ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

SIGNIFY_SPAIN_VALLADOLID/EU - SunStay Pro gen2 (off-grid)

Signify N.V.

EPD HUB, HUB-4367

Published on 14.01.2026, last updated on 14.01.2026, valid until 14.01.2031

MANUFACTURER AND SITE

Manufacturer	Signify N.V.
Address	High Tech Campus 48, 5656 AE Eindhoven, The Netherlands
Contact details	sustainability@signify.com
Website	https://www.signify.com/global
Place of production	VALLADOLID, SPAIN
Place(s) of raw material origin	APAC, EU
Place(s) of installation and use	EU
Period for data	Calendar Year 2023

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
Sector	Electrical product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, B6, and modules C1-C4, D
EPD author	Signify / Sustainability
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

PRODUCT SPECIFICATION

Product name	SIGNIFY_SPAIN_VALLADOLID/EU - SunStay Pro gen2 (off-grid)
Product number / reference	912300060592 / VGP726
GTIN (Global Trade Item Number)	Not applicable
NOBB (Norwegian Building Product Database)	Not applicable
A1-A3 Specific data (%)	2.33

PRODUCT DESCRIPTION

SunStay Pro Gen2 solar lighting uses the latest LED technology for a long lifetime of 100,000 hours with best-in-class lumen maintenance @L95. The specially-designed pole mounting spigot offers different tilt angles, and the option for lateral and pole top mounting. With the new LedgineO optical platform you can also increase the distance between poles to reduce the total cost of ownership in a wide range of applications. Sunstay Pro is made for quick and simple installation with a re-designed feed through cable and top-down, tool-less access to the gear components for improved serviceability. And thanks to Philips Service tag, you have access to all the documentation you need on site. Connectivity and dimming options are available, including a radar motion sensor mounted to automatically increase light levels when presence is detected. There's also the option to group and control neighbouring street lights through an internal mesh network to increase light levels in case of presence or activity detection. What's more, VGP726 SunStay Pro Gen2 Solar lighting is System Ready so it can be paired with lighting management systems such as Interact City at any point in the future. The all-in-one choice for today and tomorrow

This EPD is intended for business-to-business and/or business-to-consumer communication. 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. 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 CLASSIFICATION

Declared operating voltage, Volt	Off-grid
Light source colour temperature, Kelvin	3000
Protection index for water and dust (IP)	66
Impact resistance index (IK)	9
Luminous flux, Lumens	3000
Electrical power, Watt	18.3
Luminous efficiency, Lm/W	163.93
Additional characteristic	IK07 for the PV panel

ABOUT THE MANUFACTURER

Signify is the world leader in lighting for professionals, consumers and lighting for the Internet of Things. Our energy efficient lighting products, systems and services enable our customers to enjoy a superior quality of light, and make people's lives safer and more comfortable, businesses more productive and cities more liveable.

For more information, please visit: https://www.signify.com/global

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	61.46	APAC , EU
Minerals	28.59	APAC , EU
Fossil materials	9.88	APAC , EU
Bio-based materials	0.02	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.002
Biogenic carbon content in packaging, kg C	1.396

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	24.7237
Mass of packaging, kg	3.526
Functional unit (from PEP PSR0014)	Provide lighting that delivers an outgoing artificial luminous flux of 1000 lumens during a reference lifetime of 35000 hours
Reference service life (years)	25
Assigned lifetime (hours)	100000
GWP-total, A1-A3 (kg CO_2e)	317
GWP-fossil, A1-A3 (kg CO_2e)	320
Secondary material, inputs (%)	38.2
Secondary material, outputs (%)	50.9
Total energy use, A1-A3 (kWh)	1200
Net freshwater use, A1-A3 (m^3)	4.41E+00

LIFE CYCLE ASSESSMENT

SYSTEM BOUNDARY

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

Product stage			Installation stage		Use stage							End of life stage				Beyond the system
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	X	ND	X	X	X	X	X
Raw materials	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demo.	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling

Modules not declared = ND.

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. 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, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

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

Proxy data is used for certain materials due to their unavailability in the database. Conservative choices have been adopted when exact information was missing. Regarding module C1-C4: EOL scenarios are based on default values from EN 50693. For stages description please refer to section Product life cycle in this EPD report.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA Luminaire EPD Generator v2.2.7. The LCA and EPD have been prepared according to the reference standards, EN 50693, and ISO 14040/14044. Ecoinvent v 3.10.1 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, cut-off, EN 15804+A2'.

No other sources were used in the modelling of this EPD.

