ENVIRONMENTAL PRODUCT DECLARATION

Lightweight Expanded Clay Aggregate ARGEX

Lightweight filling applications

Issued	06 October 2021
Valid until	05 October 2026

Conform to EN 15804+A2 and the national complement “Guide to environmental performance calculations” from national Milieudatabase and ISO 14025.

1 General Information

EPD Owner

ARGEX

Kruibeeksesteenweg162

B-2070 Burcht

Belgique

Author of the LCA

WeLOOP

254 Rue du Bourg, Lambersart - 59130

France

Functional Unit

Lightweight fillings of expanded clay aggregates reduce the load of 1 m3 of ground used in civil engineering work (roads, railways, buildings and its surroundings, backfilling for structures, etc.) adding the function of drainage, hydro-retention, soil improvement and increased thermal insulation for a life span of 100 years

Scope of the study

The life cycle assessment (LCA) has been realised conform the EN 15804+A2. Data came from Argex Belgium for specific data and Ecoinvent 3.6 for generic data. This EPD is cradle to grave. Lightweight expanded clay aggregates Argex can be used in applications of lightweight filling in civil engineering works (roads, railways, buildings and its surroundings, backfilling for structures, etc.) according to EN 15732, and for thermal applications according to EN 14063-1, adding functions of draining, hydro-retention, quality of soil, with a life span of 100 years. End of life scenario consists of 95% reuse and 5% landfilling, if not contaminated.

PCR

EN 15804+A2

Product Commercial References

AG 4/8 – 370 GEO; AR 4/10 – 430 GEO;
AG 0/4 – 500 GEO; AR 8/16 – 340 GEO

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Verification			
Standard EN 15804+A2 as core PCR			
Independent verification of the environmental declaration and data according to standard EN ISO 14025 :2010.			
☐ internal		☒ external	
Third party verifier	Fred van der Burgh	Telephone	+31 6 28976909
Company	Agrodome	E-mail	fred@agrodome.nl
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2 Product Name

This EPD contains the environmental impact of the following four ARGEX lightweight expanded clay aggregate products:

- AG 4/8 – 370 GEO;
- AR 4/10 – 430 GEO;
- AG 0/4 – 500 GEO;
- AR 8/16 – 340 GEO.

3 Product Description

Lightweight expanded clay aggregate ARGEX is a granular ceramic material made from clay. The product is distributed in bulk or bags.

Composition	Quantity
Clay (site Argex)	87%
Iron oxides (Europe)	11-12%
Additifs (Europe)	1-2%

Figure 1: Lightweight expanded clay aggregates ARGEX

4 Intended Use

The four products are used to reduce the load of ground used in civil engineering work (roads, railways, buildings and its surroundings, backfilling for structures, etc.) adding the function of drainage, hydro-retention, soil improvement and increased thermal insulation.

For technical data, one may refer to the DoP2 (following EN 15732 www.argex.eu), technical sheets, and EN 14063-1 for thermal characteristics.

5 Reference Flow / Functional Unit

The functional unit is lightweight fillings of expanded clay aggregates reduce the load of 1m^3 of ground used in civil engineering work (roads, railways, buildings and its surroundings, backfilling for structures, etc.) with the following products

- AG 4/8 – 370 GEO,
- AR 4/10 – 430 GEO,
- AG 0/4 – 500 GEO,
- AR 8/16 – 340 GEO,

adding functions of drainage, hydro-retention, soil improvement and increased thermal insulation for a life span of 100 years. The most important part of the products is sold in bulk. The packaging is included for the 1.60% of the final product sold in big bags.

The loose bulk densities per reference flow are:

- AG 4/8 – 370 kg/m^3,
- AR 4/10 – 430 kg/m^3,
- AG 0/4 – 500 kg/m^3,
- AR 8/16 – 340 kg/m^3.

Parameters	Values
Reference Service Period	100 years
Composition	Clay 87% Iron oxides 11-12% Additifs 1-2%
Packaging (kg/kg of packed product)	PE film (2.17E-4 kg/kg) PP bags (4.25E-3 kg/kg) Wooden pallets (3.94E-2 kg/kg) HDPE bags (4.83E-3 kg/kg)
Use conditions	Not applicable
Maintenance	Not applicable

6 Installation

This EPD includes the impacts of all materials and processes necessary for installing/mounting the product accordingly. A single scenario was defined for this EPD based on the following options:

i. blowing followed by a vibrating plate for levelling and compaction,
ii. excavator followed by a vibrating plate for levelling and compaction,
iii. bulldozer installation,
iv. excavator installation and compaction.

