ENVIRONMENTAL PRODUCT DECLARATION

MULTIPLE PRODUCT EPD WITH MULTIPLE DECLARED RESULTS
IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Clay products
(clay paint, clay stucco, clay marmorino, clay decorative putty, clay decorative plaster, clay plaster, clay rustic plaster, hempclay plaster)

Saviukumaja OÜ

Programme operator: Rakennustieto Oy
Malminkatu 16 A, 00100 Helsinki
https://ymparisto.rakennustieto.fi/
EPD registration number: RTS_479_26
Publication date: 19.5.2026
Valid until: 19.5.2031

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Saviukumaja OÜ
Address	Mooste, Põlva county, Estonia
Contact details	info@uku.eu
Website	www.uku.eu

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	Rakennustieto Oy
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS EPD PCR 2024 (12.11.2024) is used.
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Kristel Lopsik, Sustinere OÜ
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Anni Oviir, LCA Support (Rangi Maja OÜ)
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EPD valid until	19.5.2031

EPD INFORMATION

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	Clay products
Additional labels	Clay paint/clay stucco; Clay marmorino; Clay decorative putty; Clay decorative plaster 0-1mm; Clay plaster 0-0.05mm; Clay rustic plaster; Hempclay plaster
Product reference	SV/1v; SS/1v; SM/1v; SP/20lv; S0-1/25v; US0-2/25h; S0-4/25bp
Place of production	Mooste, Põlva county, Estonia
Period for data	01.01.2024-31.12.2024
Averaging in EPD	No averaging, multiple products

Jukka Seppänen
RTS EPD Committee Secretary

Laura Apilo
Managing Director

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Saviukumaja OÜ, operating under the brand UKU – Pure Earth, is a Northern European manufacturer of high-quality natural clay and lime-based finishing materials. With over 18 years of experience and deep roots in traditional construction methods, UKU produces sustainable plasters, paints, and putties designed to promote a healthy indoor climate and harmony with nature. All products are developed and manufactured at the historic Mooste Manor in Southern Estonia.

PRODUCT DESCRIPTION

Clay paint is velvety matte and a slightly structural natural color. UKU clay paint offers a unique, textured finish that brings warmth and rustic charm to walls and surfaces, making it a standout choice for creating inviting, natural aesthetics.

Clay stucco is a finishing putty rooted in the European stucco tradition, subtly influenced by Japanese aesthetics. With just a few thin layers, it creates a luxurious, glossy, and patterned surface.

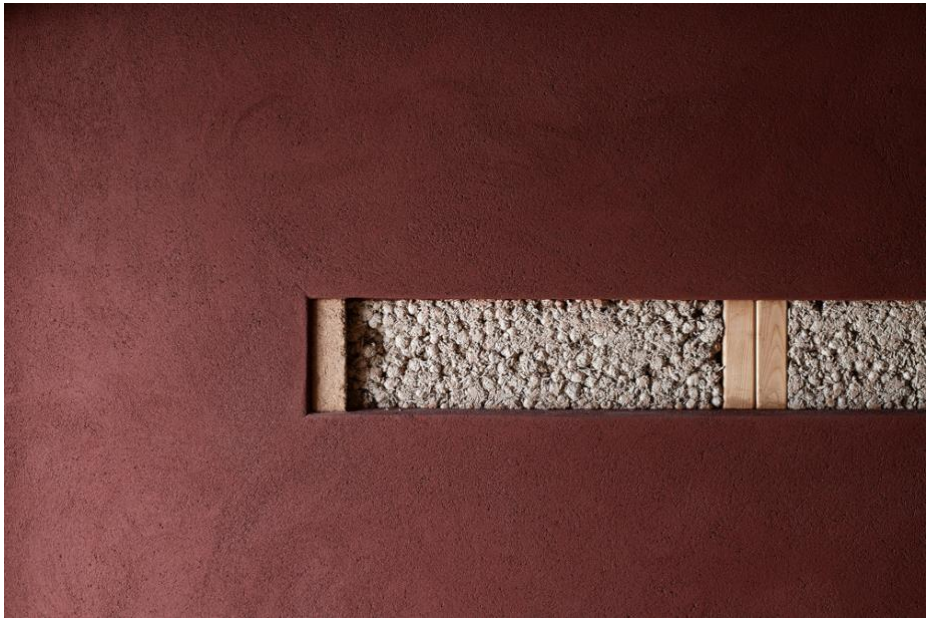
The clay marmorino finish is a good choice for interior design. With just a few thin layers, it creates a beautiful matte or satin-gloss surface, adding both elegance and natural appeal.

UKU clay decorative putty is a health-friendly and ecological solution that ensures breathability and helps balance indoor humidity. Suitable for homes and public spaces, it offers a unique and natural finish.

In clay decorative plaster naturally colorful clays are used to create each unique tone. Suitable for dry indoor surfaces, each shade comes in two textures.

This plaster is used to fill and level the base plastered surface's unevenness and achieve a structural final finish. It can also be used as a base plaster on surfaces where the thickness of the plaster must be kept to a minimum. Suitable for plastering various surfaces in dry interiors.

Further information can be found at:
www.uku.eu



PRODUCT STANDARDS

Products comply with standard EN 998-1.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Material	Amount, mass %	Usability			Origin
		Renewable	Non-renewable	Recycled	
Clay	9-49%		x		EU
Other minerals	8-82%		x		EU
Bio-based materials	0,1-1%	x			EU

Packaging raw material composition					
Plastic packaging (PP)	24%		x		EE
Plastic wrap (LDPE)	7%		x		EE
Cardboard	14%	x			EE
Paper bag KRAFT	55%	x			FI

Weight of packaging per declared unit (kg)	
Clay paint/stucco/marmorino/decorative putty/decorative plaster/clay plaster 0-0.05mm/rustic plaster/hempclay plaster	0,0051

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate:

Biogenic carbon content in product, kg C	The share of biogenic materials is less than 5% of total mass of the product
Biogenic carbon content in packaging, kg C	0,00112

SUBSTANCES, REACH - VERY HIGH CONCERN

The products do 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 as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of packaging waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers electricity transmission losses during the manufacturing processes. A market-based approach is used in modelling the electricity mix utilized in the factory.
No material losses during manufacturing process have been detected. All the raw materials are used for the final product or for samples. No by-products are produced.

The production process involves mixing and grinding and packaging the final products. All products are composed of natural raw materials and are supplied in dry form to ensure a long shelf life and ease of transport. The manufacturing process follows a standardized mixing and packaging procedure:

1) Raw Material Handling:
Raw materials are transported to the mixing area either manually or with the help of forklifts. Materials are stored in designated zones near the mixing station.
2) Mixing:
The production line uses an 800-liter horizontal mixer. Raw materials are conveyed into the mixer via conveyor belts. Mixing ensures homogeneous

blending of all ingredients.

