PHØNIX TAG MATERIALER

EPD

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

PTM BituFlex

Phønix Tag Materialer A/S

EPD HUB, HUB-3983

Published on 22.10.2025 , Last updated on 22.10.2025 , Valid until 21.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

EPD Hub

One Click LCA Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Phønix Tag Materialer A/S
Address	Vester Alle 1, DK-6600 Vejen, Denmark
Contact details	info@phonixtagmaterialer.dk
Website	www.phønixtagmaterialer.dk

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 1.2, 24 Mar 2025 EN 17388-1 Flexible sheets for waterproofing - Part 1: Cradle to grave The declared product lifetime differs from the default value in the reference PCR. Reference source, see RSL
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	Henrik Brogaard
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Lucas Pedro Berman, as an authorised 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	PTM BituFlex
Additional labels	-
Product reference	262
Place(s) of raw material origin	Denmark, Germany, France, Spain
Place of production	Nordic Waterproofing A/S, Vester Allé 1, DK-6600 Vejen, Denmark
Place(s) of installation and use	Denmark
Period for data	Calendar year 2024
Averaging in EPD	No grouping
A1-A3 Specific data (%)	50,4

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m^2
Declared unit mass	5,05 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3,05
GWP-total, A1-A3 ($kgCO_2e$)	3,06
Secondary material, inputs (%)	1,57
Secondary material, outputs (%)	5,61
Total energy use, A1-A3 (kWh)	15,1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Phønix Tag Materialer A/S is part the Nordic Waterproofing Group, one of the leading providers in the waterproofing market in Northern Europe. The Group develops, manufactures and distributes a full range of products and solutions for the protection of buildings and infrastructure. Ease of installation, energy and environmental optimization are key components of the offer.

PRODUCT DESCRIPTION

PTM BituFlex is used as the top layer in single or multi-layered coverings for new roofing and renovation projects, where a roofing with good elastic properties and a long service life is desired. The top sheet is used advantageously for projects that must be carried out at low working temperatures or where movements in the substrate may occur. The product is also used for renovation projects where there is a particularly high water load and where complete roof drainage is not possible. PTM BituFlex is fully welded or spot welded to the substrate, The product is a polymer membrane with polyester felt reinforcement that is impregnated with bitumen. It is then coated on the top and bottom with SBS polymer bitumen.
Further information can be found on www.phønixtagmaterialer.dk

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	40-45	EU
Fossil materials	55-60	EU
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	0,016

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m^2
Mass per declared unit	5,05 kg
Functional unit	-
Reference service life	50 years

REFERENCE SERVICE LIFE (RSL)

The specific RSL value of the roofing system is set at 50 years which is a deviation from the default value in the reference PCR.
The waterproofing system of BituFlex top layer and DuraFlex bottom layer is expected to perform its function for 50 years in accordance with TGA 2018/004 (Technical Approval for Use) for the product systems. See https://www.etadanmark.dk/da/tga/tga-byggevarer - TGA2018/004

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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND. 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 manufacturing is done by heating the raw materials (bitumen and polymers) to a specific temperature and mixing them. The bitumen is generally delivered hot from the petroleum refinery to the manufacturing site, where it's heated further. After this the mix is applied to the reinforcing structure (polyester reinforcement). The resulting sheet is cooled and then faced with slate on the upper side and PP film on the bottom side. The resulting sheet is then rolled and cut to desired length. Eventually the product is loaded onto trucks and transported to a construction site.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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.

Average distance of transportation from production plant to building site is assumed as 170 km in average in DK, and the transportation method is by lorry. Transportation does not cause losses as products are packaged properly. Packaging treatment was considered in module A5, with scenarios for wood and plastics as per Eurostat.

PRODUCT USE AND MAINTENANCE (B1-B7)

B1 (Use stage)

- This module is not relevant.

B2 (Maintenance)

- The maintenance activities are limited to annual cleaning activities (e.g. cleaning water outlets) by human resources, which may be omitted from the calculations.