Figure 2: Examples of lightweight expanded clay aggregate in lightweight filling applications

Figure 3: Blowing and vibrating plate levelling compactation installation

Figure 4: Excavatior & vibrating plate levelling-compactation installation

Figure 5: Bulldozer installation

Figure 6: Excavator installation

7 Reference service life

Expanded clay ARGEX products are already installed in existing construction works in previous decades (product intrinsic material properties lead to adequate long-term performances). Several construction works maybe find in Europe containing the product from decades ago. Examples are provided in the LCA background report.

The reference service life is estimated at 100 years (installed products are still in use) if the product is installed according to the manufacturers' and suppliers' guidelines. The RSL is based on available average EPDs, expert judgment, EXCA internal guidance for EPDs (2021), and corresponding to the average lifespan of the construction work.

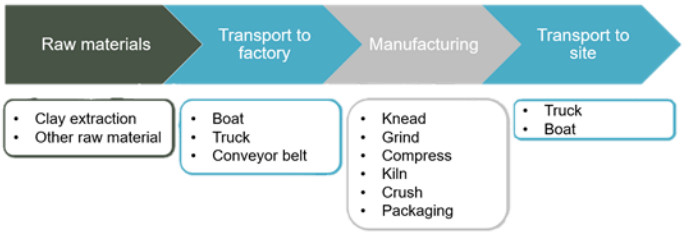
8 Geographical Representativity

This EPD is representative for the Dutch market.

9 Production Process and Technology

The clay is mixed with organic material, dried and expanded to 4-5 times its original volume in a rotary kiln at a temperature of about 1150°C. The output expanded clay aggregate granules are sieved and blended into different grades of products.

Product stage (A1-3): The extracted clay is transported by conveyor belt to the production plant. Iron oxides and additives (clay substitute) are transported to the production plant by truck and boat. The manufacturing is composed of kneading, grind, compress, kiln and crush processes. Some of the final product is packed. All production is then transported to the construction site.



10 Technical Data / Physical Characteristics

Technical property	Standard	Value	Unit
AG 4/8- 370 GEO loose bulk dry density	EN 15732	370	kg/m³
AR 4/10- 430 GEO loose bulk dry density		430	kg/m³
AG 0/4- 500 GEO loose bulk dry density		500	kg/m³
AR 8/16- 340 GEO loose bulk dry density		340	kg/m³

Additional Geotechnical characteristics: see DoP2, in accordance with EN 15732, & technical sheets (https://www.argex.eu).

11 LCA STUDY

Used PCR	EN 15804+A2
System boundaries	Cradle to grave LCA. The system boundaries respect the limits imposed by the standard EN 15804+A2.
Allocation	No co-product allocation occurs in the product foreground system. No multi-input allocation occurs in the product system. The allocations from the background database are kept intact. During the excavation, the process of refilling the clay pit with inert waste happens simultaneously. Thus, the energy used to extract the clay is allocated 50/50 to clay (as the product raw material) and landfilling operations.
Geographical and temporal representativeness	Software: SimaPro 9.1.0.7 Database: Ecoinvent version 3.6 Primary data: 2020
Cut-off	Argex provided the data used in this study. Some plausibility and completeness assessments and checks were conducted for some inputs. For a few remaining data, no extended assessment was conducted, therefore accepting data gaps. In all cases, it is assumed that the cut-off criteria of EN 15804 are met.
Excluded processes	The following processes are excluded: - The effects of capital goods and infrastructural processes have been excluded. - Flows related to human activities such as employee transport and administration activities are excluded.

12 DETAILS OF THE UNDERLYING SCENARIOS USED TO CALCULATE THE IMPACTS

PRODUCTION, A1-A3

12.1.1 A1 – RAW MATERIALS SUPPLY

Clay is extracted close to ARGEX plant (1 km). Iron oxides and additives are also part of the final product composition and are considered as waste, without economic value; hence no environmental impacts are attributed to the waste used as additives in conformity with EN15804.

12.1.2 A2 – TRANSPORT TO THE MANUFACTURER

Clay is transported by conveyor belt. Iron oxides and additives are transported by truck and boat.

12.1.3 A3 – MANUFACTURING

The manufacturing is composed of kneading, grind, compress, kiln and crush processes. The fuels consumption and their emissions in the kiln, as well as electricity and water for the rest of the processes, are considered in this module.

1.60% of the final product is packed. Products are transported to the construction site.

12.2 CONSTRUCTION, A4-A5

12.2.1 A4 - TRANSPORT TO THE BUILDING SITE

Transport scenario is modelled based on the Dutch market. Primary data for the average distances for Dutch sales are provided.