3) Cleaning:

After each batch, the mixer is cleaned to avoid cross-contamination between different product types or colors. Cleaning is performed manually and with compressed air or vacuum systems.

4) Packaging:

After mixing, the finished products are transferred via conveyor to the packaging unit. Products are primarily filled into 20–25 kg paper bags, which are closed using a handheld industrial sewing machine. Depending on the product type or customer request, materials may also be packaged in plastic buckets or 1000 kg big bags.

5) Palletizing and Storage:

Once sealed, the bags, buckets, or big bags are placed onto wooden EUR pallets, which are re-used. These pallets are then lifted using forklifts and stored on shelves in the warehouse, awaiting delivery.

The electricity used on site is partially produced by installed solar panels without storage.

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. This module considers the transportation from the factory in Mooste to main customers in closer EU region (Estonia, Finland, Latvia, Denmark). The transportation distances were calculated as a weighted average of the distances to the main customers.

Environmental impacts from installation into the building include an estimated 10% product installation loss and waste packaging materials.

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)

Given that the products are shipped to customers in Estonia (around 50% of total production volume) and the rest 50% is shipped to Europe, the end-of-life scenario is modelled according to Estonian and European region.

Demolition is assumed to take 0.01 kWh/kg (Bozdağ, Ö. & Seçer, M., 2007) and the Level(s) project. It is assumed that 100% of the waste is collected and transported to the waste treatment centre.

During demolition phase the clay products are removed together with the substrate. According to the Manufacturer in around 50% of cases the clay products are applied to the gypsum plaster and in around 50% cases other surfaces are used for other applications (e.g. reed insulation, bricks, wood). Although the products can be scraped off from the surface and re-used after grinding and mixing, the regular practice is assumed that during demolition the clay products are removed together with the substrate (e.g. gypsum plaster or bricks) and the waste is handled as the substrate.

Based on Estonian construction and demolition waste study (Estonian Environment Agency, 2024) 80% of gypsum plasterboard waste (EC waste code 17 08 02) has been recovered and used as aggregates for filling and 20% has been landfilled. Other mineral waste (EC waste code 17 01 07) has been recycled at a rate of 99% and landfilled at 1%.

The loads beyond the system boundaries include the recycling process of the products' waste. The benefits beyond the system boundaries include the avoided production of virgin material (e.g. polyethylene granulates and mineral aggregates) recycled during end-of-life of the main product.

MANUFACTURING PROCESS

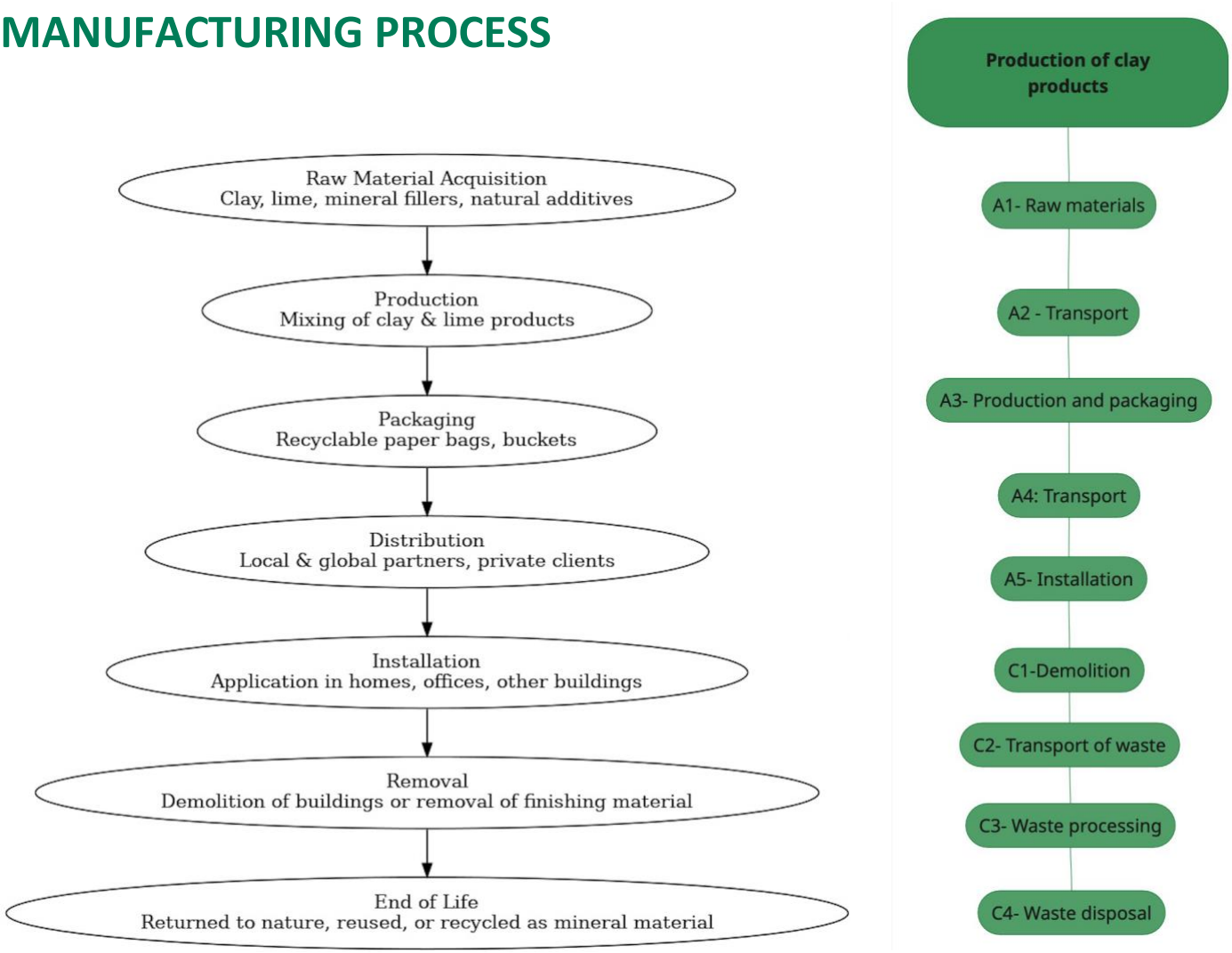


Figure 1. Schematic illustration of the manufacturing and transportation process of UKU Pure Earth products.

LIFE-CYCLE ASSESSMENT

DATA PERIOD

The period for data represents 01.01.2024-31.12.2024.

