ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Greenpipe Snipp&Snapp Hardlock 110
Greenpipe Group AB

EPD HUB, HUB-1083
Published on 09.02.2024, last updated on 09.02.2024, valid until 09.02.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Greenpipe Group AB
Address	Storgatan 82B
Contact details	info@greenpipe.se
Website	www.greenpipegroup.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16903 Product Category Rules (PCR) for buried plastics piping systems
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, D
EPD author	Tobias Svensson, Greenpipe Group AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the 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 and if they are not compared in a building context.

PRODUCT

Product name	Greenpipe Snipp Snapp Hardlock 110
Additional labels	Snipp&Snapp Orginal 110SRS
Product reference	Length 1m. Outer diameter 110 / inner diameter 99
Place of production	Väckelsång 24, 362 50 Väckelsång, Sweden
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not Relevant

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m Interlocking Split pipe
Declared unit mass	2.8 kg
GWP-fossil, A1-A3 (kgCO2e)	1,37E+00
GWP-total, A1-A3 (kgCO2e)	6,69E-01
Secondary material, inputs (%)	100.0
Secondary material, outputs (%)	2.5
Total energy use, A1-A3 (kWh)	16.7
Total water use, A1-A3 (m3e)	3,65E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Greenpipe is a Swedish company that leads in the development and production of innovative, eco-friendly infrastructure solutions. Our expansive offering includes divisible cable protection pipes and sustainable foundations, designed for an array of applications including park facilities, lighting systems, and electric vehicle charging stations.

PRODUCT DESCRIPTION

Greenpipe Snipp & Snapp Hardlock™ 110 is a divisible protection pipe made from recycled plastic. It comes in one-meter length and can be angled to bends of up to 15 degrees per connecting piece. Hardlock™ 110 has an outside diameter of 110mm and an inside diameter of 99mm, complete with a molded sleeve and three pre-installed locking clamps in the color of your choice. The divisible pull-resistant sleeve embodies the perfect blend of functionality and security, continually guarding your line even across expansive distances.

Greenpipe Snipp & Snapp Hardlock™ 110 is classified as 750N/SN8/SRS.

Further information can be found at www.greenpipegroup.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	-	-
Fossil materials	100	Sweden and Germany
Bio-based materials	-	-

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	0.2272

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m Interlocking Split pipe
Mass per declared unit	2.8 kg
Functional unit	-
Reference service life	100 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

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

Product stage			Assembly stage		Use stage							End of life stage				Beyond the 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	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

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. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product is crafted using recycled polypropylene (PP) with EPDM. In this particular model, recycled polyethylene (PE) serves as a substitute. The raw materials are derived from car bumpers, processed through granulation by a material supplier, and then transported to the production site. The granulate is fed into an injection mold to create pipes, calibrated to precise dimensions, cooled, and subsequently packaged. Material loss is insignificant and is closed-loop recycled. The final product is carefully wrapped with stretch film. The prepared and packaged items are delivered to construction sites on pallets.

TRANSPORT AND INSTALLATION (A4-A5)

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

Transportation is characterized by the mean distance to construction sites, derived from sales data. The transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilisation factor is assumed to be 100 for the nested packaged products. Wooden pallets are assumed to be incinerated with energy recovery, and plastic waste for packaging is recycled.

Environmental impacts from installation into the building include waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets. The impacts of material production, its processing and its disposal as installation waste are also included.

PRODUCT USE AND MAINTENANCE (B1-B7)