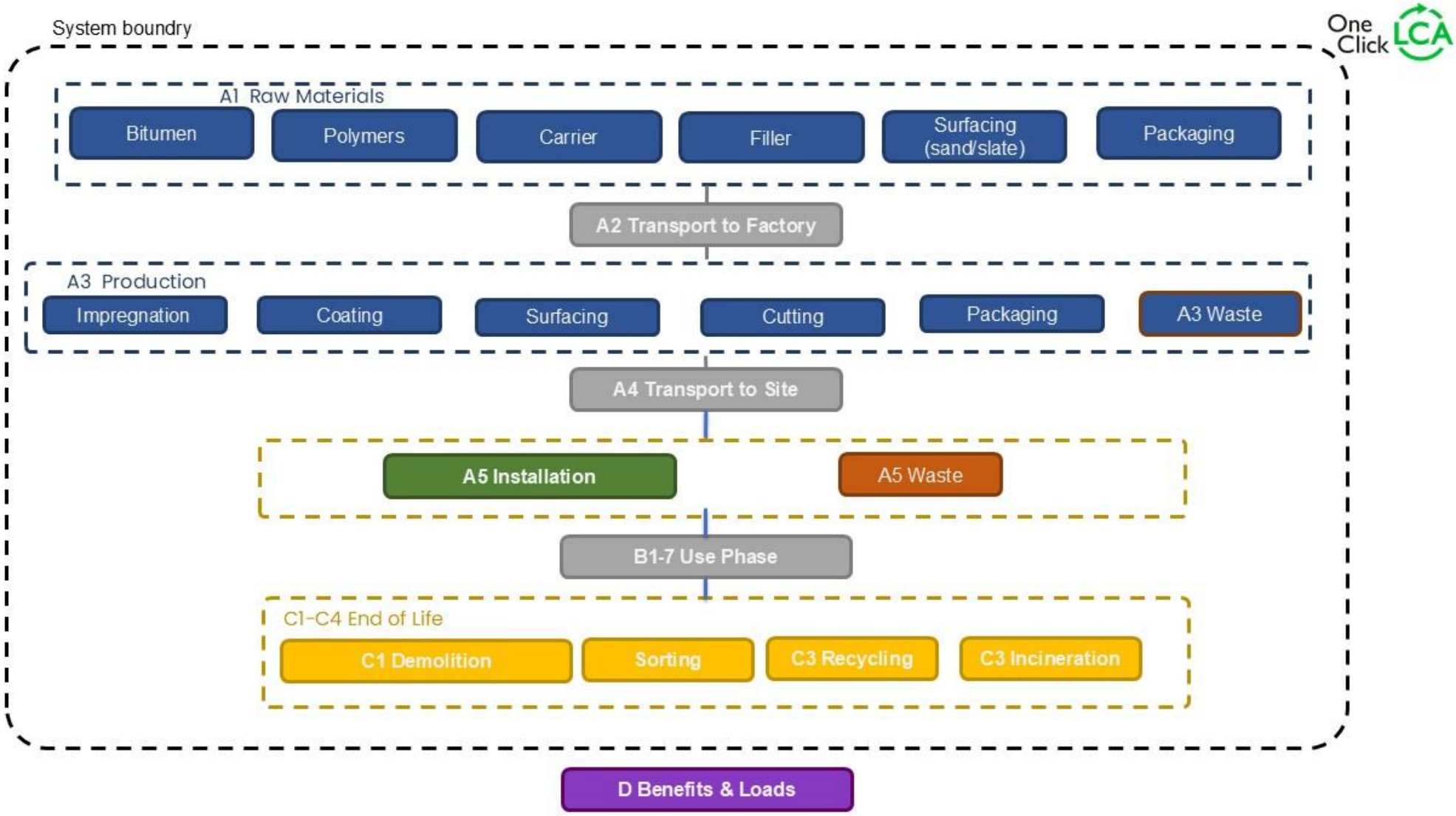
B3 (Repair)
- During the reference service life as defined, the repair activities may be omitted due to the incidental character and the negligible impact.
B4 (Replacement)
- No impacts from replacement are included according to the default values in the reference PCR.
B5 (Refurbishment)
- No impacts from renovation are included according to the default values in the reference PCR.
B6 (Operational energy use)
- This module is not relevant.
B7 (Operational water use)
- This module is not relevant.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 95% of the waste is assumed to be collected as separate as waste for recycling in asphalt mix for roads. The remaining 5% is considered to be incinerated. The consumption of energy for disassembling at the end-of-life is assumed to be 0,05 kWh/m² (C1). The bitumen sheet is delivered to the nearest construction waste treatment plant (C2), which is approximately 170 Km. At the waste treatment plant, waste that can be reused, recycled or recovered for energy is separated and diverted for further use (C3). Unusable materials are disposed of by incineration (C4). Due to the recycling potential of bitumen sheets, it can be used as raw material for asphalt mix. Recycling bitumen sheets avoids the use of virgin raw material, and the heat recovered from the combustion of bitumen roofing replaces the use of fossil fuels in energy production (D).

