InfraGrout® 110LC

Environmental Product Declaration

In accordance with EN 15804+A2 & ISO 14025 / ISO 21930

EPD HUB, HUB-2137
Published on 10.10.2024, last updated on 10.10.2024, valid until 10.10.2029.

General Information

Manufacturer

Manufacturer	Crosbe
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Contact details	info@crosbe.com
Website	www.crosbe.com

EPD standards, scope, and verification

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Niki Jackson
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Silvia Vilčeková, 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	Infragrout 110 LC
Additional labels	-
Product reference	–
Place of production	Australia
Period for data	April 2022 to March 2023
Averaging in EPD VP-024-C	No averaging
Variation in GWP-fossil for A1-A3	- %

Environmental data summary

Declared unit	1
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	525
GWP-total, A1-A3 ($kgCO_2e$)	525
Secondary material, inputs (%)	1.54
Secondary material, outputs (%)	82.2
Total energy use, A1-A3 (kWh)	949
Total water use, A1-A3 (m3e)	1.58

Product and manufacturer

About crosbe

Through ongoing investment in people, technology, and innovation; Crosbe is a leader in the research, development, production and distribution of cement-based grouts and mortars.

Our products are used across a broad range of construction applications, and can be classified into the following key categories:

Post Tensioning, Civil Engineering, Flooring, Construction Grouts, and Concrete Repair.

Our focus on innovation means we listen to the market and respond with engineered solutions. In addition to our standard range of products, our technical team are available to assist with development of products to meet specific project requirements. Often, this can include 100-year design life and rigorous product testing at our own NATA accredited laboratory.

Why crosbe?

Crosbe works closely with construction managers, project managers, and engineers to ensure that their projects are supported with quality grout and mortar solutions. From the smallest contractor to the largest civil engineering firms, across both public and private sectors, our partners benefit from having the industry expertise, leadership, and technical support of a 100% Australian owned and operated company.

Crosbe's technical team ensure that our customers have access to all relevant product data, technical specifications, and approvals they need to comfortably specify the right products for their project. Our products are proven in real-world applications, consistently providing quality without the uncontrollable variations that often cause delays. All our products are easy to use and quality tested, ensuring contractors can deliver their services on time and to the highest of standards.

Product description

InfraGrout® 110 Low Carbon is a high strength, ultra-high flow, low bleed, pumpable cementitious grout with extended working time. It is engineered with low-carbon technology to offer a sustainable solution for civil applications, including grouting of PT bridge ducts, ground anchors and soil nails. Crosbe InfraGrout® 110 LC is free from methocell and ligno-sulphonate-based additives, aluminates, and metallic expansion agents.

Reduction of GWP-fossil, A1-A3 ($kgCO_2e$)

Product	GWP-total, A1-A3 ($kgCO_2e$)
InfraGrout 110	983
InfraGrout 110 Low Carbon	525
Reduction:	**47%**

Based on InfraGrout 110 EPD xxx.

Further information can be found at **www.crosbe.com.**

Product raw material main composition

Raw material category	Amount, mass- %	Material origin
Metals	–	
Minerals	100	Australia, China
Fossil materials	–	
Bio-based materials	-	

Biogenic carbon content

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.16
Biogenic carbon content in packaging, kg C	3.88

Functional unit and service life

Declared unit	1 ton
Mass per declared unit	1000 kg
Functional unit	–
Reference service life	-

Substances, Reach - Very High Concern

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

Product Life-Cycle

System boundary

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	MND	MND	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	Deconstr. /Demol.	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.

Crosbe sources the raw materials from third parties located in Australia and overseas. The materials are transported to our site in trucks, with material from overseas imported into Australia by container ship. The production process is undertaken in a closed loop system with no waste of raw materials during manufacturing. Any waste raw materials from the packaging process are fed back into the system for re-bagging. Only the waste bags are accounted for with manufacturing waste.

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.

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.