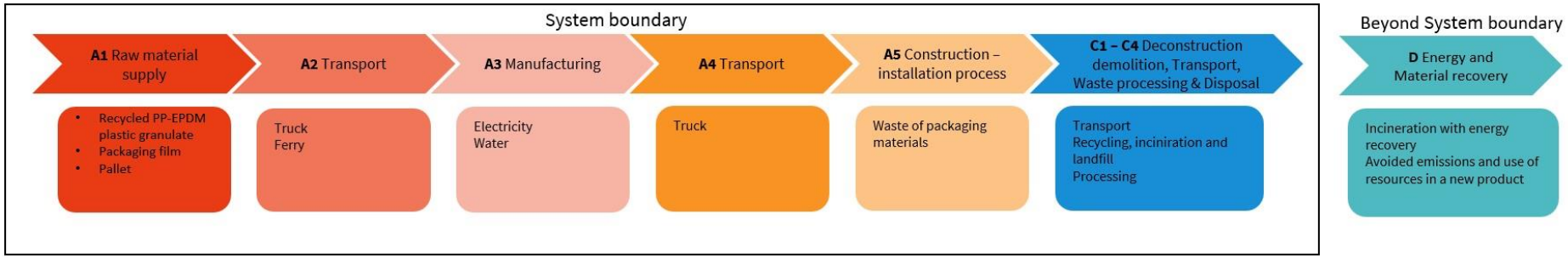
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-c4, D)

Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are

assumed negligible (C1). After ca 100 years of service life 5% of the end-of-life product is assumed to be sent to the closest treatment facilities (C2). The collected 5% from the demolition site is sent to recycling (C3) where 2,5% will be recycled for material and 2,5% for energy recovery. The remaining 95% is left inert under the ground (C4). (EoL scenarios referenced from EN 16903 Plastics piping systems. Environmental product declarations) Due to the recycling of PP, the end-of-life product is converted into recycled PP (D). The benefits and loads of waste packaging materials in A5 are also considered in module D.

MANUFACTURING PROCESS AND SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated 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 for, are included in the calculation. There is no neglected unit process 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 usage 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 done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

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

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not Relevant

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 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 – total[1)]	kg CO_2e	8,95E-01	1,71E-01	-3,97E-01	6,69E-01	2,79E-01	7,39E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,70E-04	1,17E-02	3,37E-01	-1,42E-01
GWP – fossil	kg CO_2e	8,94E-01	1,71E-01	3,08E-01	1,37E+00	2,79E-01	2,08E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,70E-04	1,17E-02	3,37E-01	-1,41E-01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-7,18E-01	-7,18E-01	0,00E+00	7,18E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,89E-04
GWP – LULUC	kg CO_2e	1,47E-03	6,40E-05	1,25E-02	1,41E-02	1,22E-04	2,03E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,28E-07	7,14E-06	2,96E-05	-1,22E-03
Ozone depletion pot.	kg CFC_{-11}e	8,39E-08	4,26E-08	2,74E-08	1,54E-07	6,40E-08	1,43E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,32E-10	2,39E-10	8,53E-09	-1,74E-08
Acidification potential	mol H^+e	4,84E-03	5,44E-04	2,02E-03	7,40E-03	2,13E-03	7,01E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,62E-06	1,92E-05	2,42E-04	-2,43E-03
EP-freshwater[2)]	kg Pe	6,47E-05	1,22E-06	1,84E-05	8,43E-05	1,82E-06	5,07E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,07E-09	1,52E-07	4,63E-07	-9,13E-06
EP-marine	kg Ne	1,07E-03	1,20E-04	4,31E-04	1,62E-03	5,00E-04	1,63E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,23E-07	5,57E-06	1,39E-04	-5,39E-04
EP-terrestrial	mol Ne	1,08E-02	1,33E-03	5,04E-03	1,71E-02	5,55E-03	1,78E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,59E-06	5,84E-05	8,97E-04	-8,74E-03
POCP ("smog")[3)]	kg NMVOCe	3,01E-03	5,24E-04	1,53E-03	5,06E-03	1,63E-03	5,17E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,38E-06	1,78E-05	3,31E-04	-1,58E-03
ADP-minerals & metals[4)]	kg Sbe	8,34E-06	4,18E-07	1,28E-05	2,16E-05	8,53E-07	7,63E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,06E-09	6,85E-08	9,66E-08	-3,50E-07
ADP-fossil resources	MJ	1,59E+01	2,73E+00	2,56E+01	4,42E+01	4,10E+00	1,84E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,48E-03	3,48E-02	6,54E-01	-2,81E+00
Water use[5)]	m^3e depr.	3,65E-01	1,26E-02	9,95E-01	1,37E+00	1,81E-02	3,19E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,97E-05	1,51E-03	3,91E-03	-6,94E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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 as energy[8)]	MJ	2,45E+00	3,53E-02	1,39E+01	1,64E+01	5,40E-02	1,40E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-04	4,15E-03	1,21E-02	-8,87E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	6,29E+00	6,29E+00	0,00E+00	-6,29E+00	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	2,45E+00	3,53E-02	2,01E+01	2,26E+01	5,40E-02	-6,27E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-04	4,15E-03	1,21E-02	-8,87E+00
Non-re. PER as energy	MJ	1,59E+01	2,73E+00	2,49E+01	4,35E+01	4,10E+00	1,84E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,49E-03	3,48E-02	6,54E-01	-2,80E+00
Non-re. PER as material	MJ	1,19E+02	0,00E+00	2,58E+00	1,21E+02	0,00E+00	-2,58E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,07E+02	-1,19E+01	0,00E+00
Total use of non-re. PER	MJ	1,35E+02	2,73E+00	2,75E+01	1,65E+02	4,10E+00	-2,40E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,49E-03	-1,07E+02	-1,12E+01	-2,80E+00
Secondary materials	kg	2,97E+00	7,68E-04	7,63E-02	3,04E+00	1,39E-03	2,23E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,89E-06	2,31E-04	2,34E-04	-5,91E-04
Renew. secondary fuels	MJ	9,16E-05	6,78E-06	2,12E-01	2,12E-01	1,30E-05	1,67E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,18E-08	1,89E-06	8,99E-06	-3,35E-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	1,12E-02	3,62E-04	2,49E-02	3,65E-02	4,88E-04	8,07E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,08E-06	3,75E-05	7,00E-04	-2,42E-03