Parameters	Values	
Vehicle used for transport	Lorry 16-32	Barge, inland waterways
Distance (km)	130.83	21.85
Volume capacity and capacity utilisation	Default values from Ecoinvent 3.6	

12.2.2 A5 – INSTALLATION IN THE BUILDING

At the construction site, packaging materials are released and treated.

No material losses are identified in the installation phase if the installation procedures are respected.

Installation type	Share	Generic data	Value
Blowing with vibrating plate levelling-compaction	4%	Machine operation, diesel	0.033 hr
		Petrol and combustion emissions	1.279 kg
Crane with vibrating plate levelling-compaction	96%*33.3%	Machine operation, diesel	0.0071 hr
		Petrol and combustion emissions	1.279 kg
Bulldozer installation-compaction	96%*33.3%	Machine operation, diesel	0.006 hr
Crane installation-compaction	96%*33.3%	Machine operation, diesel	0.0129 hr

Packaging	Recycling	Landfill	Incineration
PE	35 %	5 %	60 %
PP	35 %	5 %	60 %
Wooden pallets	40 %	20 %	40 %

12.3 Use Stage, B1-B7

If installed correctly according to the manufacturers' and suppliers' guidelines, normal expanded clay aggregate products need no further maintenance, repair, replacement or refurbishment during the full life span of the product. If the product is applied following the installation instructions, the life span of 100 years is applicable.

12.4 End of Life, C1-C4

After a service life of 100 years, the construction works are stripped for recoverable materials and products, and the remaining construction subsequently refurbished. The product can be removed separately from the other parts of the construction. The valuable sorted materials are 95% reused and 5% landfilled.

C1: dismantling considers a crane machine to remove expanded clay aggregates from the deconstruction site. Ecoinvent data used is “Machine operation, diesel, > 18.64 kW, steady-state {GLO} |market for |Cut-off, U” (1 day for 620 m3);

C2: end of life transport considers 50km for landfilling;

C3: -;

C4: 5% of the product for final disposal.

Module C2 – Transport to waste processing		
Type of vehicle	Distance	Capacity use
(Camion, bateau…)	(km)	(%)
Transport, freight, lorry 16-32 metric ton, EURO5 {RER}| transport, freight, lorry 16-32 metric ton, EURO5 | Cut-off, S	50 km for sorting and 50 km for landfilling	Ecoinvent 3.6

Parameters	Values
Wastes collected separately	100 %
Wastes collected as mixed construction waste	0%
Waste for re-use	95 %
Waste for recycling	0 %
Waste for energy recovery	0 %
Waste for final disposal	5 %
Transport distance for landfilling (km)	50
Transport distance for reuse (km)	30

12.5 Benefits and Loads Beyond the System Boundaries, D

The reuse of normal expanded clay aggregate is considered as benefits beyond system boundary, calculated in module D.

The packaging incineration with energy recovery is also considered as benefits beyond system boundary. Credits are assigned for power and heat outputs using the Dutch grid mix and thermal energy from natural gas. The latter represents cleanest fossil fuel and therefore results in a conservative estimate of avoided burdens. For regional efficiencies and heat-to-power output ratios, 20% is considered for avoided heat from natural gas, and 10% is considered for electricity production.

13 Additional Information on Release of Dangerous Substances

13.1 Indoor Air

Not applicable as this product does not contain any dangerous substances.

13.2 Soil and Water

Argex expanded clay aggregates has a NL BSB Productcertificaat K73820/02 Argex-Kiwa.

14 LIFE CYCLE ASSESSMENT RESULTS

Product stage			Construction installation stage		Use stage							End of life stage					Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒		☒

X = included in the EPD

MND = module not declared

14.1.1.1 Potential Environmental Impacts for 1m3 of AG 4/8 – 370 GEO in Lightweight filling applications.

The results of the LCIA are calculated for AG 4/8- 370 GEO lightweight expanded clay aggregate. The results are provided for 1m3 of the lightweight expanded clay aggregate product. The average installed density for the assessed product is 370 kg/m3.