PRODUCT & MANUFACTURING SITES GROUPING

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

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

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, while scenario assumptions are made in the absence of exact data. The study also considers the fuels used by machines as well as losses during electricity transmission.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes primarily are associated with assembly. A2 transport distances are calculated always taking the capital city of component country of origin as a starting point and exact manufacturing location as destination. The finished product can be packaged with polyethylene, cardboard, and/or paper as packaging material before shipment to customers. Manufacturing loss, ancillaries and wastes are calculated according to the data that each manufacturing site is sharing with Signify. The total annual amount of waste in kg is allocated to the total annual production in kg at the specific manufacturing site responsible to produce the studied product. Thus, it is possible to allocate it according to the weight of the product analysed in this study.

Co-product allocation is neglected as revenue of co-product is very low, hence, the waste undergoes a conservative waste treatment.
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)

A4 transport distances are calculated always taking the exact manufacturing location to customer location. If the customer's location is defined as a country or its capital city, the calculation is made to the respective capital city. If the customer's location is specified as a region, the distance is calculated to the capital city of the best-performing sales country within that region. The transportation method is a combination of lorry and container ship where needed. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Environmental impacts from installation include waste packaging materials (A5). The packaging waste treatment is assumed to be conservative with incineration without energy recovery. The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

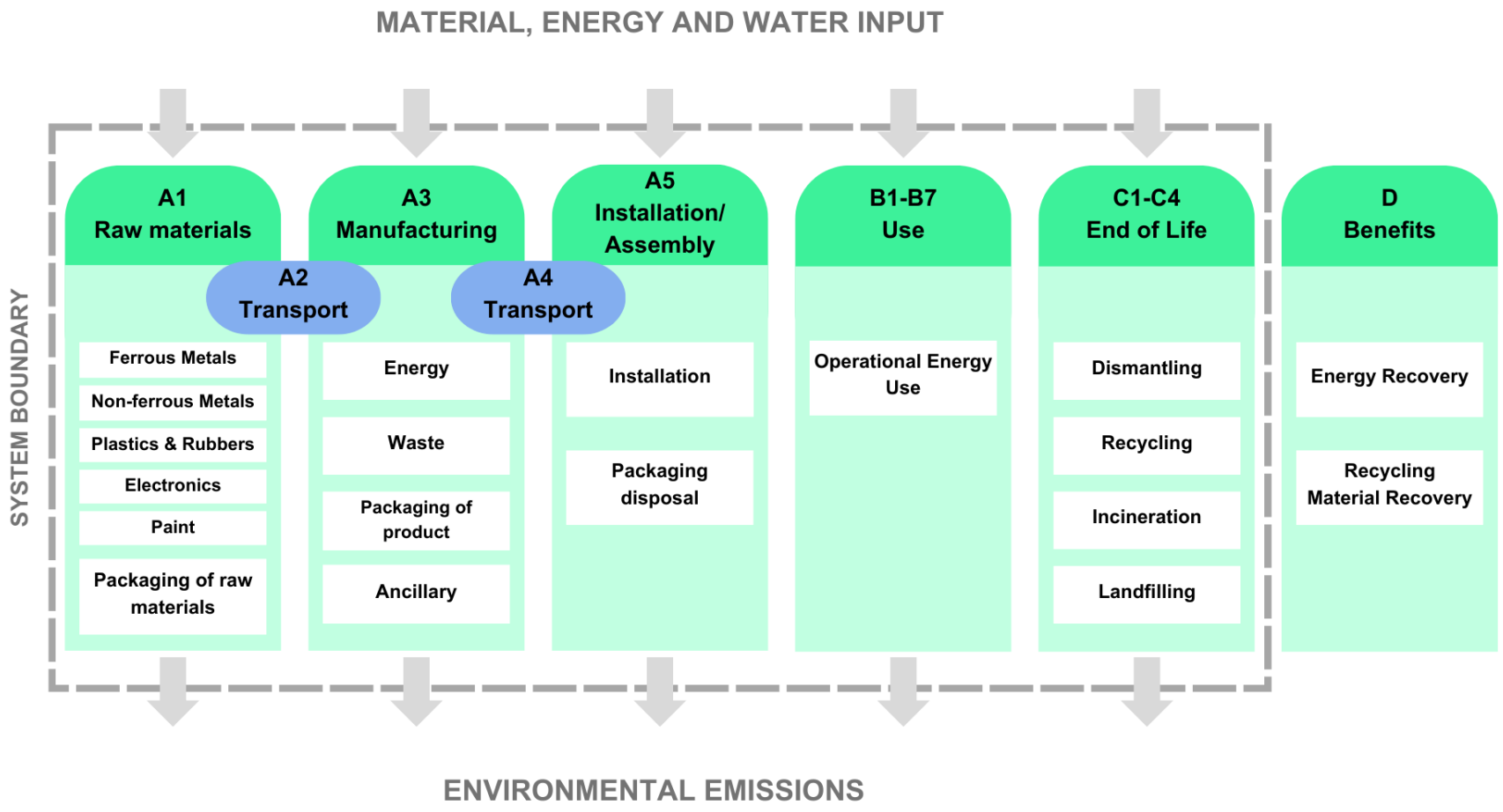
During the use phase, the product consumes electricity (B6), which is calculated multiplying the Wattage x Assigned lifetime (hours) x Country energy mix factor. To know which Country energy mix was used in this EPD, please refer to Annex 2.

