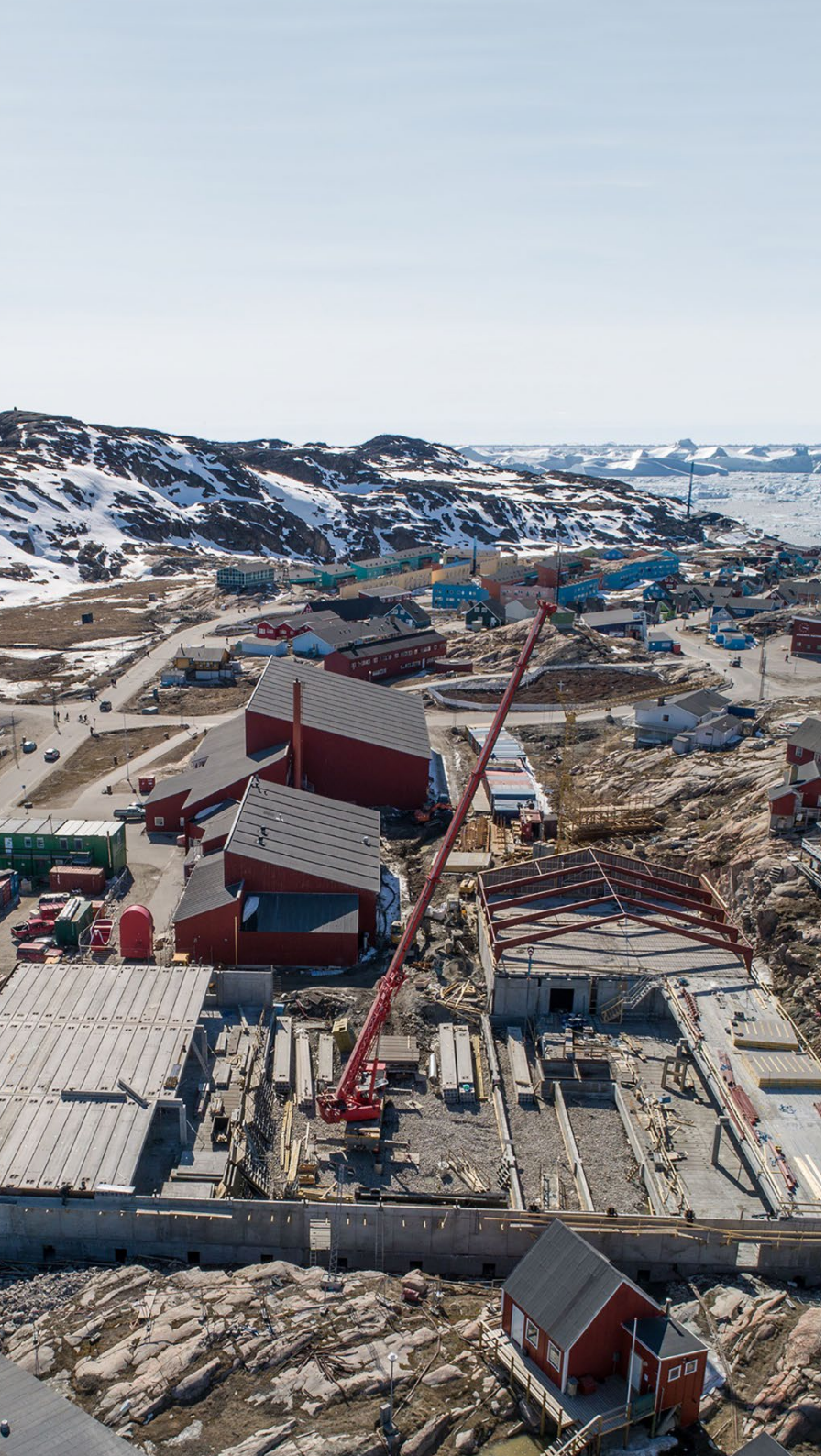


niss sørensen & søn as

ENVIRONMENTAL PRODUCT DECLARATION

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

NS Lyddæk - Density 1750 kg/m^3

EPD HUB, HUB-2170
Published on 08.11.2024, last updated on 08.11.2024, valid until 08.11.2029