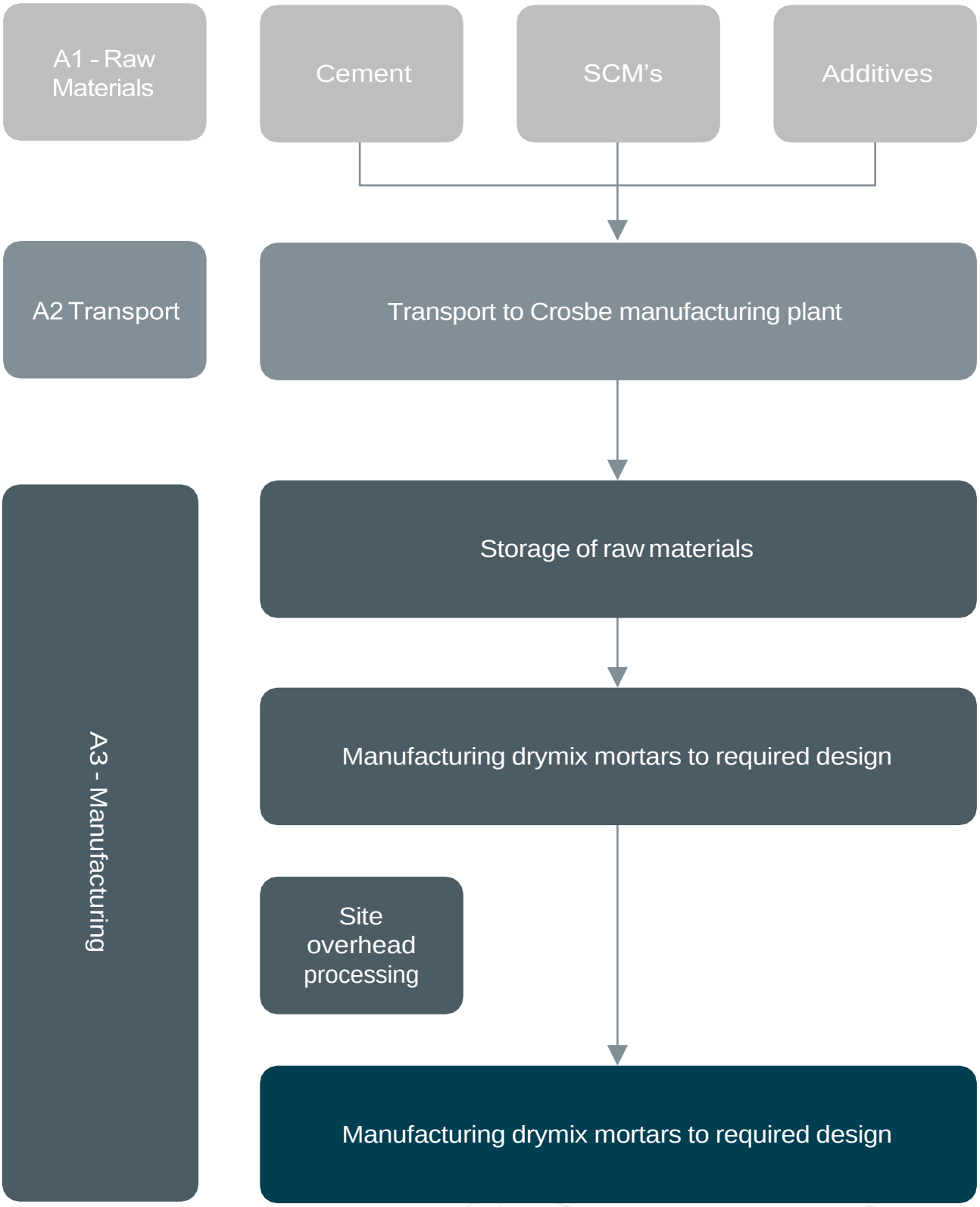
Product end of life (C1-C4, D)

