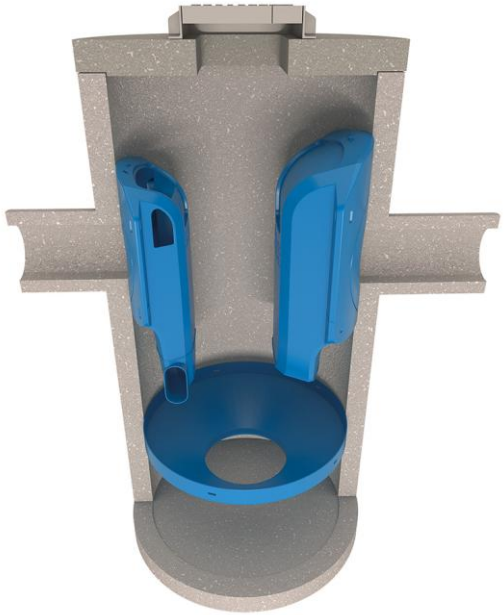
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Downstream Defender® Select 1.2m Advanced Vortex
Hydro International



EPD HUB, HUB-3858
Published on 22.08.2025, last updated on 22.08.2025, valid until 22.08.2030
Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1, 5 Dec 2023 and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Hydro International
Address	Unit 2, Rivermead Court, Kenn Business Park, Windmill Road, Kenn, Clevedon, BS21 6FT, Clevedon, GB
Contact details	enquiries@hydro-int.com
Website	https://hydro-int.com/en

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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Harvey Farrington-Thorne, Hydro International
EPD verification	Independent verification of this EPD and data, according to ISO 14025: o Internal verification þ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	Downstream Defender® Select 1.2m Advanced Vortex
Additional labels	-
Product reference	DDS
Place(s) of raw material origin	Global/Europe
Place of production	Bristol, United Kingdom
Place(s) of installation and use	United Kingdom
Period for data	2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	0
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	92.5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	4391 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	7.97E+02
GWP-total, A1-A3 ($kgCO_2e$)	8.07E+02
Secondary material, inputs (%)	0.98
Secondary material, outputs (%)	69.3
Total energy use, A1-A3 (kWh)	1110
Net freshwater use, A1-A3 (m^3)	18.1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Hydro International Ltd, a CRH company, provides advanced products, services and expertise to help municipal, industrial and construction customers to improve their water management processes, increase operational performance and reduce environmental impact.

With over 40 years of experience and a reputation for engineering excellence, businesses and public organisations all over the world rely on Hydro International products and services to reduce flood risk, improve water treatment and protect the environment from water pollution.

has a network of over 80 distribution partners and serves customers in more than 40 countries.

PRODUCT DESCRIPTION

The Downstream Defender® Select is the new generation of hydrodynamic vortex separators for treatment of stormwater runoff to protect the environment and meet water quality requirements. The Downstream Defender® Select reliably treats runoff from any impermeable surfaces: highways, car parks, industrial areas; pre-treatment for natural features such as swales, ponds and detention basins; for use with other natural Sustainable Drainage Systems (SuDS) treatment to meet required performance standards; retrofit; as part of SuDS, Water Sensitive Urban Design (WSUD), LID or LEED systems; areas where high solids and trash/litter capture are a must.

Further information can be found at https://hydro-int.com/en.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0.17	EU/Global
Minerals	98.97	UK
Fossil materials	0.86	EU/Global
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	0.0136

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit
Mass per declared unit	4345 kg
Functional unit	-
Reference service life	-

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	Deconstruction/ demolition	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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

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. 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. Each Downstream Defender® Select is manufactured from concrete, HDPE, stainless steel and EPDM rubber. The primary production process is for the plastic internals, which involves rotational moulding HDPE and trimming them down after they are removed from the mould. These internals are then fastened into a pre-cast 1.2m concrete chamber with stainless steel fixings, and rubber seals. The internals are packaged with cardboard, shrink wrap and a wooden pallet for safe transport prior to installation into the concrete chamber and subsequent transport to site.