The Reference service life in years is calculated according to the main application type of the product, based on annual operating hours. Impacts due to electricity production include direct emissions to air, transformation, and transmission losses.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. The transport distance is 150 km while the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

LIFE CYCLE FLOW DIAGRAM - SYSTEM BOUNDARY



ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

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	3.10E+02	2.92E+00	3.37E+00	3.17E+02	8.40E+00	5.33E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.32E-01	1.59E+00	1.26E+00	-2.54E+01
GWP – fossil	kg CO_2e	3.09E+02	2.91E+00	7.61E+00	3.20E+02	8.39E+00	2.21E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.32E-01	1.59E+00	1.25E+00	-2.54E+01
GWP – biogenic	kg CO_2e	6.57E-01	5.93E-04	-4.36E+00	-3.70E+00	1.90E-03	5.11E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.60E-04	-1.92E-03	6.06E-03	-2.10E-02
GWP – LULUC	kg CO_2e	5.21E-01	1.39E-03	1.17E-01	6.39E-01	3.75E-03	8.16E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.24E-04	1.28E-03	2.58E-04	-1.69E-02
Ozone depletion pot.	kg CFC_{-11}e	1.05E-05	4.26E-08	1.81E-07	1.08E-05	1.24E-07	3.04E-09	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.02E-08	6.92E-09	3.85E-09	-1.29E-07
Acidification potential	mol H^+e	2.25E+00	3.48E-02	2.99E-02	2.32E+00	2.86E-02	1.32E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.44E-03	6.12E-03	1.32E-03	-9.93E-01
EP-freshwater[2)]	kg Pe	1.47E-01	1.83E-04	2.55E-03	1.50E-01	6.53E-04	2.22E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	5.69E-05	3.86E-04	4.20E-05	-5.37E-02
EP-marine	kg Ne	3.49E-01	9.18E-03	1.32E-02	3.71E-01	9.40E-03	6.14E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.90E-04	1.33E-03	2.44E-03	-5.39E-02
EP-terrestrial	mol Ne	3.66E+00	1.02E-01	8.28E-02	3.85E+00	1.02E-01	5.60E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.60E-03	1.45E-02	5.64E-03	-6.81E-01
POCP ("smog")[3)]	kg NMVOCe	1.27E+00	3.09E-02	3.37E-02	1.33E+00	4.22E-02	1.59E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.40E-03	4.18E-03	1.78E-03	-2.04E-01
ADP-minerals & metals[4)]	kg Sbe	1.62E-02	6.40E-06	4.07E-05	1.62E-02	2.34E-05	6.58E-07	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.40E-06	2.29E-05	5.04E-07	-1.30E-02
ADP-fossil resources	MJ	3.71E+03	4.01E+01	1.02E+02	3.86E+03	1.22E+02	2.29E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.03E+01	9.82E+00	3.37E+00	-2.69E+02
Water use[5)]	m^3e depr.	1.95E+02	1.73E-01	2.55E+00	1.98E+02	6.02E-01	2.65E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	4.76E-02	2.25E-01	7.12E-02	-6.44E+00

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	2.28E-05	2.24E-07	5.05E-07	2.35E-05	8.40E-07	1.64E-08	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	5.81E-08	7.20E-08	2.63E-08	-2.36E-06
Ionizing radiation[6)]	kBq U235e	2.09E+01	3.00E-02	3.10E-01	2.12E+01	1.06E-01	2.77E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.31E-03	7.26E-02	4.12E-03	-1.74E+00
Ecotoxicity (freshwater)	CTUe	2.30E+03	4.88E+00	3.35E+01	2.34E+03	1.72E+01	6.33E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.62E+00	5.35E+00	3.44E+02	-7.50E+02
Human toxicity, cancer	CTUh	1.83E-07	5.26E-10	3.38E-09	1.87E-07	1.39E-09	3.05E-10	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.24E-10	4.83E-10	1.30E-09	-1.16E-07
Human tox. non-cancer	CTUh	7.32E-06	2.13E-08	9.36E-08	7.44E-06	7.89E-08	1.25E-08	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	6.43E-09	3.27E-08	3.04E-08	-1.16E-05
SQP[7)]	-	1.14E+03	2.95E+01	3.39E+02	1.50E+03	1.23E+02	1.12E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	6.13E+00	9.08E+00	5.39E+00	-3.14E+02