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Niss Sørensen & Søn A/S
Address	Drosselvej 9, 7860 Spøttrup, Denmark
Contact details	nsa@nssas.dk
Website	www.nssas.dk

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A5, and modules C1-C4, D
EPD author	Stefan Emil Danielsson, Circonomy Consulting
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 acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	NS Lyddæk - Density 1750 kg/m^3 **18 cm** (main dimension declared)
Additional labels	-
Product reference	-
Place of production	Spøttrup, Denmark
Period for data	Calendar year 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m^2
Declared unit mass	1750 kg
GWP-fossil, A1-A3 (kgCO_2e)	4,59E+01
GWP-total, A1-A3 (kgCO_2e)	4,59E+01
Secondary material, inputs (%)	0.25
Secondary material, outputs (%)	22
Total energy use, A1-A3 (kWh)	70.8
Net freshwater use, A1-A3 (m^3)	0.24

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Niss Sørensen & Søn A/S has more than 50 years of experience in the construction industry. We produce and sell NS Lyddæk and also sell NS Huldæk and NS Filigrandæk and other prefabricated construction materials, which make the construction process easier and more efficient. We have a wide selection of products.

PRODUCT DESCRIPTION

NS Lyddæk are precast acoustic concrete slabs serving as deck elements for floor separation. They are used in construction in an indoor dry environment. Exposure class is X0, XC1 and fire resistance REI60 A2-s1; d0. The deck elements are designed to be load-bearing and at the same time have a very good insulating capacity both in relation to heat loss and sound – including footsteps.

This product has the density 1750 kg/m^3 and is declared as 1 m^2 with five different thickness variants: 16, 18, 20, 22, and 24 cm. Thus, the volume of the products is respectively 0,16; 0,18; 0,20; 0,22 and 0,24 m^3. **The main product declared in this EPD is 18 cm**. The remaining ones are declared in Annex as separate datasets for GWP-total.

Further information can be found at www.nssas.dk.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	< 1	Europe
Minerals	> 99	Denmark

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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m^2
Mass per declared unit	1750 kg
Functional unit	-
Reference service life	100

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		
×	×	×	MND	×	MND	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
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.

The product phase includes the provision of all raw materials and water, products and energy, transport to the production, mixing process, internal transport and waste treatment up to end-of-waste or final disposal. The LCA results are given in aggregate form for the product phase, which means that the modules A1, A2 and A3 considered as a combined module A1-A3.

Concrete elements are produced by concrete mixed on a mixing plant and poured into molds where the necessary reinforcement has been applied, cast-in parts, etc. as applicable standards. The molds are often made of steel or cast veneer, so that they can be reused after cleaning. The molds are applied with a release agent (mold oil). The concrete elements are de-molded following the casting day, after which they are moved to storage, and after complete curing transported further to the construction site. Electricity consumption for the entire plant, including overhead and heating, is included to remain conservative. Supply and consumption of diesel for internal transport is also included. There is virtually no manufacturing waste at the site.

The product consists of a mixture of raw materials that all locally sourced, except the latter: Portland cement, dry quartz sand, lightweight expanded clay aggregate, and reinforcement steel. All of the components included in this EPD are modelled by using supplier specific EPDs, making the data quality of this EPD high and highly reliable.

Ancillary elements such as formwork oil and diesel for internal transportation are based on generic data and evenly distributed over the declared unit, and so is the electricity consumption.

No packaging is associated to this product because it is transported in bulk and unpackaged.

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.

The construction process phase includes transport from the factory gate to the construction site (by truck). This module is not included, but the transportation assumptions are described for further use if be necessary. Namely, the manufacturer collaborates with a transportation company that declared specific emission factors of its trucks that are powered by Diesel B7. Based on the standard DS/ISO 14083 (2023, pp. 88), this fuel has a well-to-wheel emission factor of 2,98 $kgCO_2e/L$, estimated by combining the emission factors of 93% fossil diesel and 7% biodiesel from the reference. For example, with an average load of 25 tons per truck, the well-to-wheel transport emission is then 0,038 $kgCO_2e$/ton-km. A calculator to calculate specific trucking conditions can be provided upon request on a project basis: https://dtl.eu/medlem/transportokonomi/beregn-din-CO_2-udledning.