SYSTEM DIAGRAM



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.

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. Applied PCR is EN 17388-1.

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, 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	2,79E+00	1,80E-01	8,62E-02	3,06E+00	9,31E-02	9,74E-01	ND	ND	ND	ND	ND	ND	ND	5,22E-03	2,69E-02	6,48E-01	0,00E+00	-5,28E-01
GWP – fossil	kg CO_2e	2,78E+00	1,80E-01	8,51E-02	3,05E+00	9,30E-02	9,73E-01	ND	ND	ND	ND	ND	ND	ND	5,22E-03	2,69E-02	6,48E-01	0,00E+00	-5,29E-01
GWP – biogenic	kg CO_2e	8,15E-03	4,03E-05	9,92E-04	9,19E-03	2,20E-05	-7,97E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,63E-04
GWP – LULUC	kg CO_2e	2,53E-03	7,74E-05	8,78E-05	2,70E-03	4,34E-05	3,84E-04	ND	ND	ND	ND	ND	ND	ND	1,33E-06	1,26E-05	1,24E-05	0,00E+00	-2,12E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	8,86E-08	3,04E-09	1,89E-09	9,35E-08	1,50E-09	2,00E-08	ND	ND	ND	ND	ND	ND	ND	7,78E-11	4,34E-10	4,74E-10	0,00E+00	-9,76E-09
Acidification potential	mol H^+e	9,43E-03	5,43E-04	3,93E-04	1,04E-02	2,37E-04	2,32E-03	ND	ND	ND	ND	ND	ND	ND	6,27E-05	6,85E-05	2,30E-04	0,00E+00	-2,76E-03
EP-freshwater[2)]	kg Pe	1,80E-05	1,35E-05	4,66E-05	7,81E-05	7,47E-06	5,51E-05	ND	ND	ND	ND	ND	ND	ND	2,70E-07	2,16E-06	3,26E-06	0,00E+00	-7,80E-05
EP-marine	kg Ne	2,13E-03	1,68E-04	3,82E-04	2,68E-03	6,01E-05	7,32E-04	ND	ND	ND	ND	ND	ND	ND	2,81E-05	1,74E-05	6,70E-05	0,00E+00	-9,73E-04
EP-terrestrial	mol Ne	2,26E-02	1,82E-03	8,21E-04	2,53E-02	6,51E-04	7,29E-03	ND	ND	ND	ND	ND	ND	ND	3,07E-04	1,88E-04	6,22E-04	0,00E+00	-1,09E-02
POCP ("smog")[3)]	kg NMVOCe	1,58E-02	8,31E-04	4,13E-04	1,71E-02	3,59E-04	3,77E-03	ND	ND	ND	ND	ND	ND	ND	8,60E-05	1,04E-04	1,67E-04	0,00E+00	-3,38E-03
ADP-minerals & metals[4)]	kg Sbe	1,68E-02	5,17E-07	6,27E-07	1,68E-02	2,69E-07	1,35E-03	ND	ND	ND	ND	ND	ND	ND	1,83E-08	7,79E-08	9,48E-08	0,00E+00	-2,12E-06
ADP-fossil resources	MJ	1,54E+02	2,63E+00	1,83E+00	1,58E+02	1,40E+00	2,26E+01	ND	ND	ND	ND	ND	ND	ND	6,65E-02	4,05E-01	1,60E-01	0,00E+00	-7,52E+00
Water use[5)]	m^3e depr.	5,70E-01	1,31E-02	4,17E-02	6,25E-01	6,90E-03	8,66E-02	ND	ND	ND	ND	ND	ND	ND	2,20E-04	2,00E-03	1,97E-02	0,00E+00	-4,18E-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.