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	4.84E+02	4.79E-01	2.40E+01	5.08E+02	1.67E+00	-6.27E+01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.41E-01	1.42E+00	-3.17E-03	-2.44E+01
Renew. PER as material	MJ	7.36E+00	0.00E+00	3.78E+01	4.51E+01	0.00E+00	-4.50E+01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	-4.41E-03	-6.32E-02	0.00E+00
Total use of renew. PER	MJ	4.91E+02	4.79E-01	6.18E+01	5.53E+02	1.67E+00	-1.08E+02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.41E-01	1.42E+00	-6.64E-02	-2.44E+01
Non-re. PER as energy	MJ	3.70E+03	4.01E+01	7.89E+01	3.82E+03	1.22E+02	2.29E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.03E+01	-2.56E+00	-2.43E+01	-2.69E+02
Non-re. PER as material	MJ	1.91E+01	0.00E+00	-5.23E+00	1.39E+01	0.00E+00	-3.65E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	-6.62E+00	-6.87E+00	0.00E+00
Total use of non-re. PER	MJ	3.72E+03	4.01E+01	7.36E+01	3.83E+03	1.22E+02	1.92E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.03E+01	-9.18E+00	-3.12E+01	-2.69E+02
Secondary materials	kg	9.44E+00	0.00E+00	0.00E+00	9.44E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renew. secondary fuels	MJ	1.39E-01	1.66E-04	3.88E-01	5.27E-01	6.59E-04	2.85E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	5.87E-05	4.61E-04	4.47E-05	-2.74E-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	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	4.35E+00	5.00E-03	5.77E-02	4.41E+00	1.80E-02	4.29E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.36E-03	5.28E-03	-7.52E-03	-3.59E-01

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	4.66E+01	6.36E-02	3.98E-01	4.71E+01	2.06E-01	6.96E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.79E-02	8.51E-02	1.10E+00	-7.38E+00
Non-hazardous waste	kg	9.42E+02	1.10E+00	2.96E+01	9.73E+02	3.82E+00	3.77E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.36E-01	2.80E+00	2.14E+01	-3.13E+02
Radioactive waste	kg	5.17E-03	7.34E-06	7.39E-05	5.25E-03	2.60E-05	6.94E-07	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.04E-06	1.78E-05	1.01E-06	-4.34E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	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	2.96E-01	2.96E-01	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	1.26E+01	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	ND	ND	ND	ND	ND	0.00E+00	ND	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	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	3.88E+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	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	1.63E+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	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	2.25E+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	3.09E+02	2.90E+00	8.10E+00	3.20E+02	8.35E+00	2.19E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.28E-01	1.59E+00	1.25E+00	-2.52E+01
Ozone depletion Pot.	kg CFC_{-11}e	1.03E-05	3.40E-08	1.81E-07	1.05E-05	9.89E-08	2.59E-09	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.18E-09	5.83E-09	3.09E-09	-1.16E-07
Acidification	kg SO_2e	1.89E+00	2.75E-02	2.10E-02	1.94E+00	2.19E-02	9.66E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.87E-03	4.96E-03	9.67E-04	-8.75E-01
Eutrophication	kg PO_4^3e	4.69E-01	3.71E-03	1.42E-02	4.87E-01	5.32E-03	3.00E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	4.54E-04	7.25E-04	4.91E-04	-3.57E-02
POCP (“smog”)	kg C_2H_4e	1.42E-01	1.57E-03	2.24E-03	1.46E-01	1.95E-03	7.36E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.67E-04	2.87E-04	9.33E-05	-3.89E-02
ADP-elements	kg Sbe	1.61E-02	6.25E-06	4.00E-05	1.62E-02	2.28E-05	5.50E-07	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.35E-06	2.29E-05	4.72E-07	-1.30E-02
ADP-fossil	MJ	3.38E+03	3.97E+01	9.68E+01	3.51E+03	1.20E+02	2.24E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.01E+01	8.66E+00	3.30E+00	-2.42E+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 CO2e	3.10E+02	2.92E+00	7.73E+00	3.20E+02	8.40E+00	2.21E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.32E-01	1.59E+00	1.25E+00	-2.54E+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 characterization factor for biogenic CO2 is set to zero.