DECLARED UNIT

Declared unit	1 kg of clay product
Mass per declared unit	1 kg

For informational use a conversion table is provided to calculate the consumption rate (kg/m²) which represents the amount of product required to cover 1 m² of surface under typical application conditions.

Product	kg/m2
Clay paint	0,15
Clay stucco	0,4
Clay marmorino	0,8
Clay decorative putty	1,6
Clay decorative plaster 0-1mm	3,5
Clay plaster 0-0,05mm	0,85
Clay rustic plaster	7
Hempclay plaster	7

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table. The scope of the EPD is cradle to gate with options, A4-A5, and modules C1-C4 and D.

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

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. 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. Due to this the raw material packaging waste, wooden packaging waste and installation materials have not been included in the study. The production does not cause any waste of raw materials as they can be re-used on the spot and only small particles (dust) is considered as production waste, but due to marginal amounts this has been excluded from the study.

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.

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, as per EN 15804, allocation is conducted in the following order;
1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

The production line produces two types of products: clay- and lime-based products. Consumed energy and used packaging materials during the manufacturing stage have been allocated to the analysed product based on the amount of product manufactured. Packaging material data has been collected as a total value for all clay products, since the packaging materials used are the same for each of the product.

DATA QUALITY

Data collection for production, transport, and packaging was conducted using time and site-specific information from the manufacturer via a questionnaire for reference year 2024. Raw material information is based on regional EU data from One Click LCA database and Ecoinvent. The inventory and environmental data is assessed as fair to very good quality.

This EPD is multi-product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

3rd CEER Report on Power Losses 2025, Council of European Energy Regulators. Accessed on: https://www.ceer.eu/publication/3rd-ceer-report-on-power-losses/

Bozdag, Ö. & Secer, M. 2007. Accessed on: www.irbnet.de/daten/iconda/CIB_DC24603.pd f

Estonian Construction and Demolition Waste statistics, accessed 2025: https://keskkonnaportaal.ee/et/ehitus-ja-lammutusjaatmete-teke-ja-kaitlemine

Databases: Ecoinvent 3.10.1/3.11; ProBas; IDEMAT

EPD: Dry ground calcium carbonate (GCC-Dry) Coarse - Sector EPD, S-P-02919; EPD methylcellulose, NEPD-5642-4909_EN

ENVIRONMENTAL IMPACT DATA (CLAY PAINT AND STUCCO)

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	6,30E-02	3,66E-02	7,06E-03	1,07E-01	5,45E-02	2,66E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	3,26E-02	5,60E-03	2,69E-01
GWP – fossil	kg CO_2e	8,52E-02	3,66E-02	1,12E-02	1,33E-01	5,44E-02	2,18E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-2,27E-02	7,85E-06	-4,15E-03	-2,69E-02	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	2,01E-02	2,36E-03	3,58E-01
GWP – LULUC	kg CO_2e	5,30E-04	1,58E-05	4,99E-05	5,96E-04	2,38E-05	6,78E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	1,10E-07	6,13E-10	2,91E-10	1,10E-07	9,71E-10	1,12E-08	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	6,03E-04	1,80E-04	5,51E-05	8,38E-04	1,85E-04	1,21E-04	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	1,96E-05	2,63E-06	2,68E-05	4,90E-05	4,06E-06	7,36E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	1,32E-04	5,13E-05	1,46E-05	1,98E-04	4,72E-05	3,02E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	1,38E-03	5,62E-04	1,37E-04	2,08E-03	5,15E-04	3,15E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	4,35E-04	2,18E-04	4,71E-05	6,99E-04	2,49E-04	1,14E-04	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	6,49E-07	9,81E-08	3,55E-08	7,83E-07	1,53E-07	1,06E-07	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	1,74E+00	5,31E-01	2,43E-01	2,51E+00	8,13E-01	3,80E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	3,34E-02	2,58E-03	3,17E-02	6,77E-02	4,02E-03	8,50E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	8,70E-09	3,45E-09	5,08E-10	1,27E-08	5,21E-09	2,82E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6)]	kBq U235e	2,29E-03	5,09E-04	1,54E-03	4,34E-03	8,00E-04	7,75E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	1,38E+00	6,87E-02	4,14E-01	1,86E+00	1,06E-01	1,91E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	6,84E-11	6,17E-12	2,39E-12	7,69E-11	9,15E-12	9,82E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	1,27E-09	3,31E-10	6,53E-11	1,67E-09	5,15E-10	2,60E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7)]	-	4,15E-01	5,06E-01	5,69E-01	1,49E+00	7,98E-01	2,94E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	8,34E-02	7,54E-03	6,82E-02	1,59E-01	1,18E-02	-3,06E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	2,52E-01	0,00E+00	4,83E-02	3,00E-01	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-2,26E-01	-2,65E-02	1,09E-03
Total use of renew. PER	MJ	3,35E-01	7,54E-03	1,17E-01	4,59E-01	1,18E-02	-7,89E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	-2,20E-01	-2,46E-02	-1,15E-01
Non-re. PER as energy	MJ	1,89E+00	5,32E-01	1,60E-01	2,58E+00	8,13E-01	3,26E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	1,89E+00	5,32E-01	2,34E-01	2,65E+00	8,13E-01	2,52E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	3,98E-04	2,28E-04	7,38E-04	1,36E-03	3,48E-04	1,90E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	1,38E-04	2,74E-06	1,30E-04	2,70E-04	4,31E-06	2,77E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	7,97E-04	7,59E-05	1,74E-04	1,05E-03	1,19E-04	-1,85E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	1,02E-03	8,40E-04	3,68E-04	2,23E-03	1,29E-03	5,14E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	2,19E-02	1,58E-02	3,09E-02	6,86E-02	2,44E-02	2,36E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	1,24E-05	1,25E-07	2,99E-07	1,28E-05	1,97E-07	1,37E-06	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,34E-02	3,64E-02	1,11E-02	6,09E-02	5,41E-02	1,46E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	4,68E-11	4,89E-10	2,71E-10	8,06E-10	7,73E-10	1,98E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	5,76E-05	1,41E-04	4,41E-05	2,42E-04	1,47E-04	5,38E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	1,55E-05	2,63E-05	3,04E-05	7,23E-05	3,00E-05	1,42E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	3,91E-06	1,04E-05	3,50E-06	1,78E-05	1,23E-05	4,05E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	1,88E-07	9,57E-08	3,41E-08	3,18E-07	1,49E-07	5,88E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08

ENVIRONMENTAL IMPACT DATA (CLAY MARMORINO)

