6,38E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,31E-10	6,69E-09	2,72E-10	-9,27E-08
Ionizing radiation	kBq U235e	8,82E-02	4,34E-03	3,72E-02	1,30E-01	4,65E-03	3,10E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,42E-04	4,26E-03	1,78E-04	-2,00E-01
Ecotoxicity, freshwater	CTUe	8,62E+00	7,05E-01	3,07E+00	1,24E+01	7,50E-01	1,24E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,19E-02	1,59E+00	2,57E-02	-3,00E+01
Human toxicity, cancer	CTUh	3,79E-10	1,83E-11	2,08E-10	6,06E-10	1,95E-11	3,68E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,54E-12	2,32E-10	6,43E-13	-4,16E-10
Human tox. non-cancer	CTUh	9,26E-09	7,17E-10	2,94E-09	1,29E-08	7,63E-10	3,07E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,17E-11	3,84E-09	1,68E-11	-1,37E-08
SQP[6]	-	1,55E+00	9,85E-01	8,27E+00	1,08E+01	1,05E+00	5,45E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,11E-02	7,54E-01	8,43E-02	-1,00E+01

6) SQP = Potential soil quality index

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER[7] as energy	MJ	8,01E-01	1,09E-02	1,47E+00	2,29E+00	1,17E-02	3,12E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,23E-04	4,74E-02	3,42E-04	-3,07E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	8,28E-01	8,28E-01	0,00E+00	-8,28E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	8,01E-01	1,09E-02	2,30E+00	3,11E+00	1,17E-02	-8,25E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,23E-04	4,74E-02	3,42E-04	-3,07E+00
Non-ren. PER as energy	MJ	2,87E+01	8,46E-01	5,12E+00	3,47E+01	9,02E-01	4,67E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,02E-02	5,42E-01	3,94E-02	-1,64E+01
Non-ren. PER as material	MJ	2,40E+01	0,00E+00	1,05E+00	2,51E+01	0,00E+00	-1,43E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,37E+01	0,00E+00	0,00E+00
Total use of non-ren. PER	MJ	5,28E+01	8,46E-01	6,18E+00	5,98E+01	9,02E-01	-1,38E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,02E-02	-2,31E+01	3,94E-02	-1,64E+01
Secondary materials	kg	2,19E-03	2,38E-04	3,64E-03	6,07E-03	2,54E-04	1,79E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,96E-05	2,71E-03	8,28E-06	-1,36E-03
Renew. secondary fuels	MJ	3,96E-04	2,11E-06	2,80E-02	2,84E-02	2,24E-06	1,27E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,91E-07	2,11E-05	2,16E-07	-8,56E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,59E-02	1,12E-04	5,18E-03	2,12E-02	1,20E-04	7,78E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,15E-06	5,61E-04	4,32E-05	-1,27E-02

7) PER = Primary energy resources

END-OF-LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,52E-02	9,16E-04	2,08E-02	5,69E-02	9,67E-04	4,53E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,83E-05	7,84E-03	0,00E+00	-1,08E-01
Non-hazardous waste	kg	8,51E-01	1,59E-02	3,59E-01	1,23E+00	1,68E-02	1,26E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,47E-03	8,40E-01	2,73E-01	-5,16E+00
Radioactive waste	kg	3,50E-05	5,83E-06	1,22E-05	5,30E-05	6,22E-06	1,49E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,74E-07	1,65E-06	0,00E+00	-7,34E-05

END-OF-LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec.	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,77E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,71E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming pot.	kg CO_2e	1,40E+00	5,26E-02	3,16E-01	1,77E+00	5,59E-02	1,12E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,55E-03	1,98E+00	1,41E-03	-1,34E+00
Ozone depletion pot.	kg $CFC_{-11}e$	3,86E-08	1,04E-08	2,93E-08	7,84E-08	1,12E-08	3,82E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,56E-10	3,55E-09	4,60E-10	-5,97E-08
Acidification	kg SO_2e	4,41E-03	1,39E-04	1,19E-03	5,74E-03	1,46E-04	3,70E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,43E-05	3,28E-04	1,02E-05	-9,06E-03
Eutrophication	kg PO_4^3e	9,99E-04	2,95E-05	5,16E-04	1,54E-03	3,09E-05	5,51E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,21E-06	5,58E-04	2,20E-06	-2,62E-03
POCP ('smog')	kg C_2H_4e	2,84E-04	6,41E-06	7,03E-05	3,61E-04	6,80E-06	1,62E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,81E-07	1,56E-05	4,28E-07	-3,88E-04
ADP-elements	kg Sbe	1,01E-05	1,26E-07	1,18E-06	1,14E-05	1,34E-07	4,70E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,06E-08	7,62E-07	3,26E-09	-1,02E-06
ADP-fossil	MJ	5,28E+01	8,46E-01	6,55E+00	6,02E+01	9,02E-01	4,67E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,02E-02	5,42E-01	3,94E-02	-1,64E+01