The installation phase could involve diesel or electricity powered cranes to lift and install the concrete elements in a building. Installation of the slab element assumes a consumption of 0,5 L diesel. The consumption of joint concrete, joint reinforcement and other secondary materials that are installed in accordance with the wall element on the construction site, is not declared in this EPD, and therefore can be added when using such materials in a building LCA, if viable.

PRODUCT USE AND MAINTENANCE (B1-B7)

Once the concrete element is installed in the building, according to applicable instructions and standards, under normal conditions no maintenance, repairs, replacements or renovations are required over the course of the building's lifetime. Likewise, there is neither energy nor water consumption associated with the product in the use phase. Absorption of CO_2, as a result of carbonation in the product, is modelled but not included in the LCA modelling for B1 module, since it is regarded negligible due to very restricted contact of the installed product with atmosphere in a closed building.
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 of concrete structures, they will most often be demolished using an excavator fitted with a concrete hammer or concrete shears, assuming a conservative consumption of 1 L diesel per ton. The demolished concrete is then loaded into a container/truck with an excavator, and transported from the site to the waste processor by truck, assuming 50 km. Here, the concrete is finely crushed and reinforcing steel is sorted out, after which it is sent for further waste treatment, i.e. recycling. Usually it is estimated that ~96% of the steel is recycled and the remaining 4% is landfilled. However, given the percentwise minor amount of reinforcement steel content, this assumption is in line with the cut-off rule and therefore the recycling process for the steel is omitted.

End-of-life includes demolition, initial on-site sorting/crushing, transport to treatment site as well as landfill, waste treatment and disposal of non-recyclable material. The portion of concrete material that is recycled is crushed before it is used in the next product system. In Denmark, >90% of concrete waste is recycled, the majority of which is laid out as a stabilizing base layer under roads. In this EPD 100% concrete recycling is assumed. Once crushed, the grains are left in a pile outdoor to cure for a couple of months. During this period, the concrete carbonates, meaning it absorbs CO_2 from the atmosphere that was previously released during the calcination of limestone in the production of the cement clinker. This process has generally been scientifically documented and is well known.

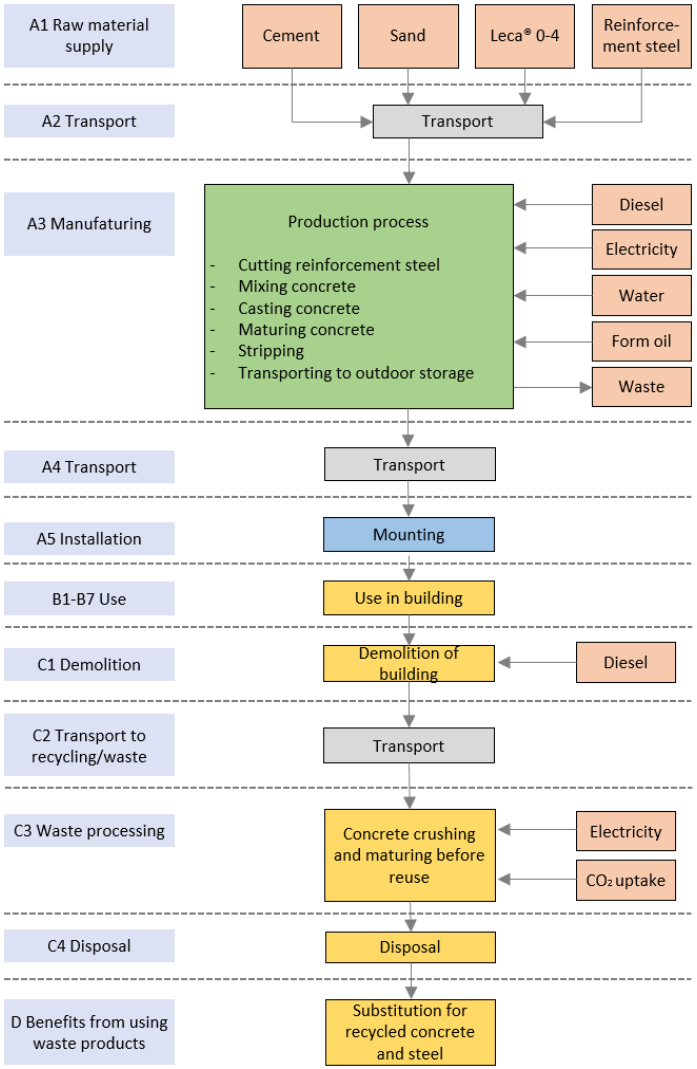
Crushed concrete is set aside for recycling as an unbound base layer in the construction of new roads and squares. The crushed concrete is included in the following products:

1. Clean crushed concrete
2. Stable for recycling (a mixture between crushed concrete and asphalt)
3. Recycled ballast (a mixture between crushed concrete and crushed brick), which also includes the fine fraction of crushed concrete.