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	1,11E-07	1,74E-08	4,11E-09	1,32E-07	9,14E-09	3,38E-08	ND	ND	ND	ND	ND	ND	ND	1,21E-10	2,65E-09	1,57E-09	0,00E+00	-2,37E-08
Ionizing radiation[6)]	kBq U235e	3,98E-01	2,56E-03	8,95E-03	4,10E-01	1,22E-03	4,14E-02	ND	ND	ND	ND	ND	ND	ND	3,42E-05	3,52E-04	4,61E-04	0,00E+00	-3,37E-02
Ecotoxicity (freshwater)	CTUe	7,28E+01	3,56E-01	1,21E+00	7,44E+01	1,97E-01	6,69E+00	ND	ND	ND	ND	ND	ND	ND	5,69E-03	5,70E-02	1,10E-01	0,00E+00	-3,08E+00
Human toxicity, cancer	CTUh	1,25E-08	2,99E-11	3,46E-11	1,26E-08	1,55E-11	1,12E-09	ND	ND	ND	ND	ND	ND	ND	6,18E-13	4,49E-12	2,92E-11	0,00E+00	-2,23E-10
Human tox. non-cancer	CTUh	4,17E-08	1,70E-09	2,16E-09	4,56E-08	9,02E-10	6,02E-09	ND	ND	ND	ND	ND	ND	ND	1,81E-11	2,61E-10	5,41E-10	0,00E+00	-9,19E-09
SQP[7)]	-	3,18E+00	2,54E+00	5,09E-01	6,23E+00	1,41E+00	1,35E+00	ND	ND	ND	ND	ND	ND	ND	5,39E-03	4,08E-01	8,29E-02	0,00E+00	-2,65E+00

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	1,91E+00	3,83E-02	1,66E+00	3,60E+00	1,92E-02	-2,62E+00	ND	ND	ND	ND	ND	ND	ND	7,35E-04	5,55E-03	7,47E-03	0,00E+00	-2,82E-01
Renew. PER as material	MJ	7,41E-03	0,00E+00	-8,78E-05	7,32E-03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,95E-03	-3,66E-04	4,02E-05
Total use of renew. PER	MJ	1,91E+00	3,83E-02	1,66E+00	3,61E+00	1,92E-02	-2,62E+00	ND	ND	ND	ND	ND	ND	ND	7,35E-04	5,55E-03	5,15E-04	-3,66E-04	-2,82E-01
Non-re. PER as energy	MJ	4,72E+01	2,63E+00	1,12E+00	5,09E+01	1,40E+00	1,34E+01	ND	ND	ND	ND	ND	ND	ND	6,65E-02	4,05E-01	-8,06E+00	0,00E+00	-7,00E+00
Non-re. PER as material	MJ	1,11E+02	0,00E+00	-6,04E-01	1,10E+02	0,00E+00	-7,09E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,04E+02	-5,47E+00	-1,57E+02
Total use of non-re. PER	MJ	1,58E+02	2,63E+00	5,15E-01	1,61E+02	1,40E+00	1,27E+01	ND	ND	ND	ND	ND	ND	ND	6,65E-02	4,05E-01	-1,12E+02	-5,47E+00	-1,64E+02
Secondary materials	kg	7,93E-02	1,13E-03	1,29E-03	8,17E-02	5,95E-04	1,14E-02	ND	ND	ND	ND	ND	ND	ND	2,10E-05	1,72E-04	1,27E-04	0,00E+00	-5,19E+00
Renew. secondary fuels	MJ	1,40E-06	1,44E-05	6,00E-04	6,16E-04	7,57E-06	7,57E-05	ND	ND	ND	ND	ND	ND	ND	1,16E-07	2,19E-06	1,38E-06	0,00E+00	-1,88E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,70E-02
Use of net fresh water	m^3	1,09E-02	3,87E-04	9,96E-04	1,23E-02	2,10E-04	1,54E-03	ND	ND	ND	ND	ND	ND	ND	5,63E-06	6,09E-05	3,35E-04	0,00E+00	-3,03E-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	1,33E-03	4,26E-03	6,39E-03	1,20E-02	2,36E-03	1,92E-02	ND	ND	ND	ND	ND	ND	ND	1,22E-04	6,83E-04	1,79E-02	0,00E+00	-8,00E-03
Non-hazardous waste	kg	1,62E-01	8,07E-02	1,80E+01	1,82E+01	4,37E-02	2,21E+00	ND	ND	ND	ND	ND	ND	ND	1,75E-03	1,26E-02	4,14E-01	0,00E+00	-1,74E-01
Radioactive waste	kg	1,43E-04	6,29E-07	2,27E-06	1,46E-04	2,98E-07	1,38E-05	ND	ND	ND	ND	ND	ND	ND	8,41E-09	8,62E-08	1,20E-07	0,00E+00	-8,47E-06