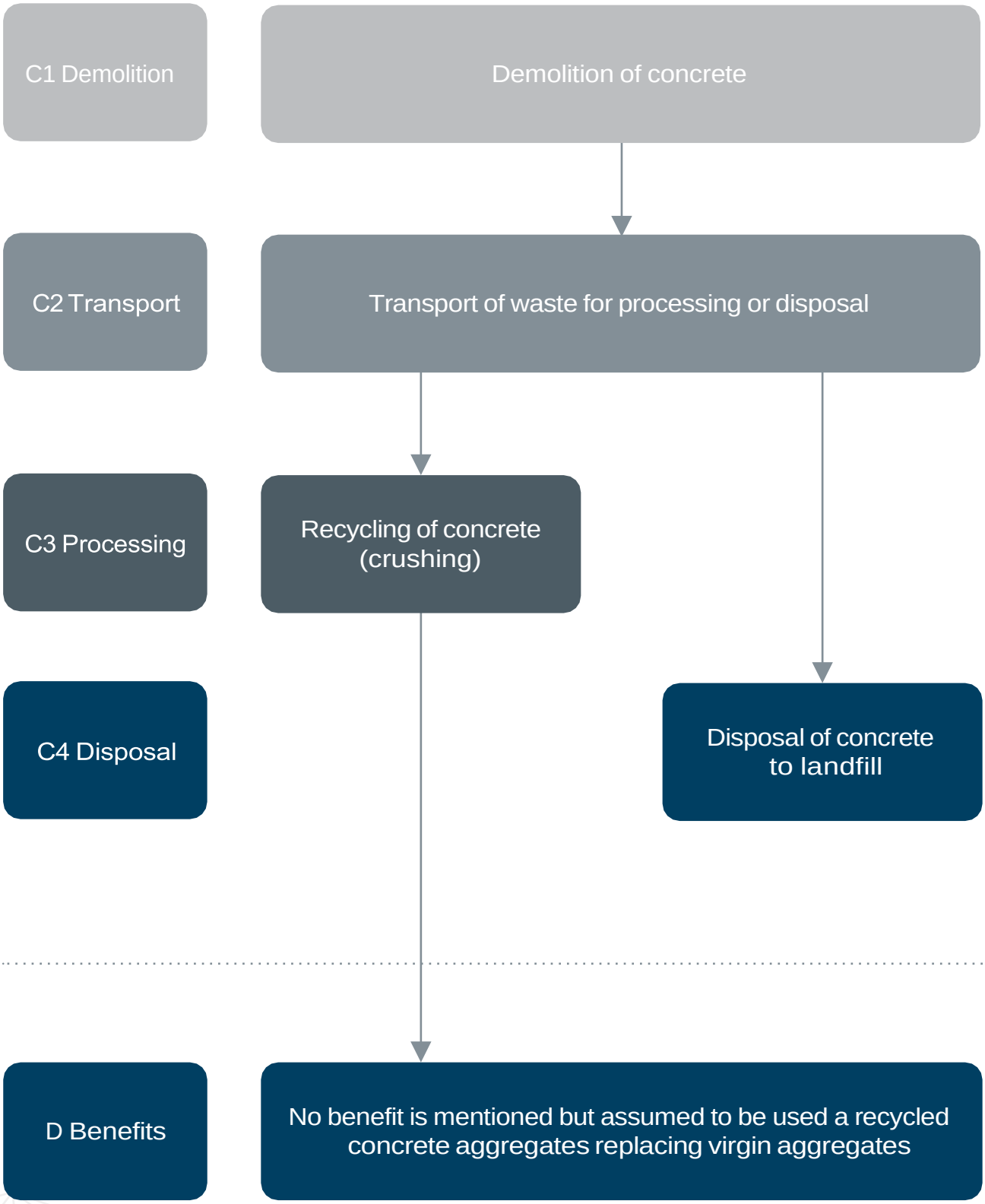
The grout undergoes a chemical change and becomes a part of the concrete structure, as such it can't be easily identified and or removed. For this stage the generic scenario for concrete will be adopted.

Module C1 covers the demolition of the concrete at the end of its service, as most of Crocbe's clients are based in NSW, the end-of-life scenario for NSW for building and demolition, based on the National Waste Report 2022(NWR 2022), Table 37. The scenario implies for 2021 the recycled rate of concrete is 79.6% with the remaining 20.4% sent to landfill. Module C2 is the transport to the recycling facility of landfill (50km). Module C3 is the recycling process and module C4 represents disposal to landfill. Concrete is deemed to reach end of waste status when the material is crushed and stockpiles as recycled concrete aggregate (RCA). The data point used for recycling concrete accounts for the energy required for demolition. Due to lack date and high uncertainty the CO2 uptake due to carbonation has not been included in the end of life.

Module D accounts for the benefits and flows from net flows leaving the product system. For this EPD the recycled material as calculated in module C3 is considered to value for Module D. We have assumed that RCA will replace virgin aggregates in concrete production.