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 impacts that occurred from final product delivery to the construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The installation on site scenario assumes a conservative estimate for the impact of moving the unit on site. As the product is bespoke the installation losses are considered negligible.

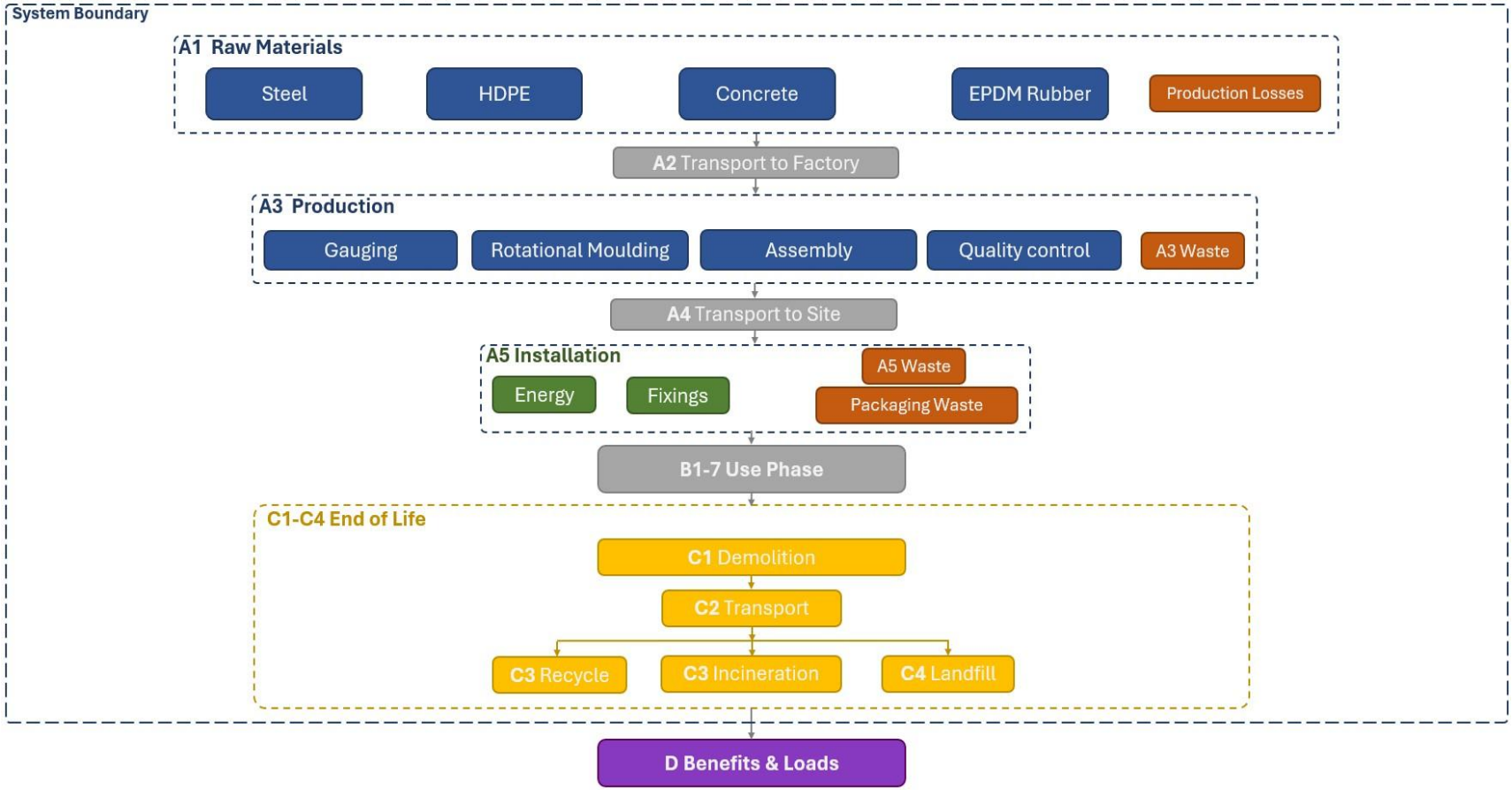
PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase is not relevant in this EPD.
Air, soil, and water impacts during the use phase have not been studied.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

For the removal of the Downstream Defender® Select from the site, a conservative estimate for the impacts of moving the unit on site is assumed. Transportation distance to waste facilities is assumed to be 50 km. All other end of life scenarios is considered as the EU average for the respective materials.