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	4,79E-02	3,63E-02	7,06E-03	9,13E-02	5,45E-02	2,46E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	2,83E-02	5,09E-03	2,69E-01
GWP – fossil	kg CO_2e	6,53E-02	3,63E-02	1,12E-02	1,13E-01	5,44E-02	1,98E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-1,78E-02	7,57E-06	-4,15E-03	-2,20E-02	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	1,58E-02	1,86E-03	3,58E-01
GWP – LULUC	kg CO_2e	3,75E-04	1,55E-05	4,99E-05	4,40E-04	2,38E-05	5,22E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	8,61E-08	6,36E-10	2,91E-10	8,70E-08	9,71E-10	8,85E-09	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	4,79E-04	2,37E-04	5,51E-05	7,71E-04	1,85E-04	1,14E-04	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	1,51E-05	2,45E-06	2,68E-05	4,43E-05	4,06E-06	6,89E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	1,06E-04	6,41E-05	1,46E-05	1,85E-04	4,72E-05	2,89E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	1,13E-03	7,05E-04	1,37E-04	1,97E-03	5,15E-04	3,04E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	3,49E-04	2,54E-04	4,71E-05	6,50E-04	2,49E-04	1,09E-04	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	4,87E-07	9,30E-08	3,55E-08	6,16E-07	1,53E-07	8,98E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	1,35E+00	5,24E-01	2,43E-01	2,11E+00	8,13E-01	3,40E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	2,59E-02	2,49E-03	3,17E-02	6,00E-02	4,02E-03	7,73E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	6,78E-09	3,24E-09	5,08E-10	1,05E-08	5,21E-09	2,60E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6)]	kBq U235e	1,77E-03	5,12E-04	1,54E-03	3,82E-03	8,00E-04	7,24E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	1,05E+00	6,39E-02	4,14E-01	1,53E+00	1,06E-01	1,88E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	5,50E-11	6,22E-12	2,39E-12	6,36E-11	9,15E-12	8,49E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	9,74E-10	3,14E-10	6,53E-11	1,35E-09	5,15E-10	2,29E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7)]	-	4,92E-01	4,70E-01	5,69E-01	1,53E+00	7,98E-01	2,98E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	5,90E-02	7,41E-03	6,82E-02	1,35E-01	1,18E-02	-3,30E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	1,98E-01	0,00E+00	4,83E-02	2,46E-01	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,77E-01	-2,08E-02	1,09E-03
Total use of renew. PER	MJ	2,57E-01	7,41E-03	1,17E-01	3,81E-01	1,18E-02	-8,13E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	-1,72E-01	-1,89E-02	-1,15E-01
Non-re. PER as energy	MJ	1,46E+00	5,24E-01	1,60E-01	2,14E+00	8,13E-01	2,82E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	1,46E+00	5,24E-01	2,34E-01	2,22E+00	8,13E-01	2,08E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	2,65E-04	2,25E-04	7,38E-04	1,23E-03	3,48E-04	1,76E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	9,14E-05	2,57E-06	1,30E-04	2,24E-04	4,31E-06	2,31E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	6,25E-04	7,22E-05	1,74E-04	8,71E-04	1,19E-04	-2,03E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	6,80E-04	7,96E-04	3,68E-04	1,84E-03	1,29E-03	4,75E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	1,50E-02	1,49E-02	3,09E-02	6,08E-02	2,44E-02	2,36E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	8,32E-06	1,26E-07	2,99E-07	8,75E-06	1,97E-07	9,61E-07	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	9,75E-03	3,61E-02	1,11E-02	5,70E-02	5,41E-02	1,42E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	3,11E-11	5,06E-10	2,71E-10	8,08E-10	7,73E-10	1,99E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	5,03E-05	1,87E-04	4,41E-05	2,82E-04	1,47E-04	5,78E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	1,31E-05	3,02E-05	3,04E-05	7,37E-05	3,00E-05	1,43E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	3,22E-06	1,24E-05	3,50E-06	1,92E-05	1,23E-05	4,18E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	1,25E-07	9,08E-08	3,41E-08	2,50E-07	1,49E-07	5,20E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	4,20E-02	5,16E-01	2,26E-01	7,84E-01	8,01E-01	2,01E-01	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

ENVIRONMENTAL IMPACT DATA (CLAY DECORATIVE PUTTY)

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	2,08E-02	3,76E-02	7,06E-03	6,54E-02	5,45E-02	2,09E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	1,83E-02	3,92E-03	2,69E-01
GWP – fossil	kg CO_2e	2,69E-02	3,76E-02	1,12E-02	7,57E-02	5,44E-02	1,61E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-6,49E-03	7,56E-06	-4,15E-03	-1,06E-02	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	5,76E-03	6,84E-04	3,58E-01
GWP – LULUC	kg CO_2e	3,56E-04	1,58E-05	4,99E-05	4,21E-04	2,38E-05	5,04E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	3,13E-08	6,92E-10	2,91E-10	3,23E-08	9,71E-10	3,37E-09	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	2,10E-04	3,26E-04	5,51E-05	5,91E-04	1,85E-04	9,64E-05	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	5,58E-06	2,32E-06	2,68E-05	3,47E-05	4,06E-06	5,93E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	4,99E-05	8,45E-05	1,46E-05	1,49E-04	4,72E-05	2,53E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	5,74E-04	9,33E-04	1,37E-04	1,64E-03	5,15E-04	2,71E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	1,70E-04	3,15E-04	4,71E-05	5,32E-04	2,49E-04	9,71E-05	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	1,84E-07	9,03E-08	3,55E-08	3,09E-07	1,53E-07	5,91E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	4,65E-01	5,37E-01	2,43E-01	1,24E+00	8,13E-01	2,53E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	9,13E-03	2,47E-03	3,17E-02	4,33E-02	4,02E-03	6,06E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	2,67E-09	3,10E-09	5,08E-10	6,28E-09	5,21E-09	2,18E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6]	kBq U235e	6,54E-04	5,35E-04	1,54E-03	2,72E-03	8,00E-04	6,14E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	4,01E-01	6,05E-02	4,14E-01	8,75E-01	1,06E-01	1,81E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	4,92E-11	6,58E-12	2,39E-12	5,81E-11	9,15E-12	7,94E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	3,71E-10	3,05E-10	6,53E-11	7,41E-10	5,15E-10	1,67E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7]	-	6,19E-01	4,44E-01	5,69E-01	1,63E+00	7,98E-01	3,08E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	1,26E-02	7,55E-03	6,82E-02	8,83E-02	1,18E-02	-3,77E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	7,20E-02	0,00E+00	4,83E-02	1,20E-01	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,44E-02	-7,56E-03	1,09E-03
Total use of renew. PER	MJ	8,46E-02	7,55E-03	1,17E-01	2,09E-01	1,18E-02	-8,60E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	-5,92E-02	-5,68E-03	-1,15E-01
Non-re. PER as energy	MJ	5,07E-01	5,37E-01	1,60E-01	1,20E+00	8,13E-01	1,88E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	5,07E-01	5,37E-01	2,34E-01	1,28E+00	8,13E-01	1,14E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	1,11E-04	2,32E-04	7,38E-04	1,08E-03	3,48E-04	1,61E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	3,84E-05	2,46E-06	1,30E-04	1,71E-04	4,31E-06	1,78E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	2,39E-04	7,06E-05	1,74E-04	4,84E-04	1,19E-04	-2,41E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	2,84E-04	7,75E-04	3,68E-04	1,43E-03	1,29E-03	4,34E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	6,11E-03	1,45E-02	3,09E-02	5,15E-02	2,44E-02	2,35E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	1,66E-07	1,32E-07	2,99E-07	5,97E-07	1,97E-07	1,46E-07	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	8,63E-03	3,73E-02	1,11E-02	5,71E-02	5,41E-02	1,43E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	1,31E-11	5,50E-10	2,71E-10	8,34E-10	7,73E-10	2,01E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	4,96E-05	2,59E-04	4,41E-05	3,53E-04	1,47E-04	6,49E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	1,13E-05	3,69E-05	3,04E-05	7,86E-05	3,00E-05	1,48E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	2,84E-06	1,57E-05	3,50E-06	2,21E-05	1,23E-05	4,47E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	5,23E-08	8,82E-08	3,41E-08	1,75E-07	1,49E-07	4,45E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	1,76E-02	5,29E-01	2,26E-01	7,72E-01	8,01E-01	2,00E-01	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