Environmental Indicators according to EN 15804 + amendment A1

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	ADPE (kg Sb equiv/FU)	1.48E-06	8.77E-06	5.28E-05	5.42E-05	4.51E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-07	5.92E-06	0.00E+00	1.03E-06	-1.92E-05
	ADPF (MJ/FU)	1.71E+01	9.45E+00	5.10E+02	7.25E+01	5.93E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E+00	4.59E+00	0.00E+00	4.63E+00	-4.75E+02
	GWP (kg CO2 equiv/FU)	1.26E+00	6.66E-01	9.46E+01	4.73E+00	1.12E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-01	3.05E-01	0.00E+00	1.91E-01	-8.96E+01
	ODP (kg CFC 11 equiv/FU)	2.77E-07	1.03E-07	3.72E-06	8.80E-07	6.81E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E-08	5.59E-08	0.00E+00	4.83E-08	-3.49E-06
	POCP (kg ethene equiv/FU)	7.74E-04	3.04E-04	9.26E-03	2.49E-03	1.93E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.68E-05	1.32E-04	0.00E+00	1.52E-04	-8.76E-03
	AP (kg SO2 equiv/FU)	6.92E-03	3.21E-03	1.45E-01	1.70E-02	1.92E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.20E-04	9.78E-04	0.00E+00	1.26E-03	-1.39E-01
	EP (kg (PO4)3- equiv/FU)	1.49E-03	6.05E-04	4.74E-02	2.94E-03	4.87E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-04	1.59E-04	0.00E+00	2.20E-04	-4.56E-02

14.1.1.1 Indicators describing toxicity (specific for Dutch market)

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
HTP (kg DCB-eq)	6.78E-01	2.60E-01	2.33E+01	2.40E+00	7.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-02	1.39E-01	0.00E+00	1.58E-01	-2.20E+01
FAETP (kg DCB-eq)	5.12E-04	4.46E-04	1.20E-02	3.83E-03	1.68E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E-04	2.29E-04	0.00E+00	1.80E-04	-1.08E-02
MAETP (kg DCB-eq)	6.76E-04	1.46E-03	1.73E-02	2.10E-02	6.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E-04	1.10E-03	0.00E+00	2.17E-04	-1.11E-02
TETP (kg DCB-eq)	3.12E-04	2.34E-04	1.84E-02	3.24E-03	5.61E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-05	1.70E-04	0.00E+00	4.07E-05	-1.68E-02

14.1.1.2 Indicators shown on the MRPI®-EPD

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
ADPF (kg Sb eq)	8.24E-03	4.55E-03	2.46E-01	3.49E-02	2.86E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-03	2.21E-03	0.00E+00	2.23E-03	-2.29E-01

14.1.1.3 Core Environmental Indicators according to EN 15804 + amendment A2

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	GWP total (kg CO2 equiv/FU)	1.28E+00	6.75E-01	9.50E+01	4.78E+00	1.12E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-01	3.09E-01	0.00E+00	1.97E-01	-8.99E+01
	GWP fossil (kg CO2 equiv/FU)	1.27E+00	6.74E-01	9.52E+01	4.78E+00	4.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-01	3.08E-01	0.00E+00	1.95E-01	-9.00E+01
	GWP biogenic (kg CO2 equiv/FU)	6.67E-03	8.28E-04	-2.64E-01	3.99E-03	6.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.17E-05	1.65E-04	0.00E+00	1.58E-03	1.22E-01
	GWP luluc (kg CO2 equiv/FU)	1.10E-03	8.35E-04	2.93E-02	1.99E-03	9.49E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-05	1.08E-04	0.00E+00	8.70E-05	-2.84E-02
	ODP (kg CFC 11 equiv/FU)	2.73E-07	1.28E-07	3.64E-06	1.10E-06	8.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.79E-08	7.00E-08	0.00E+00	6.05E-08	-3.34E-06
	AP (mol H+ equiv/FU)	9.64E-03	4.31E-03	3.43E+00	2.23E-02	2.61E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.15E-04	1.26E-03	0.00E+00	1.66E-03	-3.27E+00
	EP - freshwater (kg P equiv/FU)	1.26E-05	9.62E-06	4.73E-03	3.83E-05	3.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.08E-07	2.42E-06	0.00E+00	3.26E-06	-4.49E-03
	EP - marine (kg N equiv/FU)	4.09E-03	1.56E-03	9.28E-02	7.19E-03	1.02E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-04	3.74E-04	0.00E+00	5.63E-04	-9.01E-02
	EP - terrestrial (mol N equiv/FU)	4.51E-02	1.73E-02	1.04E+00	7.95E-02	1.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E-03	4.13E-03	0.00E+00	6.21E-03	-1.00E+00
	POCP (kg NMVOC equiv/FU)	1.23E-02	4.72E-03	4.55E-01	2.44E-02	2.98E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.17E-04	1.27E-03	0.00E+00	1.79E-03	-4.37E-01
	ADP Elements (kg Sb equiv/FU)	1.43E-06	8.76E-06	5.23E-05	5.41E-05	4.50E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E-07	5.92E-06	0.00E+00	1.03E-06	-1.87E-05