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	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,37E-22
Materials for recycling	kg	1,51E-02	0,00E+00	0,00E+00	1,51E-02	0,00E+00	7,49E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,19E+00	0,00E+00	-6,23E-03
Materials for energy rec	kg	1,86E-03	0,00E+00	0,00E+00	1,86E-03	0,00E+00	1,48E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,73E-01	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,30E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,09E+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	1,82E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,30E+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	2,48E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,79E+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	2,69E+00	1,79E-01	8,75E-02	2,96E+00	9,25E-02	9,67E-01	ND	ND	ND	ND	ND	ND	ND	5,19E-03	2,68E-02	6,48E-01	0,00E+00	-4,40E-03
Ozone depletion Pot.	kg $CFC_{-11}e$	1,02E-06	2,42E-09	1,55E-09	1,03E-06	1,19E-09	9,21E-08	ND	ND	ND	ND	ND	ND	ND	6,23E-11	3,46E-10	4,48E-10	0,00E+00	-1,50E-10
Acidification	kg SO_2e	8,26E-03	4,19E-04	3,21E-04	9,00E-03	1,89E-04	1,87E-03	ND	ND	ND	ND	ND	ND	ND	4,46E-05	5,46E-05	1,84E-04	0,00E+00	-2,47E-05
Eutrophication	kg PO_4^3e	2,87E-03	1,03E-04	9,33E-04	3,90E-03	4,51E-05	5,60E-04	ND	ND	ND	ND	ND	ND	ND	9,88E-06	1,30E-05	3,28E-05	0,00E+00	-5,92E-06
POCP (“smog”)	kg C_2H_4e	8,16E-04	3,89E-05	5,15E-05	9,07E-04	1,79E-05	2,64E-04	ND	ND	ND	ND	ND	ND	ND	3,63E-06	5,19E-06	9,86E-06	0,00E+00	-2,52E-06
ADP-elements	kg Sbe	5,47E-06	5,04E-07	6,17E-07	6,59E-06	2,62E-07	2,10E-06	ND	ND	ND	ND	ND	ND	ND	1,82E-08	7,60E-08	5,42E-08	0,00E+00	-1,51E-08
ADP-fossil	MJ	9,79E+01	2,59E+00	1,67E+00	1,02E+02	1,38E+00	1,80E+01	ND	ND	ND	ND	ND	ND	ND	6,60E-02	4,00E-01	1,52E-01	0,00E+00	-7,51E-02

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	2,78E+00	1,80E-01	8,52E-02	3,05E+00	9,31E-02	9,74E-01	ND	ND	ND	ND	ND	ND	ND	5,22E-03	2,69E-02	6,48E-01	0,00E+00	-5,29E-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.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, 1-3MW turbine, onshore, Denmark, Ecoinvent (Reference product: electricity, high voltage)
Electricity CO2e / kWh	0,0135
Biogas data source and quality	Heat and power co-generation, biogas, gas engine, Denmark, Ecoinvent (Reference product: heat, central or small-scale, other than natural gas)
Biogas CO2e / kWh	0,0056

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Market for transport, freight, lorry >32 metric ton, EURO5
Average transport distance, km	170
Capacity utilization (including empty return) %	50
Bulk density of transported products	-
Volume capacity utilization factor	1

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	5,192
Collection process – kg collected with mixed waste	Negligible
Recovery process – kg for re-use	None
Recovery process – kg for recycling	Bitumen mix from roofing felt waste (Tarpaper Recycling ApS): 5,192 kg
Recovery process – kg for energy recovery	Incineration with generation of electricity and thermal energy (district heating): 0,273 kg
Disposal (total) – kg for final deposition	None
Scenario assumptions e.g. transportation	-

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

Lucas Pedro Berman, as an authorised verifier acting for EPD Hub

Limited

22.10.2025