MANUFACTURING PROCESS



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 that is 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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

The following is a list of the exclusions we made in accordance with the cut-off criteria. All items are ancillaries used in the manufacture of the product. Between them they add up to less than 1% of the total mass of the product (which is what the % next to each item represents). We also modelled them to ensure there were not any disproportionate impacts associated and none could be found. So, they were excluded for simplicity. The ones included are also a very small % of the total mass and also have very low impacts. We decided to keep those ones in to improve transparency and to have some recorded ancillaries.

-Polyethylene Bag- <0.01%
-Skirt packer-HDPE- <0.01%
Total cut-off percentage: ≈0.01%

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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 according to 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 material	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

All estimations and assumptions regarding the cut off criteria and the allocation are declared in the part "Cut-off Criteria except the estimations/assumptions below:

Proxy data is used for certain materials and processes due to their unavailability in the database.
- Module A1: HDPE elements are assumed to be made of 100% recycled HDPE.
- Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible.
- Module A4: Transportation does not cause losses as products are packaged properly.
- Module A5: Lifting equipment is declared as installation waste.
- Module C2:
- Module C3, C4, D: The product undergoes separate collection, and a certain percentage of each material is assumed to be recycled, incinerated and landfilled. Typically, 70% of the concrete is recycled and 30% is sent to landfill. 34% of the waste HDPE is recycled, 41% energy, and 25% is sent to landfill. The steel for bolts, anchors etc. is 95% recycled and 5% landfill. Ash from incineration processes is assumed negligible. The recycled end-of-life materials are assumed to serve as secondary raw materials in manufacturing while the materials incinerated displace electricity and heat production.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	0

There is no average result in this EPD as it represents a single product from a single manufacturing location.

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. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2’.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	7.21E+02	2.85E+01	5.72E+01	8.07E+02	2.47E+02	1.65E+00	MND	MND	MND	MND	MND	MND	MND	3.61E-03	4.19E+01	7.20E+01	1.71E+01	-9.27E+01
GWP – fossil	kg CO_2e	7.12E+02	2.85E+01	5.69E+01	7.97E+02	2.47E+02	1.65E+00	MND	MND	MND	MND	MND	MND	MND	3.60E-03	4.19E+01	7.20E+01	1.71E+01	-9.29E+01
GWP – biogenic	kg CO_2e	9.72E+00	6.09E-03	4.90E-02	9.77E+00	4.93E-02	2.96E-05	MND	MND	MND	MND	MND	MND	MND	3.68E-07	8.32E-03	-3.18E-03	-3.59E-03	2.74E-01
GWP – LULUC	kg CO_2e	2.32E-01	1.28E-02	2.71E-01	5.16E-01	8.79E-02	2.53E-04	MND	MND	MND	MND	MND	MND	MND	3.69E-07	1.48E-02	2.37E-03	4.74E-03	-7.96E-02
Ozone depletion pot.	kg CFC-$_{11}$e	3.03E-05	4.20E-07	1.30E-06	3.20E-05	4.95E-06	2.51E-08	MND	MND	MND	MND	MND	MND	MND	5.52E-11	8.32E-07	2.17E-07	2.38E-07	-1.11E-06
Acidification potential	mol H^+e	2.25E+00	1.20E-01	2.10E-01	2.58E+00	9.84E-01	1.49E-02	MND	MND	MND	MND	MND	MND	MND	3.25E-05	1.31E-01	1.30E-01	5.91E-02	-4.91E-01
EP-freshwater[2)]	kg Pe	2.67E-02	2.18E-03	2.18E-02	5.07E-02	1.65E-02	8.83E-05	MND	MND	MND	MND	MND	MND	MND	1.04E-07	2.78E-03	6.89E-04	6.99E-04	-3.31E-02
EP-marine	kg Ne	6.24E-01	3.74E-02	5.93E-02	7.21E-01	3.71E-01	6.70E-03	MND	MND	MND	MND	MND	MND	MND	1.51E-05	4.42E-02	6.01E-02	2.95E-02	-9.66E-02
EP-terrestrial	mol Ne	7.20E+00	4.08E-01	5.12E-01	8.12E+00	4.04E+00	7.34E-02	MND	MND	MND	MND	MND	MND	MND	1.65E-04	4.81E-01	6.51E-01	2.46E-01	-1.08E+00
POCP ("smog")[3)]	kg NMVOCe	2.01E+00	1.58E-01	2.05E-01	2.37E+00	1.50E+00	2.19E-02	MND	MND	MND	MND	MND	MND	MND	4.93E-05	2.05E-01	1.92E-01	8.79E-02	-3.71E-01
ADP-minerals & metals[4)]	kg Sbe	4.01E-03	7.79E-05	1.90E-04	4.27E-03	8.13E-04	5.16E-06	MND	MND	MND	MND	MND	MND	MND	1.29E-09	1.37E-04	2.10E-05	1.36E-05	-6.96E-04
ADP-fossil resources	MJ	4.33E+03	4.11E+02	8.85E+02	5.63E+03	3.49E+03	2.17E+01	MND	MND	MND	MND	MND	MND	MND	4.72E-02	5.88E+02	1.84E+02	2.01E+02	-1.41E+03
Water use[5)]	m^3e depr.	1.09E+02	2.01E+00	2.74E+01	1.38E+02	1.72E+01	6.83E-02	MND	MND	MND	MND	MND	MND	MND	1.18E-04	2.89E+00	2.41E+00	9.96E-01	-6.11E+01