ENVIRONMENTAL IMPACT DATA, RESULTS PER FUNCTIONAL UNIT

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_2 éq/FU	3.62E+01	3.40E-01	3.93E-01	3.69E+01	9.80E-01	6.22E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.54E-02	1.86E-01	1.47E-01	-2.96E+00
GWP – fossil	kg CO_2 éq/FU	3.61E+01	3.40E-01	8.88E-01	3.73E+01	9.79E-01	2.58E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.54E-02	1.86E-01	1.46E-01	-2.96E+00
GWP – biogenic	kg CO_2 éq/FU	7.67E-02	6.92E-05	-5.09E-01	-4.32E-01	2.22E-04	5.96E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.86E-05	-2.24E-04	7.07E-04	-2.45E-03
GWP – LULUC	kg CO_2 éq/FU	6.08E-02	1.63E-04	1.36E-02	7.45E-02	4.38E-04	9.52E-06	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.78E-05	1.49E-04	3.02E-05	-1.98E-03
Ozone depletion pot.	kg CFC_{-11}e/FU	1.23E-06	4.98E-09	2.11E-08	1.26E-06	1.45E-08	3.55E-10	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.19E-09	8.08E-10	4.49E-10	-1.51E-08
Acidification potential	mole H^+e/FU	2.63E-01	4.06E-03	3.48E-03	2.70E-01	3.34E-03	1.53E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.85E-04	7.14E-04	1.54E-04	-1.16E-01
EP-freshwater[2)]	kg Pe/FU	1.71E-02	2.13E-05	2.97E-04	1.74E-02	7.62E-05	2.59E-06	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	6.64E-06	4.50E-05	4.90E-06	-6.27E-03
EP-marine	kg Ne/FU	4.07E-02	1.07E-03	1.53E-03	4.33E-02	1.10E-03	7.16E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	9.22E-05	1.56E-04	2.85E-04	-6.29E-03
EP-terrestrial	mol Ne/FU	4.27E-01	1.18E-02	9.66E-03	4.49E-01	1.19E-02	6.53E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.00E-03	1.69E-03	6.58E-04	-7.94E-02
POCP ("smog")[3)]	kg NMVOCe/	1.48E-01	3.60E-03	3.93E-03	1.55E-01	4.92E-03	1.86E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.96E-04	4.88E-04	2.08E-04	-2.38E-02
ADP-minerals & metals[4)]	kg Sbe/FU	1.89E-03	7.46E-07	4.75E-06	1.90E-03	2.73E-06	7.68E-08	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.80E-07	2.68E-06	5.88E-08	-1.51E-03
ADP-fossil resources	MJ/FU	4.33E+02	4.68E+00	1.19E+01	4.50E+02	1.42E+01	2.67E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.20E+00	1.15E+00	3.93E-01	-3.14E+01
Water use[5)]	m^3e priv. /FU	2.28E+01	2.02E-02	2.98E-01	2.31E+01	7.02E-02	3.09E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	5.56E-03	2.63E-02	8.30E-03	-7.51E-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 /FU	2.66E-06	2.62E-08	5.89E-08	2.75E-06	9.80E-08	1.91E-09	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	6.78E-09	8.40E-09	3.07E-09	-2.76E-07
Ionizing radiation[6)]	kBq U235e/FU	2.44E+00	3.50E-03	3.62E-02	2.48E+00	1.24E-02	3.23E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	9.69E-04	8.47E-03	4.81E-04	-2.03E-01
Ecotoxicity (freshwater)	CTUe/FU	2.68E+02	5.70E-01	3.90E+00	2.73E+02	2.01E+00	7.39E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.89E-01	6.24E-01	4.01E+01	-8.75E+01
Human toxicity, cancer	CTUh/FU	2.13E-08	6.14E-11	3.94E-10	2.18E-08	1.62E-10	3.56E-11	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.45E-11	5.63E-11	1.52E-10	-1.36E-08
Human tox. non-cancer	CTUh/FU	8.55E-07	2.48E-09	1.09E-08	8.68E-07	9.20E-09	1.45E-09	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.50E-10	3.82E-09	3.55E-09	-1.36E-06
SQP[7)]	-/FU	1.32E+02	3.45E+00	3.96E+01	1.75E+02	1.43E+01	1.31E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	7.15E-01	1.06E+00	6.29E-01	-3.67E+01

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/FU	5.64E+01	5.59E-02	2.80E+00	5.93E+01	1.95E-01	-7.31E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.64E-02	1.66E-01	-3.70E-04	-2.84E+00
Renew. PER as material	MJ/FU	8.59E-01	0.00E+00	4.40E+00	5.26E+00	0.00E+00	-5.26E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	-5.15E-04	-7.37E-03	0.00E+00
Total use of renew. PER	MJ/FU	5.73E+01	5.59E-02	7.21E+00	6.46E+01	1.95E-01	-1.26E+01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.64E-02	1.65E-01	-7.75E-03	-2.84E+00
Non-re. PER as energy	MJ/FU	4.31E+02	4.68E+00	9.20E+00	4.45E+02	1.42E+01	2.67E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.20E+00	-2.99E-01	-2.84E+00	-3.14E+01
Non-re. PER as material	MJ/FU	2.23E+00	0.00E+00	-6.11E-01	1.62E+00	0.00E+00	-4.26E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	-7.72E-01	-8.02E-01	0.00E+00
Total use of non-re. PER	MJ/FU	4.33E+02	4.68E+00	8.59E+00	4.47E+02	1.42E+01	2.24E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.20E+00	-1.07E+00	-3.64E+00	-3.14E+01
Secondary materials	kg/FU	1.10E+00	0.00E+00	0.00E+00	1.10E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renew. secondary fuels	MJ/FU	1.62E-02	1.93E-05	4.52E-02	6.15E-02	7.68E-05	3.32E-06	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	6.85E-06	5.37E-05	5.21E-06	-3.20E-04
Non-ren. secondary fuels	MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3/FU	5.07E-01	5.83E-04	6.74E-03	5.14E-01	2.10E-03	5.01E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.59E-04	6.16E-04	-8.77E-04	-4.18E-02