	ADP fossil fuels (MJ/FU)	2.91E+01	9.40E+00	5.72E+02	7.33E+01	5.91E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.05E+00	4.65E+00	0.00E+00	4.58E+00	-5.45E+02
	WDP (m^3 water eq deprived /FU)	1.73E-01	3.86E-02	5.36E+00	2.41E-01	-6.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.09E-03	1.29E-02	0.00E+00	1.98E-01	-5.16E+00

GWP total = total Global Warming Potential (Climate Change); GWP-luluc = Global Warming Potential (Climate Change) land use and land use change; ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; WDP = water use (Water (user) deprivation potential, deprivation-weighted water consumption)

14.1.1.4 Additional Environmental Indicators according to EN 15804 + amendment A2

Additional Impact Categories		Production			Construction process		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	PM (disease incidence)	2.36E-07	3.29E-08	2.13E-05	4.05E-07	3.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-08	2.15E-08	0.00E+00	3.18E-08	-2.03E-05
	IRHH (kg U235 eq/FU)	2.49E-01	4.13E-02	3.38E+00	3.21E-01	2.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-02	2.03E-02	0.00E+00	1.80E-02	-3.34E+00
	ETF (CTUe/FU)	1.25E+01	8.26E+00	2.61E+02	5.84E+01	5.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E+00	3.72E+00	0.00E+00	3.38E+00	-2.40E+02
	HTCE (CTUh/FU)	3.38E-10	2.69E-10	2.17E-08	1.52E-09	5.18E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E-10	1.05E-10	0.00E+00	1.20E-10	-2.03E-08
	HTnCE (CTUh/FU)	8.40E-09	7.34E-09	1.86E-07	6.49E-08	1.87E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-09	4.06E-09	0.00E+00	2.51E-09	-1.62E-07

	Land Use Related impacts (dimension less)	5.75E+00	6.43E+00	9.59E+02	8.22E+01	2.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.90E-01	3.21E+00	0.00E+00	1.10E+01	-8.89E+02

HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; ETF = Ecotoxicity – freshwater; (potential comparative toxic unit)
PM = Particulate Matter (Potential incidence of disease due to PM emissions);
IRHH = Ionizing Radiation – human health effects (Potential Human exposure efficiency relative to U235);

14.1.1.5 Parameters describing resource use according to EN 15804 + amendment A2

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
PERE (MJ/FU, net calorific value)	1.58E+00	2.49E-01	2.13E+02	9.86E-01	7.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-02	6.56E-02	0.00E+00	7.56E-02	-2.02E+02
PERM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (MJ/FU, net calorific value)	1.58E+00	2.49E-01	2.13E+02	9.86E-01	7.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-02	6.56E-02	0.00E+00	7.56E-02	-2.02E+02
PENRE (MJ/FU, net calorific value)	3.00E+01	9.84E+00	6.86E+02	7.40E+01	6.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E+00	4.69E+00	0.00E+00	4.73E+00	-6.54E+02
PENRM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (MJ/FU, net calorific value)	3.00E+01	9.84E+00	6.86E+02	7.40E+01	6.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E+00	4.69E+00	0.00E+00	4.73E+00	-6.54E+02
SM (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NRSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (m^3 water eq/FU)	5.14E-03	9.87E-04	8.69E-02	6.11E-03	1.08E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	3.56E-04	0.00E+00	4.51E-03	-8.46E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water.

14.1.1.6 Environmental information describing output flows and waste categories according to EN 15804 + amendment A2

Waste Categories & Output Flows	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (kg/FU)	1.32E-02	1.07E-02	1.98E-01	4.78E-02	1.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.93E-03	2.99E-03	0.00E+00	5.50E-03	-1.83E-01
Non-hazardous waste disposed (kg/FU)	1.34E-01	3.63E-01	3.30E+00	6.31E+00	3.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-02	2.44E-01	0.00E+00	1.86E+01	-1.94E+00
Radioactive waste disposed (kg/FU)	2.50E-04	6.00E-05	3.35E-03	5.00E-04	3.63E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E-05	3.17E-05	0.00E+00	2.75E-05	-3.25E-03
Components for reuse (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.52E+02	0.00E+00	0.00E+00
Materials for recycling (kg/FU)	0.00E+00	0.00E+00	0.00E+00	6.07E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Materials for energy recovery (kg/FU)	0.00E+00	0.00E+00	0.00E+00	1.00E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Electricity (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	3.69E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Heat (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	1.85E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

14.1.1.7 Information on biogenic carbon content according to EN 15804 + amendment A2

Carbon Content	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
BCCpr (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

14.1.1.8 Potential Environmental Impacts for 1m3 of AR 4/10 – 430 GEO in Lightweight filling applications.

The results of the LCIA are calculated for AR 4/10- 430 GEO lightweight expanded clay aggregate. The results are provided for 1m3 of the lightweight expanded clay aggregate product. The average installed density for the assessed product is 430 kg/m3.