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.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	4.57E-06	2.79E-06	2.43E-06	9.80E-06	2.00E-05	4.11E-07	MND	MND	MND	MND	MND	MND	MND	9.25E-10	3.30E-06	2.59E-05	1.32E-06	-6.34E-06
Ionizing radiation[6)]	kBq U235e	8.25E+00	3.54E-01	1.07E+01	1.93E+01	4.45E+00	1.66E-02	MND	MND	MND	MND	MND	MND	MND	2.09E-05	7.49E-01	1.31E-01	1.29E-01	-8.74E+00
Ecotoxicity (freshwater)	CTUe	3.07E+02	5.75E+01	1.91E+02	5.55E+02	4.59E+02	1.69E+00	MND	MND	MND	MND	MND	MND	MND	2.60E-03	7.74E+01	4.83E+01	4.11E+01	-3.15E+02
Human toxicity, cancer	CTUh	4.23E-08	4.74E-09	6.48E-08	1.12E-07	4.23E-08	2.22E-10	MND	MND	MND	MND	MND	MND	MND	3.71E-13	7.14E-09	3.40E-09	1.65E-09	-2.55E-08
Human tox. non-cancer	CTUh	8.71E-07	2.62E-07	4.97E-07	1.63E-06	2.19E-06	6.67E-09	MND	MND	MND	MND	MND	MND	MND	5.87E-12	3.70E-07	1.03E-07	5.07E-08	-8.30E-07
SQP[7)]	-	3.12E+02	4.04E+02	4.24E+03	4.96E+03	2.08E+03	3.49E+00	MND	MND	MND	MND	MND	MND	MND	3.30E-03	3.51E+02	2.40E+01	3.96E+02	-5.88E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