Manufacturing process




C1 Demolition
Demolition of concrete
C2 Transport
Transport of waste for processing or disposal
C3 Processing
Recycling of concrete (crushing)
C4 Disposal
Disposal of concrete to landfill
D Benefits
No benefit is mentioned but assumed to be used a recycled concrete aggregates replacing virgin aggregates

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 materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

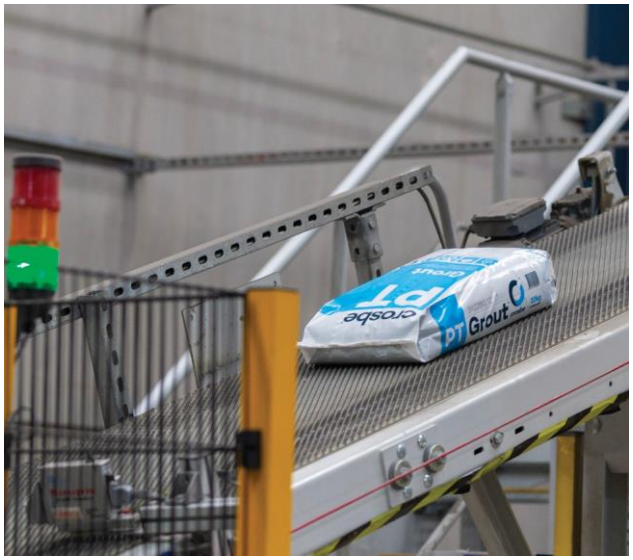
Averages and variability

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.


PT Grout

Environmental impact data

Core environmental impact indicators – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,94E+02	1,52E+01	1,59E+01	5,25E+02	1,41E+01	4,82E+00	4,56E+00	1,08E+00	-4,94E+00
GWP – fossil	kg CO_2e	4,94E+02	1,52E+01	1,59E+01	5,25E+02	1,40E+01	4,82E+00	4,56E+00	1,07E+00	-4,93E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	2,30E-01	6,51E-03	1,73E-02	2,54E-01	2,62E-02	1,78E-03	6,31E-04	1,01E-03	-3,37E-03
Ozone depletion pot.	kg CFC^{-11}e	1,89E-05	3,42E-06	5,81E-07	2,29E-05	3,94E-06	1,11E-06	9,61E-07	4,35E-07	-1,03E-06
Acidification potential	mol H^+e	2,01E+00	1,37E-01	7,95E-02	2,23E+00	1,28E-01	2,04E-02	4,70E-02	1,01E-02	-4,89E-02
EP-freshwater[2)]	kg Pe	4,69E-03	1,10E-04	1,51E-03	6,32E-03	1,17E-04	3,94E-05	2,32E-05	1,13E-05	-2,67E-05
EP-marine	kg Ne	3,33E-01	3,70E-02	1,58E-02	3,86E-01	5,01E-02	6,06E-03	2,07E-02	3,50E-03	-2,13E-02
EP-terrestrial	mol Ne	4,05E+00	4,09E-01	1,74E-01	4,63E+00	5,49E-01	6,69E-02	2,27E-01	3,85E-02	-2,34E-01
POCP ("smog")[3)]	kg NMVOCe	1,07E+00	1,17E-01	5,93E-02	1,24E+00	1,55E-01	2,14E-02	6,23E-02	1,12E-02	-6,44E-02
ADP-minerals & metals[4)]	kg Sbe	2,63E-03	3,33E-05	6,00E-05	2,72E-03	2,64E-05	1,13E-05	2,49E-06	2,47E-06	-3,09E-06
ADP-fossil resources	MJ	4,11E+03	2,22E+02	2,73E+02	4,60E+03	2,65E+02	7,23E+01	6,20E+01	2,94E+01	-6,69E+01
Water use[5)]	m^3e depr.	1,07E+02	9,49E-01	7,06E+00	1,15E+02	9,33E-01	3,24E-01	2,08E-01	9,34E-02	-2,29E-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, PEF