Environmental Indicators according to EN 15804 + amendment A1

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	ADPE (kg Sb equiv/FU)	1.72E-06	1.02E-05	6.14E-05	6.30E-05	5.24E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-07	6.89E-06	0.00E+00	1.20E-06	-2.23E-05
	ADPF (MJ/FU)	1.99E+01	1.10E+01	5.93E+02	8.43E+01	6.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.51E+00	5.34E+00	0.00E+00	5.38E+00	-5.52E+02
	GWP (kg CO2 equiv/FU)	1.46E+00	7.74E-01	1.10E+02	5.50E+00	1.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.58E-01	3.55E-01	0.00E+00	2.22E-01	-1.04E+02
	ODP (kg CFC 11 equiv/FU)	3.22E-07	1.20E-07	4.32E-06	1.02E-06	7.92E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.42E-08	6.50E-08	0.00E+00	5.62E-08	-4.06E-06
	POCP (kg ethene equiv/FU)	8.99E-04	3.54E-04	1.08E-02	2.89E-03	2.25E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-04	1.53E-04	0.00E+00	1.76E-04	-1.02E-02
	AP (kg SO2 equiv/FU)	8.04E-03	3.73E-03	1.68E-01	1.98E-02	2.23E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E-04	1.14E-03	0.00E+00	1.47E-03	-1.61E-01
	EP (kg (PO4)3- equiv/FU)	1.74E-03	7.03E-04	5.51E-02	3.42E-03	5.66E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-04	1.85E-04	0.00E+00	2.55E-04	-5.30E-02

14.1.1.1 Indicators describing toxicity (specific for Dutch market)

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
HTP (kg DCB-eq)	7.88E-01	3.03E-01	2.71E+01	2.79E+00	8.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.40E-02	1.61E-01	0.00E+00	1.83E-01	-2.56E+01
FAETP (kg DCB-eq)	5.95E-04	5.18E-04	1.40E-02	4.46E-03	1.95E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-04	2.66E-04	0.00E+00	2.09E-04	-1.25E-02
MAETP (kg DCB-eq)	7.85E-04	1.70E-03	2.02E-02	2.45E-02	7.49E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-04	1.27E-03	0.00E+00	2.52E-04	-1.29E-02
TETP (kg DCB-eq)	3.62E-04	2.72E-04	2.13E-02	3.77E-03	6.52E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.60E-05	1.98E-04	0.00E+00	4.74E-05	-1.95E-02

14.1.1.2 Indicators shown on the MRPI®-EPD

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
ADPF (kg Sb eq)	9.58E-03	5.29E-03	2.85E-01	4.06E-02	3.32E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	2.57E-03	0.00E+00	2.59E-03	-2.66E-01

14.1.1.3 Core Environmental Indicators according to EN 15804 + amendment A2

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	GWP total (kg CO2 equiv/FU)	1.49E+00	7.85E-01	1.10E+02	5.56E+00	1.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.60E-01	3.59E-01	0.00E+00	2.29E-01	-1.05E+02
	GWP fossil (kg CO2 equiv/FU)	1.48E+00	7.83E-01	1.11E+02	5.55E+00	5.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.60E-01	3.58E-01	0.00E+00	2.27E-01	-1.05E+02
	GWP biogenic (kg CO2 equiv/FU)	7.75E-03	9.62E-04	-3.07E-01	4.63E-03	7.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.17E-05	1.91E-04	0.00E+00	1.83E-03	1.42E-01
	GWP luluc (kg CO2 equiv/FU)	1.28E-03	9.70E-04	3.41E-02	2.31E-03	1.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-05	1.25E-04	0.00E+00	1.01E-04	-3.30E-02
	ODP (kg CFC 11 equiv/FU)	3.17E-07	1.49E-07	4.23E-06	1.28E-06	9.83E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.57E-08	8.14E-08	0.00E+00	7.03E-08	-3.88E-06
	AP (mol H+ equiv/FU)	1.12E-02	5.01E-03	3.99E+00	2.59E-02	3.03E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.47E-04	1.46E-03	0.00E+00	1.93E-03	-3.79E+00
	EP - freshwater (kg P equiv/FU)	1.47E-05	1.12E-05	5.49E-03	4.45E-05	3.75E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-07	2.81E-06	0.00E+00	3.79E-06	-5.22E-03
	EP - marine (kg N equiv/FU)	4.75E-03	1.82E-03	1.08E-01	8.36E-03	1.18E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-04	4.34E-04	0.00E+00	6.54E-04	-1.05E-01
	EP - terrestrial (mol N equiv/FU)	5.24E-02	2.00E-02	1.20E+00	9.24E-02	1.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-03	4.80E-03	0.00E+00	7.21E-03	-1.17E+00
	POCP (kg NMVOC equiv/FU)	1.43E-02	5.49E-03	5.29E-01	2.84E-02	3.46E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-03	1.47E-03	0.00E+00	2.08E-03	-5.08E-01
	ADP Elements (kg Sb equiv/FU)	1.66E-06	1.02E-05	6.07E-05	6.29E-05	5.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-07	6.88E-06	0.00E+00	1.19E-06	-2.17E-05

