ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Vent Brandstopp
Tenmat Limited

EPD HUB, HUB-3600
Published on 04.07.2025, last updated on 04.07.2025, valid until 03.07.2030

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	Tenmat Limited
Address	Frank Perkins Way, Northbank Industrial Park, Greater Manchester, GB
Contact details	Tenmat_EPD@tenmat.com
Website	https://www.tenmat.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
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	James Ginty Tenmat Ltd.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Sarah Curpen, an authorized verifier acting for EPD Hub Limited

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	Vent Brandstopp
Additional labels	-
Product reference	-
Place(s) of raw material origin	United Kingdom, Europe
Place of production	Northbanks Industrial Park, Frank Perkins Way, Irlam, M44 5EW, United Kingdom
Place(s) of installation and use	-
Period for data	01/01/2024-31/12/2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	56.7

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m
Declared unit mass	0.2623 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	4.88E-01
GWP-total, A1-A3 ($kgCO_2e$)	4.62E-01
Secondary material, inputs (%)	0.17
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	2.4
Net freshwater use, A1-A3 (m^3)	0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Founded in Manchester in the early twentieth century, Tenmat has been manufacturing for over 100 years. Synonymous with quality and reliability, our passive fire protection products are meticulously engineered and rigorously tested to deliver optimum safety performance.

Our Irlam Manufacturing & Innovation Centre is where we develop and manufacture our industry-leading passive fire technology, which is commonly selected by architects and specifiers to be installed in buildings of all types across the world.

While we specialise in passive fire protection for brickwork and façades, ventilation, and service penetrations, our Firefly Millboard range provides protection in a variety of high temperature applications.

Simply put, we are experts in making things that withstand heat and save lives.

PRODUCT DESCRIPTION

The Vent Brandstopp is specially designed and made from a flexible material, allowing it to be provided as intumescent material rolls. With a thickness of only 4mm, the low-profile design offers significant space and labour savings over traditional cavity socks, whilst also ensuring the external cavity is left unobstructed and free to ventilate. It is also covered with a protective layer of polythene for ease of handling and to protect it from water.

Further information can be found at:
https://www.tenmat.com/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	N/A
Minerals	89.5	United Kingdom, Europe
Fossil materials	5.5	United Kingdom, Europe
Bio-based materials	5	United Kingdom, Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate.

Biogenic Carbon Content was derived from the formula:

GWPbiogenic × Quantity × 12/44

For the Biogenic Carbon Content in the product, using the GWPbiogenic from the results table gives:

0.0124 × 1 × 12/44 = 0.0034

For the Biogenic Carbon Content in the packaging, using the GWPbiogenic from the results table gives:

0.0260 × 1 × 12/44 = 0.0071

Biogenic carbon content in product, kg C	0.0034
Biogenic carbon content in packaging, kg C	0.0071

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	Linear Metre
Mass per declared unit	0.2623 kg
Functional unit	-
Reference service life	>60 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	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 Vent Brandstopp product Is composed of a flexible intumescent strip that has been encased in a polythene sleeve for weatherproofing purposes. The intumescent strips primarily consist of a mineral wool matrix with intumescent graphite dispersed throughout. Binders and minerals are added to provide strength in normal conditions and during a fire scenario.

The intumescent material is manufactured entirely at the ISO9001&ISO14001 approved Tenmat, Irlam site in Greater Manchester and the raw materials are sourced from across the UK and Europe. The raw materials are dispersed in water, before being aligned on a porous felt conveyor. Excess water is drained off and the material is laminated to thickness. The material proceeds to the drying ovens and is cut into strips when dry. Final assembly in the polythene sleeve is carried out by hand.

Mass balance analysis shows that 95% of raw material that enters the factory leaves as finished product across the site. Energy in the process is used in the form of electricity to drive machinery and natural gas, which is used in the drying process. Water is used as a dispersion medium for the wet forming process and is filtered and recycled on site before being released to drain. The products are packaged in cardboard containers which are shipped to customers on a wooden pallet.

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.

All distances to customers were calculated by using Google Maps to determine road distance with an average transport distance of approximately 2700 km. Although these assumptions may impact the result, transport to the building site is a much smaller proportion of total emissions compared to the material and manufacturing modules (A1-A3). Transport datasets have been used for EURO5 class lorries and container ships where appropriate. The datasets account for an average load factor for empty returns. The total mass for transport has been modelled by using the declared unit (1m) and a pro-rata amount of packaging.