Impact category	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	8,23E-06	1,54E-06	7,68E-07	1,05E-05	1,04E-05	5,55E-07	7,17E-06	2,03E-07	-7,21E-06
Ionizing radiation[6)]	kBq U235e	2,34E+01	1,06E+00	6,14E-01	2,51E+01	1,23E+00	3,44E-01	3,22E-01	1,33E-01	-3,26E-01
Ecotoxicity (freshwater)	CTUe	4,23E+03	1,90E+02	2,41E+02	4,66E+03	1,85E+02	6,51E+01	3,72E+01	1,92E+01	-4,31E+01
Human toxicity, cancer	CTUh	8,09E-08	5,73E-09	2,70E-08	1,14E-07	5,88E-09	1,60E-09	1,44E-09	4,80E-10	-1,66E-09
Human tox. non-cancer	CTUh	2,75E-06	1,82E-07	1,81E-07	3,12E-06	1,39E-07	6,44E-08	2,72E-08	1,26E-08	-3,05E-08
SQP[7)]	-	1,02E+03	2,23E+02	1,85E+03	3,10E+03	3,59E+02	8,33E+01	8,09E+00	6,30E+01	-1,24E+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	C1	C2	C3	C4	D
Renew. PER as energy[8]	MJ	3,00E+02	2,40E+00	1,36E+02	4,39E+02	2,68E+00	8,15E-01	6,39E-01	2,56E-01	-5,85E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	3,00E+02	2,40E+00	1,36E+02	4,39E+02	2,68E+00	8,15E-01	6,39E-01	2,56E-01	-5,85E-01
Non-re. PER as energy	MJ	2,57E+03	2,22E+02	1,87E+02	2,97E+03	2,65E+02	7,23E+01	6,20E+01	2,95E+01	-6,69E+01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,57E+03	2,22E+02	1,87E+02	2,97E+03	2,65E+02	7,23E+01	6,20E+01	2,95E+01	-6,69E+01
Secondary materials	kg	1,54E+01	6,76E-02	4,11E-01	1,59E+01	8,31E-02	2,01E-02	2,42E-02	6,19E-03	-2,64E-02
Renew. secondary fuels	MJ	4,30E-03	5,66E-04	3,36E+00	3,36E+00	1,08E-03	2,03E-04	7,81E-05	1,62E-04	-1,16E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,39E+00	2,67E-02	1,67E-01	1,58E+00	1,70E-01	9,37E-03	5,08E-03	3,22E-02	-5,01E-03

8) PER = Primary energy resources.

End of life – waste

Impact category	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	9,23E+00	2,90E-01	1,10E+00	1,06E+01	3,51E-01	9,59E-02	8,76E-02	0,00E+00	-1,01E-01
Non-hazardous waste	kg	3,16E+02	4,43E+00	6,40E+01	3,85E+02	4,61E+00	1,58E+00	9,47E-01	2,04E+02	-1,04E+00
Radioactive waste	kg	1,14E-02	1,50E-03	2,80E-04	1,32E-02	1,79E-03	4,84E-04	4,36E-04	0,00E+00	-4,63E-04

End of life – output flows

Impact category	Unit	A1	A2	A3	A1-A3	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	7,96E+02	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E+03	0,00E+00	2,63E+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	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	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	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,72E+02	1,50E+01	1,55E+01	5,02E+02	1,39E+01	4,78E+00	4,51E+00	1,30E+00	-4,88E+00
Ozone depletion Pot.	kg $CFC^{-11}e$	1,39E-05	2,71E-06	4,81E-07	1,71E-05	3,12E-06	8,79E-07	7,62E-07	3,49E-07	-8,14E-07
Acidification	kg SO^2e	1,62E+00	1,09E-01	6,51E-02	1,79E+00	9,38E-02	1,59E-02	3,35E-02	7,77E-03	-3,50E-02
Eutrophication	kg $PO^{43}e$	3,51E-01	1,70E-02	5,33E-02	4,21E-01	2,14E-02	3,62E-03	7,99E-03	1,30E-02	-8,28E-03
POCP ("smog")	kg C^2H^4e	7,01E-02	3,32E-03	5,28E-03	7,87E-02	3,00E-03	6,20E-04	7,42E-04	3,64E-04	-7,93E-04
ADP-elements	kg Sbe	1,71E-03	3,23E-05	5,95E-05	1,80E-03	2,59E-05	1,10E-05	2,46E-06	2,50E-06	-3,02E-06
ADP-fossil	MJ	2,04E+03	2,22E+02	2,73E+02	2,54E+03	2,65E+02	7,25E+01	6,20E+01	2,99E+01	-6,69E+01

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.

Silvia Vilčeková, as an authorized verifier acting for EPD Hub Limited

10.10.2024

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