	ADP fossil fuels (MJ/FU)	3.38E+01	1.09E+01	6.65E+02	8.52E+01	6.87E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.55E+00	5.40E+00	0.00E+00	5.33E+00	-6.33E+02
	WDP (m^3 water eq deprived /FU)	2.01E-01	4.49E-02	6.23E+00	2.80E-01	-8.12E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.76E-03	1.50E-02	0.00E+00	2.30E-01	-5.99E+00

GWP total = total Global Warming Potential (Climate Change); GWP-luluc = Global Warming Potential (Climate Change) land use and land use change; ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; WDP = water use (Water (user) deprivation potential, deprivation-weighted water consumption)

14.1.1.4 Additional Environmental Indicators according to EN 15804 + amendment A2

Additional Impact Categories		Production			Construction process		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	PM (disease incidence)	2.75E-07	3.82E-08	2.48E-05	4.71E-07	3.89E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E-08	2.49E-08	0.00E+00	3.70E-08	-2.36E-05
	IRHH (kg U235 eq/FU)	2.90E-01	4.80E-02	3.93E+00	3.73E-01	2.72E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-02	2.36E-02	0.00E+00	2.09E-02	-3.89E+00
	ETF (CTUe/FU)	1.45E+01	9.60E+00	3.03E+02	6.79E+01	6.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E+00	4.33E+00	0.00E+00	3.93E+00	-2.78E+02
	HTCE (CTUh/FU)	3.93E-10	3.12E-10	2.52E-08	1.77E-09	6.02E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-10	1.22E-10	0.00E+00	1.40E-10	-2.36E-08
	HTnCE (CTUh/FU)	9.76E-09	8.53E-09	2.16E-07	7.54E-08	2.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.58E-09	4.72E-09	0.00E+00	2.92E-09	-1.89E-07

	Land Use Related impacts (dimension less)	6.68E+00	7.48E+00	1.11E+03	9.55E+01	2.87E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.53E-01	3.73E+00	0.00E+00	1.27E+01	-1.03E+03

HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; ETF = Ecotoxicity – freshwater; (potential comparative toxic unit)
PM = Particulate Matter (Potential incidence of disease due to PM emissions);
IRHH = Ionizing Radiation – human health effects (Potential Human exposure efficiency relative to U235);

14.1.1.5 Parameters describing resource use according to EN 15804 + amendment A2

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
PERE (MJ/FU, net calorific value)	1.84E+00	2.89E-01	2.48E+02	1.15E+00	8.86E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.92E-02	7.63E-02	0.00E+00	8.79E-02	-2.35E+02
PERM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (MJ/FU, net calorific value)	1.84E+00	2.89E-01	2.48E+02	1.15E+00	8.86E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.92E-02	7.63E-02	0.00E+00	8.79E-02	-2.35E+02
PENRE (MJ/FU, net calorific value)	3.48E+01	1.14E+01	7.97E+02	8.60E+01	7.05E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.53E+00	5.45E+00	0.00E+00	5.50E+00	-7.60E+02
PENRM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (MJ/FU, net calorific value)	3.48E+01	1.14E+01	7.97E+02	8.60E+01	7.05E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.53E+00	5.45E+00	0.00E+00	5.50E+00	-7.60E+02
SM (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NRSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (m^3 water eq/FU)	5.98E-03	1.15E-03	1.01E-01	7.10E-03	1.26E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-04	4.13E-04	0.00E+00	5.24E-03	-9.83E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water.