Installation into the building has been considered and modelled appropriately (A5) accounting for the energy consumption during installation and the disposal of packaging materials. Waste scenarios for the wood and cardboard used in packaging have been taken from Eurostat & PSR-0014 v2 (2023). As the products are provided to size and installed as a system, there is presumed to be a negligible loss of material in the installation phase that can be cut off.

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)

These products have a service lifetime of over 60 years, making modelling for their end-of-life scenarios challenging. In accordance with best practice, the worst-case scenario has been assumed in which most of the product is sent to landfill where no energy or material recovery is undertaken. The exceptions to this are the metal products, which follow the end-of-life scenarios as defined in RICS WLCA, 2nd Edition, Table 23 Section 5.6.1. Disassembly is presumed to take 0.01 kWh of work. The sorting of waste metals is included in the selected datapoints. Module D accounts for benefits beyond the system scope, primarily the transfer of carbon in the recycling and reuse of the packaging and metal materials.

MANUFACTURING PROCESS

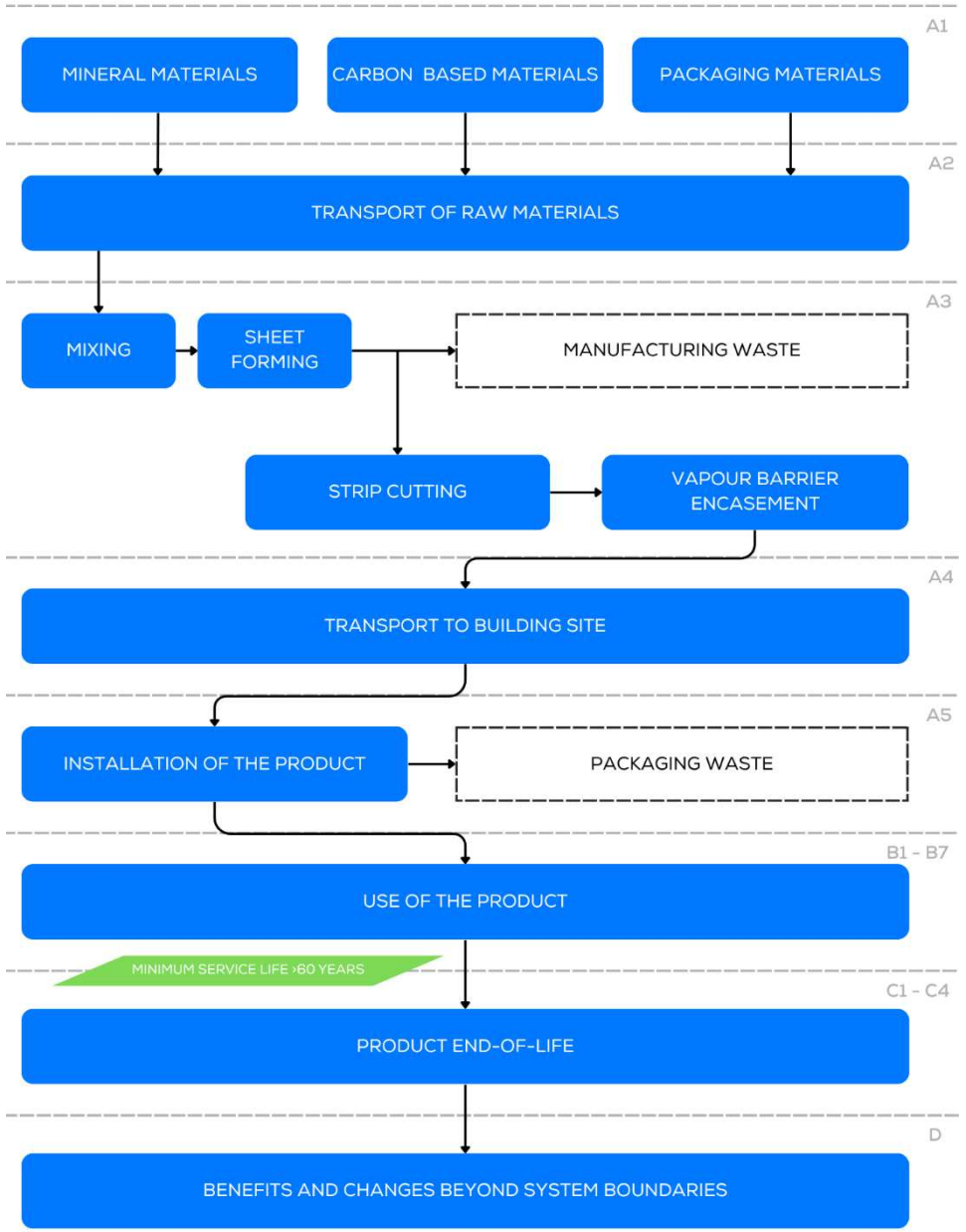
MANUFACTURING PROCESS DESCRIPTION

The raw materials are transported to the Tenmat manufacturing site in Manchester by a combination of road and sea vehicles. Stone wool, intumescent graphite, mineral reinforcement and binders are combined in a wet mixing process to form a slurry. The slurry is formed into sheets using a vacuum process and these are dried in a gas fired oven.