The various products are loaded onto a truck and transported to the receiving location and further utilized.

Module D declares the benefits of recycling the crushed concrete as a substitute for gravel. The utilization of reinforcing steel recycling is not declared due to the relatively minor steel content, and additionally because the purchased steel contains only ~6% virgin steel that would be credited.

PRODUCT SYSTEM



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Not applicable
Ancillary materials	Not applicable
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

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

This EPD is product and factory specific and does not contain average calculations.

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 v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,18E+01	1,66E+00	2,43E+00	4,59E+01	MND	6,44E-01	MND	MND	MND	MND	MND	MND	MND	1,28E+00	1,68E+00	-1,30E+01	0,00E+00	-5,44E+00
GWP – fossil	kg CO_2e	4,18E+01	1,66E+00	2,44E+00	4,59E+01	MND	6,44E-01	MND	MND	MND	MND	MND	MND	MND	1,28E+00	1,68E+00	-1,30E+01	0,00E+00	-5,44E+00
GWP – biogenic	kg CO_2e	2,44E-02	0,00E+00	-7,38E-03	1,70E-02	MND	1,18E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,44E-02	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	6,47E-03	6,49E-04	1,55E-04	7,27E-03	MND	6,41E-05	MND	MND	MND	MND	MND	MND	MND	1,27E-04	6,30E-04	2,57E-04	0,00E+00	-9,97E-05
Ozone depletion pot.	kg CFC_{-11}e	1,34E-06	4,10E-07	2,00E-07	1,95E-06	MND	1,38E-07	MND	MND	MND	MND	MND	MND	MND	2,73E-07	4,19E-07	5,81E-09	0,00E+00	-6,21E-14
Acidification potential	mol H^+e	1,29E-01	5,73E-03	2,01E-02	1,55E-01	MND	6,69E-03	MND	MND	MND	MND	MND	MND	MND	1,33E-02	5,36E-03	6,11E-04	0,00E+00	-7,78E-03
EP-freshwater[2)]	kg Pe	6,45E-03	1,22E-05	1,70E-06	6,47E-03	MND	2,13E-06	MND	MND	MND	MND	MND	MND	MND	4,23E-06	1,20E-05	1,17E-05	0,00E+00	-1,23E-06
EP-marine	kg Ne	1,78E-02	1,39E-03	3,82E-03	2,30E-02	MND	2,96E-03	MND	MND	MND	MND	MND	MND	MND	5,88E-03	1,18E-03	8,51E-05	0,00E+00	-2,69E-03
EP-terrestrial	mol Ne	2,69E-01	1,54E-02	4,20E-02	3,26E-01	MND	3,25E-02	MND	MND	MND	MND	MND	MND	MND	6,44E-02	1,31E-02	9,66E-04	0,00E+00	-2,96E-02
POCP ("smog")[3)]	kg NMVOCe	8,91E-02	5,70E-03	1,16E-02	1,06E-01	MND	8,93E-03	MND	MND	MND	MND	MND	MND	MND	1,77E-02	5,16E-03	2,76E-04	0,00E+00	-8,24E-03
ADP-minerals & metals4)	kg Sbe	1,74E+02	4,15E-06	3,88E-06	1,74E+02	MND	3,26E-07	MND	MND	MND	MND	MND	MND	MND	6,48E-07	4,12E-06	3,08E-07	0,00E+00	-1,46E-07
ADP-fossil resources	MJ	1,64E+02	2,64E+01	3,27E+01	2,23E+02	MND	8,66E+00	MND	MND	MND	MND	MND	MND	MND	1,72E+01	2,69E+01	2,38E+00	0,00E+00	-6,90E+01
Water use[5)]	m^3e depr.	3,76E+00	1,24E-01	6,78E-01	4,56E+00	MND	2,33E-02	MND	MND	MND	MND	MND	MND	MND	4,62E-02	1,24E-01	6,27E-02	0,00E+00	-9,20E-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, PEF