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/FU	5.44E+00	7.42E-03	4.64E-02	5.49E+00	2.41E-02	8.12E-03	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.09E-03	9.92E-03	1.28E-01	-8.61E-01
Non-hazardous waste	kg/FU	1.10E+02	1.28E-01	3.46E+00	1.14E+02	4.46E-01	4.40E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	3.92E-02	3.27E-01	2.50E+00	-3.65E+01
Radioactive waste	kg/FU	6.03E-04	8.57E-07	8.62E-06	6.13E-04	3.03E-06	8.10E-08	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.38E-07	2.07E-06	1.18E-07	-5.07E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	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	3.45E-02	3.45E-02	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	1.47E+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	ND	ND	ND	ND	ND	0.00E+00	ND	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	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	4.53E-01	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	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	1.91E-01	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	0.00E+00	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	0.00E+00	2.62E-01	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_2 éq./FU	3.60E+01	3.38E-01	9.45E-01	3.73E+01	9.74E-01	2.56E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.49E-02	1.85E-01	1.46E-01	-2.94E+00
Ozone depletion Pot.	kg CFC-$_{11}$e/FU	1.20E-06	3.96E-09	2.11E-08	1.23E-06	1.15E-08	3.02E-10	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	9.54E-10	6.80E-10	3.61E-10	-1.35E-08
Acidification	kg SO_2e/FU	2.21E-01	3.21E-03	2.45E-03	2.26E-01	2.55E-03	1.13E-04	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.18E-04	5.78E-04	1.13E-04	-1.02E-01
Eutrophication	kg PO_4^3e/FU	5.48E-02	4.32E-04	1.66E-03	5.69E-02	6.21E-04	3.50E-05	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	5.30E-05	8.46E-05	5.73E-05	-4.17E-03
POCP (“smog”)	kg C_2H_4e/FU	1.66E-02	1.83E-04	2.62E-04	1.70E-02	2.27E-04	8.59E-06	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.95E-05	3.35E-05	1.09E-05	-4.54E-03
ADP-elements	kg Sbe/FU	1.88E-03	7.29E-07	4.67E-06	1.89E-03	2.66E-06	6.42E-08	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	2.74E-07	2.67E-06	5.51E-08	-1.51E-03
ADP-fossil	MJ/FU	3.94E+02	4.63E+00	1.13E+01	4.10E+02	1.40E+01	2.62E-01	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	1.18E+00	1.01E+00	3.85E-01	-2.83E+01

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/FU	3.61E+01	3.40E-01	9.02E-01	3.74E+01	9.80E-01	2.58E-02	ND	ND	ND	ND	ND	0.00E+00	ND	0.00E+00	8.54E-02	1.86E-01	1.46E-01	-2.96E+00

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 characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation – A3 (Energy data source)

1. Energy supply, electricity production, co-generation oil and gas, Heat and power co-generation, natural gas, combined cycle power plant, 400MW electrical, Spain, ecoinvent 3.10.1, 0.0249 kgCO2e/MJ
2. Energy supply, electricity production, solar photovoltaic, Electricity production, photovoltaic, 570kWp open ground installation, multi-Si, Spain, ecoinvent 3.10.1, 0.0673 kgCO2e/kWh

Transport scenario documentation - A4

1. Transport, freight, sea, container ship, 0.0 km
2. Transport, freight, lorry >32 metric ton, EURO5, 2760.17 km

Installation scenario documentation - A5 (Waste materials data source)

1. Market for sulfate pulp, unbleached, 0.001 kg
2. Market for corrugated board box, 3.53 kg

Use stages scenario documentation - B6-B7 (Energy data source)

TRANSPORT SCENARIO DOCUMENTATION - A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50 %
Bulk density of transported products / kg/m3	1.85E+02
Volume capacity utilization factor (factor: =1 or <1 or ≥1 for compressed or nested packaged products)	1

INSTALLATION SCENARIO DOCUMENTATION - A5

Scenario parameter	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m^3	0
Other resource use / kg	0
Direct emissions to ambient air, soil and water / kg	0

USE STAGES SCENARIO DOCUMENTATION - B6-B7 USE OF ENERGY AND WATER

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	Not applicable
Net fresh water consumption / m^3	0
Power output of equipment / kW	18.3
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc. / Units as appropriate	For more details see product classification table and product description.
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants / Units as appropriate	For more details see product classification table and product description.