The dried sheets are inspected for their reaction to fire properties in the Quality Control lab and then cut into strips using a panel saw. A shrink-wrapper is then used to encase the cavity barrier in polythene wrapping.

The finished products are loaded into cardboard boxes and stacked on pallets. They are delivered either directly to construction sites or distribution warehouses by road.

At site the products are installed using powered hand tools. The lifetime of the products has been tested as being equal to or greater than the expected working life of the buildings (60 years or greater) and the material does not require additional maintenance during this period.



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.

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.

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 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 material	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

PRODUCT & MANUFACTURING SITES GROUPING

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

This EPD is product and factory specific.

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

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	2.27E-01	2.09E-02	2.14E-01	4.62E-01	9.93E-02	2.64E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.79E-03	0.00E+00	3.32E-03	-2.12E-04
GWP – fossil	kg CO_2e	2.27E-01	2.09E-02	2.40E-01	4.88E-01	9.92E-02	4.99E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.78E-03	0.00E+00	3.32E-03	-2.45E-04
GWP – biogenic	kg CO_2e	0.00E+00	0.00E+00	-2.59E-02	-2.59E-02	0.00E+00	2.59E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP – LULUC	kg CO_2e	7.73E-05	9.39E-06	2.58E-04	3.45E-04	4.44E-05	5.75E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.99E-07	0.00E+00	9.15E-07	3.31E-05
Ozone depletion pot.	kg CFC_{-11}e	8.98E-10	3.08E-10	1.34E-08	1.46E-08	1.47E-09	7.00E-12	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.63E-11	0.00E+00	1.04E-10	1.86E-11
Acidification potential	mol H^+e	1.77E-03	8.52E-05	4.64E-04	2.32E-03	3.38E-04	2.48E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.09E-06	0.00E+00	3.66E-05	-5.68E-06
EP-freshwater[2)]	kg Pe	3.19E-05	1.60E-06	2.17E-05	5.52E-05	7.73E-06	1.24E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.39E-07	0.00E+00	5.57E-06	-3.80E-06
EP-marine	kg Ne	2.71E-04	2.67E-05	2.27E-04	5.24E-04	1.11E-04	3.07E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.00E-06	0.00E+00	9.13E-06	-4.25E-06
EP-terrestrial	mol Ne	3.30E-03	2.92E-04	1.61E-03	5.21E-03	1.21E-03	9.38E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.18E-05	0.00E+00	9.80E-05	-4.04E-05
POCP ("smog")[3)]	kg NMVOCe	9.72E-04	1.14E-04	5.29E-04	1.61E-03	4.99E-04	3.22E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.97E-06	0.00E+00	3.59E-05	-1.10E-05
ADP-minerals & metals[4)]	kg Sbe	7.74E-07	5.73E-08	3.16E-07	1.15E-06	2.77E-07	2.07E-09	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.98E-09	0.00E+00	6.51E-09	5.81E-09
ADP-fossil resources	MJ	4.78E+00	3.02E-01	4.13E+00	9.21E+00	1.44E+00	6.13E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.59E-02	0.00E+00	7.72E-02	9.28E-03
Water use[5)]	m^3e depr.	1.46E-01	1.48E-03	6.69E-02	2.14E-01	7.11E-03	1.65E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.28E-04	0.00E+00	4.67E-04	3.48E-03

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

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	1.85E-08	2.05E-09	3.10E-09	2.37E-08	9.94E-09	4.07E-11	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.79E-10	0.00E+00	5.57E-10	-6.18E-11
Ionizing radiation[6)]	kBq U235e	5.62E-03	2.60E-04	2.34E-02	2.93E-02	1.25E-03	2.29E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.26E-05	0.00E+00	1.03E-04	5.06E-04
Ecotoxicity (freshwater)	CTUe	6.93E-01	4.22E-02	8.66E-01	1.60E+00	2.04E-01	7.71E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.66E-03	0.00E+00	5.16E-02	-2.78E-03
Human toxicity, cancer	CTUh	1.20E-10	3.47E-12	5.61E-11	1.79E-10	1.64E-11	2.88E-13	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.95E-13	0.00E+00	1.43E-12	2.49E-13
Human tox. non-cancer	CTUh	3.60E-09	1.93E-10	1.04E-09	4.84E-09	9.33E-10	1.56E-11	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.68E-11	0.00E+00	9.21E-11	1.52E-11
SQP[7)]	-	2.25E+00	2.98E-01	2.58E+00	5.13E+00	1.45E+00	5.37E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.61E-02	0.00E+00	1.90E-01	-5.49E-01