8) 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	5,74E-02	2,92E-03	2,94E-02	8,97E-02	4,68E-03	1,34E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,65E-06	7,55E-04	0,00E+00	-1,11E-02
Non-hazardous waste	kg	3,05E+00	5,08E-02	7,54E-01	3,86E+00	7,62E-02	2,46E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,72E-04	1,09E-02	2,66E+00	1,01E-01
Radioactive waste	kg	1,08E-04	1,88E-05	3,62E-04	4,88E-04	2,83E-05	7,86E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,84E-08	1,59E-07	0,00E+00	-2,83E-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 re-use	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	5,10E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,00E-02	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	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

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	9,53E-01	1,69E-01	3,16E-01	1,44E+00	2,76E-01	2,04E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,65E-04	1,15E-02	2,74E-01	-1,39E-01
Ozone depletion Pot.	kg CFC_{-11}e	6,96E-08	3,37E-08	2,34E-08	1,27E-07	5,07E-08	1,15E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,05E-10	2,07E-10	6,77E-09	-1,67E-08
Acidification	kg SO_2e	3,96E-03	4,41E-04	1,60E-03	6,00E-03	1,71E-03	5,66E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,33E-06	1,49E-05	1,84E-04	-1,72E-03
Eutrophication	kg PO_4^3e	2,92E-03	9,35E-05	8,36E-04	3,85E-03	2,50E-04	4,45E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,87E-07	3,92E-05	1,26E-02	-4,63E-04
POCP (“smog”)	kg C_2H_4e	1,80E-04	2,06E-05	1,26E-04	3,27E-04	5,71E-05	2,75E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,71E-08	1,20E-06	5,01E-05	-9,91E-05
ADP-elements	kg Sbe	8,27E-06	4,06E-07	1,29E-05	2,15E-05	8,33E-07	7,55E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,01E-09	6,79E-08	9,31E-08	-3,51E-07
ADP-fossil	MJ	1,59E+01	2,73E+00	2,55E+01	4,41E+01	4,10E+00	1,84E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,48E-03	3,47E-02	6,54E-01	-2,80E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program 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 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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
09.02.2024

VERIFIED ISO 14025