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	5,62E+00	1,93E-07	1,24E-07	5,62E+00	MND	1,79E-07	MND	MND	MND	MND	MND	MND	MND	3,56E-07	1,95E-07	2,31E-09	0,00E+00	-3,87E-05
Ionizing radiation[6)]	kBq U235e	2,97E+01	1,36E-01	2,56E-01	3,01E+01	MND	3,98E-02	MND	MND	MND	MND	MND	MND	MND	7,90E-02	1,38E-01	6,30E-02	0,00E+00	-1,76E-02
Ecotoxicity (freshwater)	CTUe	4,52E+02	2,21E+01	2,17E+01	4,96E+02	MND	5,20E+00	MND	MND	MND	MND	MND	MND	MND	1,03E+01	2,23E+01	1,45E+00	0,00E+00	-3,59E+01
Human toxicity, cancer	CTUh	3,19E-08	6,04E-10	3,76E-10	3,29E-08	MND	1,99E-10	MND	MND	MND	MND	MND	MND	MND	3,96E-10	5,81E-10	1,08E-10	0,00E+00	-1,15E-09
Human tox. non-cancer	CTUh	1,84E-07	2,24E-08	1,19E-08	2,18E-07	MND	3,76E-09	MND	MND	MND	MND	MND	MND	MND	7,47E-09	2,27E-08	2,19E-09	0,00E+00	-1,02E-07
SQP[7)]	-	1,04E+02	3,03E+01	3,03E+00	1,37E+02	MND	1,13E+00	MND	MND	MND	MND	MND	MND	MND	2,23E+00	3,13E+01	3,55E-01	0,00E+00	-3,10E-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	2,29E+01	3,52E-01	2,07E+00	2,53E+01	MND	4,95E-02	MND	MND	MND	MND	MND	MND	MND	9,83E-02	3,48E-01	4,09E-01	0,00E+00	-3,99E-01
Renew. PER as material	MJ	2,40E+00	0,00E+00	0,00E+00	2,40E+00	MND	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	2,53E+01	3,52E-01	2,07E+00	2,77E+01	MND	4,95E-02	MND	MND	MND	MND	MND	MND	MND	9,83E-02	3,48E-01	4,09E-01	0,00E+00	-3,99E-01
Non-re. PER as energy	MJ	1,66E+02	2,64E+01	3,25E+01	2,25E+02	MND	8,66E+00	MND	MND	MND	MND	MND	MND	MND	1,72E+01	2,69E+01	2,37E+00	0,00E+00	-6,90E+01
Non-re. PER as material	MJ	4,08E+00	0,00E+00	1,61E-01	4,24E+00	MND	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 non-re. PER	MJ	1,70E+02	2,64E+01	3,27E+01	2,29E+02	MND	8,66E+00	MND	MND	MND	MND	MND	MND	MND	1,72E+01	2,69E+01	2,37E+00	0,00E+00	-6,90E+01
Secondary materials	kg	4,45E+00	8,14E-03	1,88E-03	4,46E+00	MND	3,39E-03	MND	MND	MND	MND	MND	MND	MND	6,73E-03	7,57E-03	1,30E-03	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	1,40E-01	6,63E-05	6,98E-06	1,41E-01	MND	1,11E-05	MND	MND	MND	MND	MND	MND	MND	2,20E-05	6,67E-05	1,43E-06	0,00E+00	0,00E+00
Non-ren. secondary fuels	MJ	4,64E+00	0,00E+00	0,00E+00	4,64E+00	MND	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	2,13E-01	3,54E-03	2,34E-02	2,40E-01	MND	5,26E-04	MND	MND	MND	MND	MND	MND	MND	1,04E-03	3,56E-03	1,98E-03	0,00E+00	-7,44E-04