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	2.73E-01	4.10E-03	3.67E-01	6.44E-01	1.97E-02	-2.16E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.55E-04	0.00E+00	1.62E-03	-6.86E-02
Renew. PER as material	MJ	0.00E+00	0.00E+00	2.25E-01	2.25E-01	0.00E+00	-2.25E-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	2.73E-01	4.10E-03	5.92E-01	8.69E-01	1.97E-02	-4.41E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.55E-04	0.00E+00	1.62E-03	-6.86E-02
Non-re. PER as energy	MJ	3.59E+00	3.02E-01	4.12E+00	8.01E+00	1.44E+00	6.13E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.59E-02	0.00E+00	7.72E-02	8.12E-03
Non-re. PER as material	MJ	0.00E+00	0.00E+00	1.06E-02	1.06E-02	0.00E+00	-1.06E-02	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 non-re. PER	MJ	3.59E+00	3.02E-01	4.13E+00	8.02E+00	1.44E+00	-4.46E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.59E-02	0.00E+00	7.72E-02	8.12E-03
Secondary materials	kg	4.52E-04	1.29E-04	6.17E-03	6.75E-03	6.13E-04	5.79E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.10E-05	0.00E+00	2.57E-05	3.26E-03
Renew. secondary fuels	MJ	2.17E-05	1.60E-06	4.64E-03	4.66E-03	7.79E-06	4.57E-08	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.40E-07	0.00E+00	4.65E-07	-3.03E-08
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	3.41E-03	4.41E-05	8.92E-04	4.35E-03	2.13E-04	-1.23E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.83E-06	0.00E+00	-9.33E-04	8.52E-05

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	1.28E-02	5.09E-04	2.01E-02	3.35E-02	2.44E-03	5.71E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.39E-05	0.00E+00	1.30E-04	9.68E-05
Non-hazardous waste	kg	1.81E-01	9.37E-03	5.83E+00	6.02E+00	4.52E-02	2.33E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.12E-04	0.00E+00	1.19E+00	-3.61E-03
Radioactive waste	kg	1.79E-06	6.37E-08	8.80E-06	1.06E-05	3.07E-07	5.77E-09	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.52E-09	0.00E+00	2.52E-08	1.30E-07

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	7.30E-03	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	1.63E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.85E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.50E-03	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

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	2.26E-01	2.08E-02	2.39E-01	4.86E-01	9.87E-02	1.23E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.78E-03	0.00E+00	3.29E-03	-2.23E-04
Ozone depletion Pot.	kg $CFC_{-11}e$	7.75E-10	2.46E-10	1.07E-08	1.18E-08	1.17E-09	5.66E-12	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.10E-11	0.00E+00	8.28E-11	1.51E-11
Acidification	kg SO_2e	1.46E-03	6.56E-05	3.32E-04	1.86E-03	2.58E-04	1.86E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.65E-06	0.00E+00	2.94E-05	-2.83E-06
Eutrophication	kg PO_4^3e	2.50E-03	1.43E-05	2.69E-04	2.78E-03	6.30E-05	1.35E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.13E-06	0.00E+00	7.81E-06	-1.92E-07
POCP (“smog”)	kg C_2H_4e	8.21E-05	5.35E-06	2.93E-05	1.17E-04	2.30E-05	3.19E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.14E-07	0.00E+00	1.91E-06	-6.25E-07
ADP-elements	kg Sbe	7.30E-07	5.59E-08	3.02E-07	1.09E-06	2.70E-07	2.01E-09	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.86E-09	0.00E+00	6.32E-09	5.28E-09
ADP-fossil	MJ	4.60E+00	2.98E-01	4.08E+00	8.98E+00	1.42E+00	5.75E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.55E-02	0.00E+00	7.55E-02	3.50E-04

ENVIRONMENTAL IMPACTS – 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	2.27E-01	2.09E-02	2.40E-01	4.88E-01	9.93E-02	5.00E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.79E-03	0.00E+00	3.32E-03	-2.12E-04

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, an authorized verifier acting for EPD Hub Limited
04.07.2025