END OF LIFE SCENARIO DOCUMENTATION

Scenario information	Value
Collection process – kg collected separately	24.7237
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	1.26E+01
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	1.21E+01
Scenario assumptions e.g. transportation	Lorry, 16-32 metric ton, EURO5; 150 km

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 15804+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.

Program assistant: Xinyuan Zhang

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: Hai Ha Nguyen
Tool verification validity: 28 March 2025 - 27 March 2028

APPENDIX 1

MATERIAL COMPOSITION

The product material composition is illustrated in the table below. The material weight is given in grams and in percentage on total product weight.

Table 1: Material composition

Material	Weight (g)	Weight-%
Aluminium	13135.69	53.13
Copper	414.06	1.67
Glass	4521.35	18.29
Lead	1.51	0.01
Non-ferrous metal	263.87	1.07
Other Mineral	2546.12	10.3
Other Plastics	1900.46	7.69
Paint	261.86	1.06
Printing Paper	4.0	0.02
PCB Alu	88.54	0.36
PCB Copper	188.81	0.76
PCB Iron	82.89	0.34

PCB Non-ferrous metal	285.2	1.15
PCB Support	275.69	1.12
PCB Tin	26.86	0.11
PP / PS-High Impact PS / ABS	3.56	0.01
Silica Sand	0.06	0.0
Stainless Steel	230.0	0.93
Steel	450.96	1.82
Tin	26.34	0.11

APPENDIX 2

USE PHASE (B6) VALUES FOR DIFFERENT COUNTRY MIX

In this EPD the B6 impact has been calculated using the energy mix of EU. The table in this appendix is useful for conversion and comparison of B6 values with other energy country mix. The Global Warming Potential Total (GWP tot) value is illustrated for each country. The value refers to 1 kwh.

Example on how to use the table:

If for example this EPD was done according to EU energy mix and you want to see how the GWP total changes according to a Finland country energy mix, you can take the original value in the results table here highlighted in yellow:

ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

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	4.44E-01	4.75E-03	2.34E-02	4.72E-01	9.50E-04	8.13E-03	ND	ND	ND	ND	ND	4.06E+02	ND	0.00E+00	5.50E-04	2.23E-03	7.33E-04	-2.82E-02

Divide that value according to the EU value from the following table (EU = 3.30E-01) and then multiplying for the Finland value from the same table (FINLAND = 1.54E-01).

Thus, the calculation of this example would be:

New B6 GWP tot for Finland = (4.06E-02 / 3.30E-01) x 1.54E-01 = 1.89E-02.

Country	GWP tot (kg CO2 eq. per kwh)		
AFRICA	7.30E-01	GERMANY	3.90E-01
APAC	9.50E-01	INDIA	1.50E+00
AUSTRALIA	8.40E-01	ITALY	3.50E-01
AUSTRIA	2.30E-01	LATAM	3.90E-01
BELGIUM	2.00E-01	NAM	4.50E-01
CHINA	1.02E+00	NETHERLANDS	3.90E-01
DENMARK	1.60E-01	NORWAY	4.50E-02
EU	3.30E-01	ROW	7.30E-01
FINLAND	1.54E-01	SPAIN	2.10E-01
FRANCE	8.70E-02	SWEDEN	3.70E-02
		UK	2.60E-01

Source Ecoinvent 3.10.1

APPENDIX 3

PRODUCTS COVERED UNDER THIS EPD

Table 1: Products covered under this EPD

	12NC or Product Family Code	Description
1	VGP726	VGP726 LED6-4S/740 DM10
2	VGP726	VGP726 LED7-4S/740 DM10
3	VGP726	VGP726 LED8-4S/740 DM10
4	VGP726	VGP726 LED9-4S/740 DM10
5	VGP726	VGP726 LED10-4S/740 DM10
6	VGP726	VGP726 LED12-4S/740 DM10
7	VGP726	VGP726 LED14-4S/740 DM10
8	VGP726	VGP726 LED16-4S/740 DM10
9	VGP726	VGP726 LED18-4S/740 DM10
10	VGP726	VGP726 LED20-4S/740 DM10
11	VGP726	VGP726 LED22-4S/740 DM10
12	VGP726	VGP726 LED25-4S/740 DM10
13	VGP726	VGP726 LED27-4S/740 DM10
14	VGP726	VGP726 LED30-4S/740 DM10
15	VGP726	VGP726 LED35-4S/740 DM10
16	VGP726	VGP726 LED40-4S/740 DM10
17	VGP726	VGP726 LED45-4S/740 DM10
18	VGP726	VGP726 LED50-4S/740 DM10
19	VGP726	VGP726 LED55-4S/740 DM10
20	VGP726	VGP726 LED60-4S/740 DM10
21	VGP726	VGP726 LED65-4S/740 DM10
22	VGP726	VGP726 LED70-4S/740 DM10
23	VGP726	VGP726 LED75-4S/740 DM10
24	VGP726	VGP726 LED80-4S/740 DM10
25	VGP726	VGP726 LED85-4S/740 DM10
26	VGP726	VGP726 LED90-4S/740 DM10