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	4.57E+02	5.57E+00	-1.86E+02	2.77E+02	6.04E+01	2.94E-01	MND	MND	MND	MND	MND	MND	MND	2.99E-04	1.02E+01	2.10E+00	2.00E+00	-1.40E+02
Renew. PER as material	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
Total use of renew. PER	MJ	4.57E+02	5.57E+00	-1.86E+02	2.77E+02	6.04E+01	2.94E-01	MND	MND	MND	MND	MND	MND	MND	2.99E-04	1.02E+01	2.10E+00	2.00E+00	-1.40E+02
Non-re. PER as energy	MJ	2.65E+03	4.11E+02	6.03E+02	3.67E+03	3.49E+03	2.17E+01	MND	MND	MND	MND	MND	MND	MND	4.72E-02	5.88E+02	-7.61E+02	-2.48E+02	-1.42E+03
Non-re. PER as material	MJ	1.67E+03	0.00E+00	-2.34E+02	1.43E+03	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.43E+03	0.00E+00	2.80E+02
Total use of non-re. PER	MJ	4.32E+03	4.11E+02	3.69E+02	5.10E+03	3.49E+03	2.17E+01	MND	MND	MND	MND	MND	MND	MND	4.72E-02	5.88E+02	-2.19E+03	-2.48E+02	-1.13E+03
Secondary materials	kg	4.30E+01	1.76E-01	7.22E+00	5.04E+01	1.60E+00	9.68E-03	MND	MND	MND	MND	MND	MND	MND	1.96E-05	2.69E-01	1.04E-01	5.18E-02	1.42E+01
Renew. secondary fuels	MJ	4.72E+01	2.18E-03	1.49E+01	6.21E+01	2.02E-02	7.32E-05	MND	MND	MND	MND	MND	MND	MND	5.12E-08	3.40E-03	5.80E-04	1.08E-03	-9.67E-03
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	1.74E+01	5.99E-02	6.24E-01	1.81E+01	4.70E-01	1.93E-03	MND	MND	MND	MND	MND	MND	MND	3.12E-06	7.92E-02	3.75E-02	1.77E-01	-1.54E+00

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	3.30E+01	6.93E-01	5.17E+00	3.89E+01	5.01E+00	2.90E-02	MND	MND	MND	MND	MND	MND	MND	5.25E-05	8.45E-01	9.55E-01	3.93E-01	-1.95E+01
Non-hazardous waste	kg	5.85E+02	1.28E+01	2.21E+02	8.19E+02	1.06E+02	5.25E-01	MND	MND	MND	MND	MND	MND	MND	7.15E-04	1.78E+01	2.51E+01	5.71E+01	-2.32E+02
Radioactive waste	kg	1.81E-02	8.66E-05	2.74E-03	2.09E-02	1.11E-03	4.15E-06	MND	MND	MND	MND	MND	MND	MND	5.12E-09	1.86E-04	3.26E-05	3.15E-05	-2.18E-03

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	1.57E+01	1.57E+01	0.00E+00	2.81E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	3.02E+03	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	1.32E+01	1.32E+01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.85E+01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	9.72E+01	9.72E+01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.50E+02	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	4.09E+01	4.09E+01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.05E+02	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	5.63E+01	5.63E+01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.45E+02	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	7.06E+02	2.83E+01	5.82E+01	7.93E+02	2.45E+02	1.64E+00	MND	MND	MND	MND	MND	MND	MND	3.59E-03	4.16E+01	7.19E+01	1.70E+01	-9.20E+01
Ozone depletion Pot.	kg $CFC_{-11}e$	2.54E-05	3.35E-07	1.18E-06	2.69E-05	3.94E-06	1.99E-08	MND	MND	MND	MND	MND	MND	MND	4.37E-11	6.62E-07	1.73E-07	1.90E-07	-9.36E-07
Acidification	kg SO_2e	1.63E+00	9.25E-02	1.68E-01	1.89E+00	7.30E-01	1.05E-02	MND	MND	MND	MND	MND	MND	MND	2.29E-05	9.96E-02	9.17E-02	4.37E-02	-4.00E-01
Eutrophication	kg PO_4^3e	6.78E-01	1.98E-02	4.64E-01	1.16E+00	1.85E-01	2.41E-03	MND	MND	MND	MND	MND	MND	MND	5.34E-06	2.53E-02	2.17E-02	1.42E-02	-3.74E-01
POCP (“smog”)	kg C_2H_4e	8.07E-02	7.43E-03	1.98E-02	1.08E-01	6.41E-02	7.82E-04	MND	MND	MND	MND	MND	MND	MND	1.71E-06	9.49E-03	6.83E-03	4.26E-03	-3.46E-02
ADP-elements	kg Sbe	4.00E-03	7.59E-05	1.87E-04	4.26E-03	7.95E-04	5.13E-06	MND	MND	MND	MND	MND	MND	MND	1.26E-09	1.34E-04	2.02E-05	1.32E-05	-6.91E-04
ADP-fossil	MJ	4.20E+03	4.06E+02	6.98E+02	5.30E+03	3.42E+03	2.14E+01	MND	MND	MND	MND	MND	MND	MND	4.68E-02	5.76E+02	1.82E+02	1.99E+02	-1.27E+03