ENVIRONMENTAL IMPACT DATA (CLAY DECORATIVE PLASTER 0-1MM)

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	2,51E-02	1,99E-02	7,06E-03	5,21E-02	5,45E-02	1,91E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	1,40E-02	3,42E-03	2,69E-01
GWP – fossil	kg CO_2e	2,67E-02	1,99E-02	1,12E-02	5,78E-02	5,44E-02	1,43E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-1,63E-03	4,21E-06	-4,15E-03	-5,77E-03	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	1,47E-03	1,80E-04	3,58E-01
GWP – LULUC	kg CO_2e	7,81E-05	8,16E-06	4,99E-05	1,36E-04	2,38E-05	2,18E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg CFC-$_{11}$e	7,83E-09	3,81E-10	2,91E-10	8,50E-09	9,71E-10	9,97E-10	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	1,69E-04	1,01E-04	5,51E-05	3,25E-04	1,85E-04	6,98E-05	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	1,72E-06	1,35E-06	2,68E-05	2,99E-05	4,06E-06	5,45E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	5,38E-05	2,68E-05	1,46E-05	9,52E-05	4,72E-05	1,99E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	5,96E-04	2,94E-04	1,37E-04	1,03E-03	5,15E-04	2,09E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	1,60E-04	1,19E-04	4,71E-05	3,26E-04	2,49E-04	7,65E-05	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	6,97E-08	5,31E-08	3,55E-08	1,58E-07	1,53E-07	4,40E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	4,52E-01	2,92E-01	2,43E-01	9,87E-01	8,13E-01	2,27E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	6,64E-03	1,43E-03	3,17E-02	3,98E-02	4,02E-03	5,70E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	7,47E-10	1,83E-09	5,08E-10	3,08E-09	5,21E-09	1,86E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6)]	kBq U235e	1,87E-04	3,16E-04	1,54E-03	2,04E-03	8,00E-04	5,45E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	1,26E-01	3,47E-02	4,14E-01	5,74E-01	1,06E-01	1,78E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	6,22E-12	3,39E-12	2,39E-12	1,20E-11	9,15E-12	3,33E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	1,09E-10	1,80E-10	6,53E-11	3,54E-10	5,15E-10	1,29E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7)]	-	1,42E-01	2,73E-01	5,69E-01	9,85E-01	7,98E-01	2,44E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	1,20E-01	4,41E-03	6,82E-02	1,93E-01	1,18E-02	-2,72E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	1,80E-02	0,00E+00	4,83E-02	6,63E-02	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,61E-02	-1,89E-03	1,09E-03
Total use of renew. PER	MJ	1,38E-01	4,41E-03	1,17E-01	2,59E-01	1,18E-02	-7,55E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	-1,09E-02	-1,40E-05	-1,15E-01
Non-re. PER as energy	MJ	4,62E-01	2,92E-01	1,60E-01	9,15E-01	8,13E-01	1,59E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	4,62E-01	2,92E-01	2,34E-01	9,89E-01	8,13E-01	8,53E-02	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	6,85E-05	1,26E-04	7,38E-04	9,33E-04	3,48E-04	1,46E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	2,37E-05	1,49E-06	1,30E-04	1,55E-04	4,31E-06	1,62E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	2,13E-04	4,13E-05	1,74E-04	4,28E-04	1,19E-04	-2,47E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	1,76E-04	4,31E-04	3,68E-04	9,75E-04	1,29E-03	3,88E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	3,58E-03	8,31E-03	3,09E-02	4,28E-02	2,44E-02	2,34E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	3,49E-05	7,80E-08	2,99E-07	3,53E-05	1,97E-07	3,62E-06	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,42E-03	1,98E-02	1,11E-02	3,23E-02	5,41E-02	1,18E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	8,06E-12	3,03E-10	2,71E-10	5,82E-10	7,73E-10	1,76E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	1,27E-05	7,99E-05	4,41E-05	1,37E-04	1,47E-04	4,33E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	3,63E-06	1,39E-05	3,04E-05	4,79E-05	3,00E-05	1,17E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	8,10E-07	5,75E-06	3,50E-06	1,01E-05	1,23E-05	3,27E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	3,24E-08	5,19E-08	3,41E-08	1,18E-07	1,49E-07	3,89E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	1,09E-02	2,87E-01	2,26E-01	5,24E-01	8,01E-01	1,75E-01	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

ENVIRONMENTAL IMPACT DATA (CLAY PLASTER 0-0.05MM)