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	9,98E-01	3,03E-02	1,53E-01	1,18E+00	MND	1,16E-02	MND	MND	MND	MND	MND	MND	MND	2,30E-02	2,88E-02	9,16E-03	0,00E+00	-3,83E-05
Non-hazardous waste	kg	1,23E+02	5,11E-01	3,49E+00	1,27E+02	MND	8,14E-02	MND	MND	MND	MND	MND	MND	MND	1,62E-01	5,01E-01	5,32E-01	0,00E+00	-2,05E-02
Radioactive waste	kg	4,29E-04	1,81E-04	1,44E-04	7,55E-04	MND	6,10E-05	MND	MND	MND	MND	MND	MND	MND	1,21E-04	1,85E-04	1,70E-05	0,00E+00	-1,56E-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 re-use	kg	1,01E+00	0,00E+00	0,00E+00	1,01E+00	MND	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	6,32E-01	0,00E+00	0,00E+00	6,32E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,87E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	1,09E-01	0,00E+00	0,00E+00	1,09E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,68E-03
Exported energy	MJ	1,10E+00	0,00E+00	0,00E+00	1,10E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,23E+01	1,65E+00	2,41E+00	4,63E+01	MND	6,36E-01	MND	MND	MND	MND	MND	MND	MND	1,26E+00	1,67E+00	-1,30E+01	0,00E+00	0,00E+00
Ozone depletion Pot.	kg CFC_{-11}e	1,02E-06	3,25E-07	1,58E-07	1,50E-06	MND	1,09E-07	MND	MND	MND	MND	MND	MND	MND	2,16E-07	3,32E-07	5,05E-09	0,00E+00	0,00E+00
Acidification	kg SO_2e	1,67E-01	4,59E-03	1,69E-02	1,89E-01	MND	4,77E-03	MND	MND	MND	MND	MND	MND	MND	9,46E-03	4,35E-03	5,16E-04	0,00E+00	0,00E+00
Eutrophication	kg PO_4^3e	2,90E-02	9,94E-04	3,70E-03	3,37E-02	MND	1,11E-03	MND	MND	MND	MND	MND	MND	MND	2,20E-03	9,21E-04	4,10E-04	0,00E+00	0,00E+00
POCP (“smog”)	kg C_2H_4e	6,26E-03	2,06E-04	5,52E-04	7,02E-03	MND	1,04E-04	MND	MND	MND	MND	MND	MND	MND	2,07E-04	2,02E-04	2,29E-05	0,00E+00	0,00E+00
ADP-elements	kg Sbe	1,12E-04	4,04E-06	3,87E-06	1,20E-04	MND	3,21E-07	MND	MND	MND	MND	MND	MND	MND	6,38E-07	4,00E-06	3,08E-07	0,00E+00	0,00E+00
ADP-fossil	MJ	3,00E+02	2,64E+01	3,27E+01	3,59E+02	MND	8,66E+00	MND	MND	MND	MND	MND	MND	MND	1,72E+01	2,69E+01	2,37E+00	0,00E+00	0,00E+00

ANNEX

The following result table sums up the GWP-total for all the product variants studied.

GWP-TOTAL - 1750 KG/M^3 **PRODUCT GROUP, EN 15804+A2, PEF**

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
1750 kg/m^3_16cm	kg CO_2e	3,69E+01	1,46E+00	2,41E+00	4,07E+01	MND	5,52E-01	MND	MND	MND	MND	MND	MND	MND	1,10E+00	1,45E+00	-1,14E+01	0,00E+00	-4,68E+00
1750 kg/m^3_18cm	**kg CO_2e**	**4,18E+01**	**1,66E+00**	**2,43E+00**	**4,59E+01**	**MND**	**6,44E-01**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**1,28E+00**	**1,68E+00**	**-1,30E+01**	**0,00E+00**	**-5,44E+00**
1750 kg/m^3_20cm	kg CO_2e	4,44E+01	1,77E+00	2,43E+00	4,86E+01	MND	6,81E-01	MND	MND	MND	MND	MND	MND	MND	1,37E+00	1,80E+00	-1,38E+01	0,00E+00	-5,83E+00
1750 kg/m^3_22cm	kg CO_2e	4,89E+01	1,90E+00	2,43E+00	5,33E+01	MND	7,36E-01	MND	MND	MND	MND	MND	MND	MND	1,47E+00	1,94E+00	-1,54E+01	0,00E+00	-6,27E+00
1750 kg/m^3_24cm	kg CO_2e	5,26E+01	2,00E+00	2,43E+00	5,70E+01	MND	7,72E-01	MND	MND	MND	MND	MND	MND	MND	1,54E+00	2,03E+00	-1,68E+01	0,00E+00	-6,59E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

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

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited
08.11.2024