ANNEX: ARTICLES COVERED BY THIS EPD

Article number	Product description	d / outer diameter [mm]	DN / inner diameter [mm]	L / Length [m]	Specific net weight [kg per m]	Net weight [kg per item]	GWP-fossil, A1-A3 [kg CO_2e/kg]	GWP-fossil, A1-A3 [kg CO_2e/m]	GWP-fossil, A1-A3 [kg CO_2e/item]
390.000.14.1	pipe with socket PP-MD d32x2 L15	32	28	0.15	0.28	0.04	1.86	0.08	0.01
390.100.14.1	pipe with socket PP-MD d40x2 L15	40	36	0.15	0.39	0.06	1.86	0.11	0.02
390.200.14.1	pipe with socket PP-MD d50x2 L15	50	46	0.15	0.51	0.08	1.86	0.14	0.02
390.300.14.1	pipe with socket PP-MD d75x2.6 L15	75	69.8	0.15	0.94	0.14	1.86	0.26	0.04
390.400.14.1	pipe with socket PP-MD d90x3.1 L15	90	83.8	0.15	1.49	0.22	1.86	0.41	0.06
390.500.14.1	pipe with socket PP-MD d110x3.6 L15	110	102.8	0.15	2.12	0.32	1.86	0.59	0.09
390.600.14.1	pipe with socket PP-MD d125x4.2 L15	125	116.6	0.15	3.20	0.48	1.86	0.89	0.13
390.700.14.1	pipe with socket PP-MD d160x5.2 L15	160	149.6	0.15	5.07	0.76	1.86	1.41	0.21
390.001.14.1	pipe with socket PP-MD d32 x2 L25	32	28	0.25	0.26	0.06	1.86	0.12	0.03
390.101.14.1	pipe with socket PP-MD d40x2 L25	40	36	0.25	0.29	0.07	1.86	0.13	0.03
390.201.14.1	pipe with socket PP-MD d50x2 L25	50	46	0.25	0.41	0.10	1.86	0.19	0.05
390.301.14.1	pipe with socket PP-MD d75x2.6 L25	75	69.8	0.25	0.82	0.21	1.86	0.38	0.10
390.401.14.1	pipe with socket PP-MD d90x3.1 L25	90	83.8	0.25	1.24	0.31	1.86	0.58	0.14
390.501.14.1	pipe with socket PP-MD d110x3.6 L25	110	102.8	0.25	1.82	0.45	1.86	0.84	0.21
390.601.14.1	pipe with socket PP-MD d125x4.2 L25	125	116.6	0.25	2.45	0.61	1.86	1.14	0.29
390.701.14.1	pipe with socket PP-MD d160x5.2 L25	160	149.6	0.25	4.14	1.03	1.86	1.92	0.48
390.002.14.1	pipe with socket PP-MD d32 x2 L50	32	28	0.5	0.22	0.11	1.86	0.21	0.10
390.102.14.1	pipe with socket PP-MD d40x2 L50	40	36	0.5	0.29	0.14	1.86	0.27	0.13
390.202.14.1	pipe with socket PP-MD d50x2 L50	50	46	0.5	0.38	0.19	1.86	0.35	0.17
390.302.14.1	pipe with socket PP-MD d75x2.6 L50	75	69.8	0.5	0.73	0.37	1.86	0.68	0.34