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	2,55E-02	2,88E-02	7,06E-03	6,14E-02	5,45E-02	2,03E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	1,69E-02	3,75E-03	2,69E-01
GWP – fossil	kg CO_2e	3,01E-02	2,88E-02	1,12E-02	7,01E-02	5,44E-02	1,56E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-4,88E-03	5,94E-06	-4,15E-03	-9,02E-03	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	4,33E-03	5,16E-04	3,58E-01
GWP – LULUC	kg CO_2e	2,49E-04	1,20E-05	4,99E-05	3,11E-04	2,38E-05	3,93E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	2,35E-08	5,33E-10	2,91E-10	2,43E-08	9,71E-10	2,58E-09	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	2,10E-04	2,05E-04	5,51E-05	4,70E-04	1,85E-04	8,43E-05	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	4,40E-06	1,87E-06	2,68E-05	3,31E-05	4,06E-06	5,77E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	5,61E-05	5,37E-05	1,46E-05	1,24E-04	4,72E-05	2,28E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	6,27E-04	5,92E-04	1,37E-04	1,36E-03	5,15E-04	2,42E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	1,79E-04	2,11E-04	4,71E-05	4,38E-04	2,49E-04	8,76E-05	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	1,53E-07	7,26E-08	3,55E-08	2,61E-07	1,53E-07	5,43E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	5,23E-01	4,16E-01	2,43E-01	1,18E+00	8,13E-01	2,47E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	9,13E-03	1,97E-03	3,17E-02	4,28E-02	4,02E-03	6,01E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	2,03E-09	2,50E-09	5,08E-10	5,04E-09	5,21E-09	2,05E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6]	kBq U235e	5,07E-04	4,25E-04	1,54E-03	2,47E-03	8,00E-04	5,88E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	3,17E-01	4,84E-02	4,14E-01	7,80E-01	1,06E-01	1,81E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	3,04E-11	4,98E-12	2,39E-12	3,78E-11	9,15E-12	5,91E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	2,89E-10	2,45E-10	6,53E-11	6,00E-10	5,15E-10	1,53E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7]	-	3,69E-01	3,65E-01	5,69E-01	1,30E+00	7,98E-01	2,75E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	7,01E-02	6,00E-03	6,82E-02	1,44E-01	1,18E-02	-3,21E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	5,40E-02	0,00E+00	4,83E-02	1,02E-01	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-4,83E-02	-5,67E-03	1,09E-03
Total use of renew. PER	MJ	1,24E-01	6,00E-03	1,17E-01	2,47E-01	1,18E-02	-8,04E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	-4,31E-02	-3,79E-03	-1,15E-01
Non-re. PER as energy	MJ	5,54E-01	4,16E-01	1,60E-01	1,13E+00	8,13E-01	1,81E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	5,54E-01	4,16E-01	2,34E-01	1,21E+00	8,13E-01	1,07E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	1,11E-04	1,80E-04	7,38E-04	1,03E-03	3,48E-04	1,56E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	3,84E-05	2,00E-06	1,30E-04	1,70E-04	4,31E-06	1,77E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	2,54E-04	5,66E-05	1,74E-04	4,85E-04	1,19E-04	-2,41E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	2,85E-04	6,11E-04	3,68E-04	1,26E-03	1,29E-03	4,17E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	5,97E-03	1,15E-02	3,09E-02	4,84E-02	2,44E-02	2,34E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	1,81E-05	1,05E-07	2,99E-07	1,85E-05	1,97E-07	1,94E-06	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	5,73E-03	2,86E-02	1,11E-02	4,55E-02	5,41E-02	1,31E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	1,31E-11	4,24E-10	2,71E-10	7,08E-10	7,73E-10	1,88E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	3,26E-05	1,62E-04	4,41E-05	2,39E-04	1,47E-04	5,35E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	7,88E-06	2,48E-05	3,04E-05	6,31E-05	3,00E-05	1,32E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	1,95E-06	1,04E-05	3,50E-06	1,59E-05	1,23E-05	3,85E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	5,26E-08	7,09E-08	3,41E-08	1,57E-07	1,49E-07	4,28E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	1,77E-02	4,09E-01	2,26E-01	6,53E-01	8,01E-01	1,88E-01	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

ENVIRONMENTAL IMPACT DATA (CLAY RUSTIC PLASTER)

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	3,46E-03	1,28E-02	7,06E-03	2,33E-02	5,45E-02	1,60E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	1,26E-02	3,25E-03	2,69E-01
GWP – fossil	kg CO_2e	3,59E-03	1,28E-02	1,12E-02	2,75E-02	5,44E-02	1,13E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-1,30E-04	2,82E-06	-4,15E-03	-4,28E-03	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	3,56E-05	1,22E-05	3,58E-01
GWP – LULUC	kg CO_2e	2,98E-06	5,44E-06	4,99E-05	5,83E-05	2,38E-05	1,41E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	5,09E-11	2,17E-10	2,91E-10	5,59E-10	9,71E-10	2,02E-10	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	3,21E-05	3,94E-05	5,51E-05	1,27E-04	1,85E-04	4,99E-05	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	1,07E-06	9,56E-07	2,68E-05	2,88E-05	4,06E-06	5,34E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	5,98E-06	1,22E-05	1,46E-05	3,27E-05	4,72E-05	1,37E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	7,08E-05	1,32E-04	1,37E-04	3,40E-04	5,15E-04	1,41E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	2,03E-05	6,04E-05	4,71E-05	1,28E-04	2,49E-04	5,66E-05	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	6,95E-08	3,59E-08	3,55E-08	1,41E-07	1,53E-07	4,23E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	8,52E+01	1,88E-01	2,43E-01	8,56E+01	8,13E-01	8,69E+00	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	1,87E-02	9,39E-04	3,17E-02	5,13E-02	4,02E-03	6,86E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	4,18E-10	1,26E-09	5,08E-10	2,19E-09	5,21E-09	1,77E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6)]	kBq U235e	2,67E-04	1,87E-04	1,54E-03	1,99E-03	8,00E-04	5,40E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	9,77E-02	2,49E-02	4,14E-01	5,36E-01	1,06E-01	1,78E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	2,19E-12	2,12E-12	2,39E-12	6,70E-12	9,15E-12	2,80E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	7,11E-11	1,21E-10	6,53E-11	2,58E-10	5,15E-10	1,19E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7)]	-	4,92E-02	1,89E-01	5,69E-01	8,07E-01	7,98E-01	2,26E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	7,09E-03	2,75E-03	6,82E-02	7,81E-02	1,18E-02	-3,87E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	4,83E-02	4,83E-02	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E-03
Total use of renew. PER	MJ	7,09E-03	2,75E-03	1,17E-01	1,26E-01	1,18E-02	-8,70E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,15E-01
Non-re. PER as energy	MJ	3,45E-02	1,88E-01	1,60E-01	3,82E-01	8,13E-01	1,06E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	3,45E-02	1,88E-01	2,34E-01	4,57E-01	8,13E-01	3,20E-02	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	1,53E-04	8,03E-05	7,38E-04	9,71E-04	3,48E-04	1,50E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	5,05E-05	1,02E-06	1,30E-04	1,81E-04	4,31E-06	1,88E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	2,22E-05	2,77E-05	1,74E-04	2,24E-04	1,19E-04	-2,67E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	3,74E-04	3,00E-04	3,68E-04	1,04E-03	1,29E-03	3,95E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	7,19E-03	5,71E-03	3,09E-02	4,38E-02	2,44E-02	2,34E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	4,01E-08	4,59E-08	2,99E-07	3,85E-07	1,97E-07	1,25E-07	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	3,60E-03	1,27E-02	1,11E-02	2,74E-02	5,41E-02	1,13E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	4,96E-11	1,73E-10	2,71E-10	4,93E-10	7,73E-10	1,67E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	2,60E-05	3,04E-05	4,41E-05	1,01E-04	1,47E-04	3,96E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	5,45E-06	7,38E-06	3,04E-05	4,32E-05	3,00E-05	1,13E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	1,59E-06	2,80E-06	3,50E-06	7,89E-06	1,23E-05	3,05E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	6,91E-08	3,50E-08	3,41E-08	1,38E-07	1,49E-07	4,09E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	8,52E+01	1,85E-01	2,26E-01	8,56E+01	8,01E-01	8,68E+00	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