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	7.12E+02	2.85E+01	5.72E+01	7.97E+02	2.47E+02	1.65E+00	MND	MND	MND	MND	MND	MND	MND	3.61E-03	4.19E+01	7.20E+01	1.71E+01	-9.30E+01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

THIRD-PARTY 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.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
22.08.2025

INDICATIVE A1-A3 RESULTS FOR ADDITIONAL PRODUCT VARIANTS

Please note that these results are based on life-cycle assessments, however, they are not subject to third-party verification.

GWP- Fossil ($kgCO_2e$ per unit) (A1-A3)									
Size	Standard Unit (1 Inlet and 1 Outlet)			**+1 Inlet**	**Rebate Cover Slab***	**Additional rings (depth- m) Marshalls EPD**			
	AV	**V+**	**V**			0.25	0.5	0.75	1
1	565.9	546.0	543.7	18.7	92.7	26.5	52.8	79.3	105.6
1.2	**796.9**	772.3	764.4	22.9		34.5	69.0	103.5	138.0
1.5	1323.2	1294.5	1290.0	33.3		/	97.3	146.0	194.6
1.8	2136.3	2095.6	2080.1	46.9		/	133.2	199.7	266.3
2.1	3038.5	2959.5	2946.3	96.8		/	/	242.9	323.8
2.4	3669.2	3564.0	3534.7	132.4		/	/	311.0	414.6
3	6229.8	6050.8	6015.1	157.5		/	/	469.8	626.5

*Rebate Cover Slab required when using additional rings for the 1m DDS size.

GWP- Total ($kgCO_2e$ per unit) (A1-A3)									
Size	Standard Unit (1 Inlet and 1 Outlet)			**+1 Inlet**	**Rebate Cover Slab***	**Additional rings (depth- m) Marshalls EPD**			
	AV	**V+**	**V**			0.25	0.5	0.75	1
1	573.1	553.2	550.9	18.8	94.0	26.9	53.6	80.4	107.2
1.2	**807.2**	782.5	774.6	23.1		35.0	70.0	105.0	140.0
1.5	1340.2	1311.5	1306.9	33.6		/	98.7	148.1	197.4
1.8	2163.9	2123.0	2107.5	88.2		/	135.1	202.6	270.2
2.1	3077.5	2998.3	2985.0	97.1		/	/	246.4	328.5
2.4	3713.4	3607.9	3578.4	132.8		/	/	315.5	420.6
3	6309.3	6129.7	6093.9	158.1		/	/	476.6	635.5

HOW TO USE TABLES- EXAMPLES

(FOCUS- GWP TOTAL)

1) 1.8m Downstream Defender Select- Advanced Vortex Model (**AV**)

i. 1 inlet and 1 outlet required
ii. 2m deep additional rings required

Locate and sum values in the table:

- 1 inlet and 1 outlet (This means it is a standard unit with no extra inlets) 1.8m DDS AV = 2163.9 kgCO2e
- 2m deep rings (This means 2 no. 1m deep additional rings would be required) = 2 * 270.2 kgCO2e

Total = 2704.3 kgCO2e

2) 1m Downstream Defender Select- Vortex Plus Model (**V+**)

i. 3 no. inlets required
ii. 0.5m deep additional ring required

Locate and sum values in the table:

- 1m DDS V+ = 553.2 kgCO2e
- 3 no. inlets (2 more inlets than standard unit) = 2 * 18.8 kgCO2e
- 0.5m deep ring (rebate cover slab also required) = 53.6 kgCO2e + 94 kgCO2e

Total = 738.4 kgCO2e