390.402.14.1	pipe with socket PP-MD d90x3.1 L50	90	83.8	0.5	1.12	0.56	1.86	1.04	0.52
390.502.14.1	pipe with socket PP-MD d110x3.6 L50	110	102.8	0.5	1.59	0.79	1.86	1.47	0.74
390.602.14.1	pipe with socket PP-MD d125x4.2 L50	125	116.6	0.5	2.16	1.08	1.86	2.01	1.00
390.702.14.1	pipe with socket PP-MD d160x5.2 L50	160	149.6	0.5	3.53	1.77	1.86	3.28	1.64
390.004.14.1	pipe with socket PP-MD d32x2 L100	32	28	1	0.21	0.21	1.86	0.40	0.40
390.104.14.1	pipe with socket PP-MD d40x2 L100	40	36	1	0.27	0.27	1.86	0.51	0.51
390.204.14.1	pipe with socket PP-MD d50x2 L100	50	46	1	0.35	0.35	1.86	0.65	0.65
390.304.14.1	pipe with socket PP-MD d75x2.6 L100	75	69.8	1	0.50	0.50	1.86	0.93	0.93
390.404.14.1	pipe with socket PP-MD d90x3.1 L100	90	83.8	1	1.01	1.01	1.86	1.88	1.88
390.504.14.1	pipe with socket PP-MD d110x3.6 L100	110	102.8	1	1.48	1.48	1.86	2.74	2.74
390.604.14.1	pipe with socket PP-MD d125x4.2 L100	125	116.6	1	1.99	1.99	1.86	3.69	3.69
390.704.14.1	pipe with socket PP-MD d160x5.2 L100	160	149.6	1	3.10	3.10	1.86	5.76	5.76
390.005.14.1	pipe with socket PP-MD d32x2 L150	32	28	1.5	0.13	0.20	1.86	0.37	0.56
390.105.14.1	pipe with socket PP-MD d40x2 L150	40	36	1.5	0.27	0.40	1.86	0.75	1.12
390.205.14.1	pipe with socket PP-MD d50x2 L150	50	46	1.5	0.34	0.51	1.86	0.95	1.42
390.305.14.1	pipe with socket PP-MD d75x2.6 L150	75	69.8	1.5	0.67	1.01	1.86	1.88	2.82
390.405.14.1	pipe with socket PP-MD d90x3.1 L150	90	83.8	1.5	0.99	1.48	1.86	2.75	4.13
390.505.14.1	pipe with socket PP-MD d110x3.6 L150	110	102.8	1.5	1.43	2.15	1.86	4.00	5.99
390.605.14.1	pipe with socket PP-MD d125x4.2 L150	125	116.6	1.5	1.87	2.80	1.86	5.21	7.81
390.705.14.1	pipe with socket PP-MD d160x5.2 L150	160	149.6	1.5	3.00	4.50	1.86	8.37	12.56
390.006.14.1	pipe with socket PP-MD d32 x2 L200	32	28	2	0.20	0.40	1.86	0.74	1.49
390.106.14.1	pipe with socket PP-MD d40x2 L200	40	36	2	0.27	0.53	1.86	0.99	1.98
390.206.14.1	pipe with socket PP-MD d50x2 L200	50	46	2	0.34	0.67	1.86	1.25	2.50
390.306.14.1	pipe with socket PP-MD d75x2.6 L200	75	69.8	2	0.67	1.33	1.86	2.48	4.95

390.406.14.1	pipe with socket PP-MD d90x3.1 L200	90	83.8	2	0.98	1.95	1.86	3.63	7.25
390.506.14.1	pipe with socket PP-MD d110x3.6 L200	110	102.8	2	1.41	2.83	1.86	5.25	10.51
390.606.14.1	pipe with socket PP-MD d125x4.2 L200	125	116.6	2	1.80	3.60	1.86	6.70	13.39
390.706.14.1	pipe with socket PP-MD d160x5.2 L200	160	149.6	2	3.00	6.00	1.86	11.16	22.32
390.007.14.1	pipe with socket PP-MD d32 x2 L300	32	28	3	0.20	0.60	1.86	1.12	3.35
390.107.14.1	pipe with socket PP-MD d40x2 L300	40	36	3	0.26	0.79	1.86	1.47	4.41
390.207.14.1	pipe with socket PP-MD d50x2 L300	50	46	3	0.33	1.00	1.86	1.86	5.58
390.307.14.1	pipe with socket PP-MD d75x2.6 L300	75	69.8	3	0.66	1.97	1.86	3.67	11.01
390.407.14.1	pipe with socket PP-MD d90x3.1 L300	90	83.8	3	0.96	2.89	1.86	5.37	16.12
390.507.14.1	pipe with socket PP-MD d110x3.6 L300	110	102.8	3	1.39	4.18	1.86	7.77	23.32
390.607.14.1	pipe with socket PP-MD d125x4.2 L300	125	116.6	3	1.83	5.50	1.86	10.23	30.69
390.707.14.1	pipe with socket PP-MD d160x5.2 L300	160	149.6	3	3.03	9.08	1.86	16.89	50.68

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier. The process involved reviewing results, documents and compliance with the reference standards, ISO 14025, ISO 14040 and ISO 14044 following the process and checklists of the programme operator for:

- This Environmental Product Declaration
- The Life Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online.

This EPD has been generated by the One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorised verifier acting for EPD Hub Limited

24 January 2024