ENVIRONMENTAL IMPACT DATA (HEMPCLAY PLASTER)

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	4,03E-03	1,45E-02	7,06E-03	2,56E-02	5,45E-02	1,63E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,39E-03	1,26E-02	3,25E-03	2,69E-01
GWP – fossil	kg CO_2e	4,19E-03	1,45E-02	1,12E-02	2,99E-02	5,44E-02	1,15E-02	ND	ND	ND	ND	ND	ND	ND	3,62E-03	5,38E-03	1,25E-02	3,23E-03	-8,88E-02
GWP – biogenic	kg CO_2e	-1,65E-04	3,18E-06	-4,15E-03	-4,31E-03	1,23E-05	4,73E-03	ND	ND	ND	ND	ND	ND	ND	6,90E-07	1,22E-06	4,20E-05	1,30E-05	3,58E-01
GWP – LULUC	kg CO_2e	3,74E-06	6,21E-06	4,99E-05	5,98E-05	2,38E-05	1,42E-05	ND	ND	ND	ND	ND	ND	ND	3,71E-07	2,41E-06	2,39E-05	2,00E-06	-3,01E-04
Ozone depletion pot.	kg CFC-$_{11}$e	6,88E-11	2,43E-10	2,91E-10	6,03E-10	9,71E-10	2,07E-10	ND	ND	ND	ND	ND	ND	ND	5,38E-11	7,95E-11	2,22E-10	6,93E-11	-1,82E-05
Acidification potential	mol H^+e	3,68E-05	4,51E-05	5,51E-05	1,37E-04	1,85E-04	5,10E-05	ND	ND	ND	ND	ND	ND	ND	3,24E-05	1,84E-05	9,38E-05	3,24E-03	-1,27E-03
EP-freshwater[2)]	kg Pe	1,29E-06	1,09E-06	2,68E-05	2,92E-05	4,06E-06	5,38E-06	ND	ND	ND	ND	ND	ND	ND	1,17E-07	4,19E-07	8,56E-06	4,94E-07	-8,94E-06
EP-marine	kg Ne	7,13E-06	1,40E-05	1,46E-05	3,57E-05	4,72E-05	1,40E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	6,03E-06	2,90E-05	1,13E-05	-5,32E-04
EP-terrestrial	mol Ne	8,51E-05	1,52E-04	1,37E-04	3,75E-04	5,15E-04	1,44E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	6,56E-05	3,13E-04	6,99E-05	-5,72E-03
POCP ("smog")[3)]	kg NMVOCe	2,39E-05	6,89E-05	4,71E-05	1,40E-04	2,49E-04	5,79E-05	ND	ND	ND	ND	ND	ND	ND	4,94E-05	2,70E-05	1,06E-04	2,19E-04	-1,46E-03
ADP-minerals & metals[4)]	kg Sbe	9,19E-08	4,07E-08	3,55E-08	1,68E-07	1,53E-07	4,50E-08	ND	ND	ND	ND	ND	ND	ND	1,30E-09	1,50E-08	3,41E-08	9,69E-09	-4,84E-07
ADP-fossil resources	MJ	8,09E+01	2,13E-01	2,43E-01	8,14E+01	8,13E-01	8,27E+00	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-1,15E+00
Water use[5)]	m^3e depr.	2,13E-02	1,06E-03	3,17E-02	5,40E-02	4,02E-03	7,13E-03	ND	ND	ND	ND	ND	ND	ND	1,21E-04	3,86E-04	5,31E-03	2,36E-03	1,56E-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	4,98E-10	1,44E-09	5,08E-10	2,44E-09	5,21E-09	1,80E-09	ND	ND	ND	ND	ND	ND	ND	9,25E-10	5,39E-10	8,36E-09	2,83E-09	-6,42E-11
Ionizing radiation[6)]	kBq U235e	2,96E-04	2,09E-04	1,54E-03	2,04E-03	8,00E-04	5,46E-04	ND	ND	ND	ND	ND	ND	ND	2,01E-05	6,80E-05	3,26E-04	1,82E-04	1,21E-04
Ecotoxicity (freshwater)	CTUe	1,22E-01	2,84E-02	4,14E-01	5,64E-01	1,06E-01	1,78E+00	ND	ND	ND	ND	ND	ND	ND	2,69E-02	1,10E-02	8,50E+00	1,24E+02	-2,48E-01
Human toxicity, cancer	CTUh	2,84E-12	2,40E-12	2,39E-12	7,63E-12	9,15E-12	2,89E-12	ND	ND	ND	ND	ND	ND	ND	3,69E-13	8,88E-13	3,44E-12	4,51E-12	-1,07E-12
Human tox. non-cancer	CTUh	9,12E-11	1,38E-10	6,53E-11	2,94E-10	5,15E-10	1,23E-10	ND	ND	ND	ND	ND	ND	ND	5,80E-12	5,06E-11	1,45E-10	3,63E-10	1,58E-12
SQP[7)]	-	6,47E-02	2,14E-01	5,69E-01	8,48E-01	7,98E-01	2,30E-01	ND	ND	ND	ND	ND	ND	ND	3,12E-03	7,87E-02	3,11E-01	6,76E-02	-4,60E-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	8,58E-03	3,10E-03	6,82E-02	7,99E-02	1,18E-02	-3,85E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,22E-03	1,88E-03	-1,16E-01
Renew. PER as material	MJ	4,50E-05	0,00E+00	4,83E-02	4,83E-02	0,00E+00	-4,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-4,03E-05	-4,72E-06	1,09E-03
Total use of renew. PER	MJ	8,63E-03	3,10E-03	1,17E-01	1,28E-01	1,18E-02	-8,68E-02	ND	ND	ND	ND	ND	ND	ND	2,96E-04	1,07E-03	5,18E-03	1,87E-03	-1,15E-01
Non-re. PER as energy	MJ	4,20E-02	2,13E-01	1,60E-01	4,15E-01	8,13E-01	1,09E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,79E-01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,41E-02	7,41E-02	0,00E+00	-7,41E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,45E-03
Total use of non-re. PER	MJ	4,20E-02	2,13E-01	2,34E-01	4,89E-01	8,13E-01	3,53E-02	ND	ND	ND	ND	ND	ND	ND	4,72E-02	7,81E-02	2,11E-01	5,28E-02	-6,82E-01
Secondary materials	kg	1,85E-04	9,11E-05	7,38E-04	1,01E-03	3,48E-04	1,55E-04	ND	ND	ND	ND	ND	ND	ND	1,95E-05	3,32E-05	7,97E-05	1,60E-05	2,67E+01
Renew. secondary fuels	MJ	6,10E-05	1,15E-06	1,30E-04	1,92E-04	4,31E-06	1,99E-05	ND	ND	ND	ND	ND	ND	ND	5,12E-08	4,22E-07	1,15E-06	2,36E-07	-4,82E-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	-5,13E-03
Use of net fresh water	m^3	1,01E-04	3,14E-05	1,74E-04	3,07E-04	1,19E-04	-2,59E-04	ND	ND	ND	ND	ND	ND	ND	3,02E-06	1,15E-05	-1,54E-03	-2,40E-04	-1,57E-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	5,27E-04	3,43E-04	3,68E-04	1,24E-03	1,29E-03	4,15E-04	ND	ND	ND	ND	ND	ND	ND	5,29E-05	1,32E-04	4,91E-04	4,28E-04	-1,22E-03
Non-hazardous waste	kg	8,91E-03	6,49E-03	3,09E-02	4,63E-02	2,44E-02	2,34E-01	ND	ND	ND	ND	ND	ND	ND	7,71E-04	2,45E-03	1,12E+00	3,92E-01	-3,44E-03
Radioactive waste	kg	5,48E-08	5,15E-08	2,99E-07	4,06E-07	1,97E-07	1,27E-07	ND	ND	ND	ND	ND	ND	ND	4,93E-09	1,67E-08	7,97E-08	4,64E-08	-1,43E-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	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,95E-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	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,19E-03	1,44E-02	1,11E-02	2,97E-02	5,41E-02	1,15E-02	ND	ND	ND	ND	ND	ND	ND	3,60E-03	5,35E-03	1,25E-02	3,21E-03	-3,51E-03
Ozone depletion Pot.	kg CFC_{-11}e	6,37E-11	1,94E-10	2,71E-10	5,29E-10	7,73E-10	1,71E-10	ND	ND	ND	ND	ND	ND	ND	4,28E-11	6,34E-11	1,79E-10	5,60E-11	-1,08E-10
Acidification	kg SO_2e	2,97E-05	3,48E-05	4,41E-05	1,09E-04	1,47E-04	4,04E-05	ND	ND	ND	ND	ND	ND	ND	2,28E-05	1,40E-05	7,27E-05	2,97E-03	-7,55E-06
Eutrophication	kg PO_4^3e	6,85E-06	8,45E-06	3,04E-05	4,57E-05	3,00E-05	1,15E-05	ND	ND	ND	ND	ND	ND	ND	5,36E-06	3,41E-06	1,93E-05	1,62E-05	-1,63E-05
POCP (“smog”)	kg C_2H_4e	1,84E-06	3,19E-06	3,50E-06	8,54E-06	1,23E-05	3,12E-06	ND	ND	ND	ND	ND	ND	ND	1,71E-06	1,25E-06	5,12E-06	1,19E-04	-1,71E-06
ADP-elements	kg Sbe	9,14E-08	3,98E-08	3,41E-08	1,65E-07	1,49E-07	4,36E-08	ND	ND	ND	ND	ND	ND	ND	1,26E-09	1,46E-08	3,33E-08	9,09E-09	-1,62E-08
ADP-fossil	MJ	8,09E+01	2,09E-01	2,26E-01	8,14E+01	8,01E-01	8,26E+00	ND	ND	ND	ND	ND	ND	ND	4,69E-02	7,70E-02	2,06E-01	4,96E-02	-1,16E-01