27	VGP726	VGP726 LED95-4S/740 DM10
28	VGP726	VGP726 LED100-4S/740 DM10
29	VGP726	VGP726 LED6-4S/730 DM10
30	VGP726	VGP726 LED7-4S/730 DM10
31	VGP726	VGP726 LED8-4S/730 DM10
32	VGP726	VGP726 LED9-4S/730 DM10
33	VGP726	VGP726 LED10-4S/730 DM10
34	VGP726	VGP726 LED12-4S/730 DM10
35	VGP726	VGP726 LED14-4S/730 DM10
36	VGP726	VGP726 LED16-4S/730 DM10
37	VGP726	VGP726 LED18-4S/730 DM10
38	VGP726	VGP726 LED20-4S/730 DM10
39	VGP726	VGP726 LED22-4S/730 DM10
40	VGP726	VGP726 LED25-4S/730 DM10
41	VGP726	VGP726 LED27-4S/730 DM10
42	VGP726	VGP726 LED30-4S/730 DM10
43	VGP726	VGP726 LED35-4S/730 DM10
44	VGP726	VGP726 LED40-4S/730 DM10
45	VGP726	VGP726 LED45-4S/730 DM10
46	VGP726	VGP726 LED50-4S/730 DM10
47	VGP726	VGP726 LED55-4S/730 DM10
48	VGP726	VGP726 LED60-4S/730 DM10
49	VGP726	VGP726 LED65-4S/730 DM10
50	VGP726	VGP726 LED70-4S/730 DM10
51	VGP726	VGP726 LED75-4S/730 DM10
52	VGP726	VGP726 LED80-4S/730 DM10
53	VGP726	VGP726 LED85-4S/730 DM10
54	VGP726	VGP726 LED90-4S/730 DM10
55	VGP726	VGP726 LED95-4S/730 DM10
56	VGP726	VGP726 LED100-4S/730 DM10
57	VGP726	VGP726 LED5-4S/727 DM10
58	VGP726	VGP726 LED6-4S/727 DM10
59	VGP726	VGP726 LED7-4S/727 DM10
60	VGP726	VGP726 LED8-4S/727 DM10
61	VGP726	VGP726 LED9-4S/727 DM10

62	VGP726	VGP726 LED10-4S/727 DM10
63	VGP726	VGP726 LED12-4S/727 DM10
64	VGP726	VGP726 LED14-4S/727 DM10
65	VGP726	VGP726 LED16-4S/727 DM10
66	VGP726	VGP726 LED18-4S/727 DM10
67	VGP726	VGP726 LED20-4S/727 DM10
68	VGP726	VGP726 LED22-4S/727 DM10
69	VGP726	VGP726 LED25-4S/727 DM10
70	VGP726	VGP726 LED27-4S/727 DM10
71	VGP726	VGP726 LED30-4S/727 DM10
72	VGP726	VGP726 LED35-4S/727 DM10
73	VGP726	VGP726 LED40-4S/727 DM10
74	VGP726	VGP726 LED45-4S/727 DM10
75	VGP726	VGP726 LED50-4S/727 DM10
76	VGP726	VGP726 LED55-4S/727 DM10
77	VGP726	VGP726 LED60-4S/727 DM10
78	VGP726	VGP726 LED65-4S/727 DM10
79	VGP726	VGP726 LED70-4S/727 DM10
80	VGP726	VGP726 LED75-4S/727 DM10
81	VGP726	VGP726 LED80-4S/727 DM10
82	VGP726	VGP726 LED85-4S/727 DM10
83	VGP726	VGP726 LED90-4S/727 DM10
84	VGP726	VGP726 LED95-4S/727 DM10
85	VGP726	VGP726 LED100-4S/727 DM10
86	VGP726	VGP726 LED5-4S/830 DM10
87	VGP726	VGP726 LED6-4S/830 DM10
88	VGP726	VGP726 LED7-4S/830 DM10
89	VGP726	VGP726 LED8-4S/830 DM10
90	VGP726	VGP726 LED9-4S/830 DM10
91	VGP726	VGP726 LED10-4S/830 DM10
92	VGP726	VGP726 LED12-4S/830 DM10
93	VGP726	VGP726 LED14-4S/830 DM10
94	VGP726	VGP726 LED16-4S/830 DM10
95	VGP726	VGP726 LED18-4S/830 DM10
96	VGP726	VGP726 LED20-4S/830 DM10

97	VGP726	VGP726 LED22-4S/830 DM10
98	VGP726	VGP726 LED25-4S/830 DM10
99	VGP726	VGP726 LED27-4S/830 DM10
100	VGP726	VGP726 LED30-4S/830 DM10