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, Estonia, residual mix, 2023(One Click LCA)
Electricity CO_2e / kWh	0.68
Electricity data source and quality	Electricity production, photovoltaic, 3kWp flat-roof installation, multi-Si
Electricity CO_2e / kWh	0.0732
Fuel data source and quality	Market for diesel, burned in building machine
Fuel CO_2e/MJ	0.1
Fuel data source and quality	LPG for transport, including combustion
Fuel kg CO_2e /kg	3.36
Heating data source and quality	No heating used
Heating kg CO_2e /MJ	0

Transport scenario documentation A4

Scenario parameter	Value
Specific transport CO_2e emissions/kg CO_2e / tkm	0.103 (lorry >32, EURO6), 0.119 (ferry)
Average transport distance/km	586 (truck), 82 (ferry)
Capacity utilization (including empty return) %	100%
Bulk density of transported products (kg/m3)	1700
Volume capacity utilization factor	100%

Installation scenario documentation A5 (installation waste)

Scenario information	Value
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Installation loss (mineral waste) 0.1, plastic packaging waste 0.0016, packaging waste paper 0.0028, packaging waste paperboard 0.0007 (applies to all products)
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	Materials for recycling 0.0051, materials for recovery 0.099, materials for disposal 0.001.

End of life scenario documentation -C1-C4

Scenario information	Value
Collection process specified by type / kg	Waste is collected as mixed construction waste destined for sorting, 1.0
Recovery process – kg for recycling	Waste gypsum 0.4 Waste mineral plaster 0.495
Recovery process – kg for energy recovery	0
Disposal specified by type / kg	Waste gypsum 0.1 Waste mineral plaster 0.005
Energy used for demolition (kWh)	0.01 kWh (diesel)
Scenario assumptions e.g. transportation	50 km

Rakennustieto EPD - Environmental Product Declaration

Saviukumaja OÜ

has the Rakennustieto EPD Environmental Product Declaration for the product(s):

Clay products (paint, stucco, marmorino, putty, plaster)

The published EPD is valid until **19.05.2031**.

Saviukumaja OÜ has the right to equip its approved product with Rakennustieto EPD label and use this label when marketing the products mentioned here.

The decision is in line with the requirements laid down in the standard EN ISO 14044, EN 15804 + A2:2019 and *RTS PCR- protocol: EPDs published by the Building Information Foundation RTS sr*. The workgroup of the PT42 RTS EPD Committee, set up by the Building Information Foundation RTS sr, is monitoring and guiding the publication.

Rakennustieto Oy

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