14.1.1.6 Environmental information describing output flows and waste categories according to EN 15804 + amendment A2

Waste Categories & Output Flows	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (kg/FU)	1.53E-02	1.24E-02	2.30E-01	5.55E-02	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-03	3.48E-03	0.00E+00	6.39E-03	-2.13E-01
Non-hazardous waste disposed (kg/FU)	1.55E-01	4.22E-01	3.83E+00	7.34E+00	3.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-02	2.84E-01	0.00E+00	2.16E+01	-2.26E+00
Radioactive waste disposed (kg/FU)	2.91E-04	6.98E-05	3.89E-03	5.81E-04	4.22E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-05	3.68E-05	0.00E+00	3.19E-05	-3.78E-03
Components for reuse (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.09E+02	0.00E+00	0.00E+00
Materials for recycling (kg/FU)	0.00E+00	0.00E+00	0.00E+00	7.04E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Materials for energy recovery (kg/FU)	0.00E+00	0.00E+00	0.00E+00	1.16E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Electricity (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	4.28E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Heat (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	2.14E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

14.1.1.7 Information on biogenic carbon content according to EN 15804 + amendment A2

Carbon Content	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
BCCpr (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

14.1.1.8 Potential Environmental Impacts for 1m3 of AG 0/4 – 500 GEO in Lightweight filling applications.

The results of the LCIA are calculated for AG 0/4- 500 GEO lightweight expanded clay aggregate. The results are provided for 1m3 of the lightweight expanded clay aggregate product. The average installed density for the assessed product is 500 kg/m3.

Environmental Indicators according to EN 15804 + amendment A1

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	ADPE (kg Sb equiv/FU)	2.00E-06	1.19E-05	7.13E-05	7.32E-05	6.09E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-07	8.01E-06	0.00E+00	1.39E-06	-2.60E-05
	ADPF (MJ/FU)	2.31E+01	1.28E+01	6.90E+02	9.80E+01	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.08E+00	6.21E+00	0.00E+00	6.25E+00	-6.42E+02
	GWP (kg CO2 equiv/FU)	1.70E+00	9.00E-01	1.28E+02	6.39E+00	1.51E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E-01	4.12E-01	0.00E+00	2.59E-01	-1.21E+02
	ODP (kg CFC 11 equiv/FU)	3.74E-07	1.39E-07	5.02E-06	1.19E-06	9.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.14E-08	7.56E-08	0.00E+00	6.53E-08	-4.72E-06
	POCP (kg ethene equiv/FU)	1.05E-03	4.11E-04	1.25E-02	3.36E-03	2.61E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-04	1.78E-04	0.00E+00	2.05E-04	-1.18E-02
	AP (kg SO2 equiv/FU)	9.35E-03	4.34E-03	1.96E-01	2.30E-02	2.59E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.38E-04	1.32E-03	0.00E+00	1.70E-03	-1.87E-01
	EP (kg (PO4)3- equiv/FU)	2.02E-03	8.18E-04	6.40E-02	3.97E-03	6.58E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-04	2.15E-04	0.00E+00	2.97E-04	-6.16E-02

14.1.1.1 Indicators describing toxicity (specific for Dutch market)

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
HTP (kg DCB-eq)	9.16E-01	3.52E-01	3.15E+01	3.25E+00	9.90E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E-02	1.88E-01	0.00E+00	2.13E-01	-2.97E+01
FAETP (kg DCB-eq)	6.92E-04	6.02E-04	1.63E-02	5.18E-03	2.27E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-04	3.09E-04	0.00E+00	2.43E-04	-1.45E-02
MAETP (kg DCB-eq)	9.13E-04	1.97E-03	2.34E-02	2.84E-02	8.71E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.58E-04	1.48E-03	0.00E+00	2.93E-04	-1.50E-02
TETP (kg DCB-eq)	4.21E-04	3.16E-04	2.48E-02	4.38E-03	7.58E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-05	2.30E-04	0.00E+00	5.51E-05	-2.27E-02

14.1.1.2 Indicators shown on the MRPI®-EPD

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
ADPF (kg Sb eq)	1.11E-02	6.15E-03	3.32E-01	4.72E-02	3.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-03	2.99E-03	0.00E+00	3.01E-03	-3.09E-01

14.1.1.3 Core Environmental Indicators according to EN 15804 + amendment A2

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	GWP total (kg CO2 equiv/FU)	1.73E+00	9.13E-01	1.28E+02	6.46E+00	1.51E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-01	4.17E-01	0.00E+00	2.66E-01	-1.22E+02
	GWP fossil (kg CO2 equiv/FU)	1.72E+00	9.10E-01	1.29E+02	6.46E+00	6.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-01	4.17E-01	0.00E+00	2.64E-01	-1.22E+02
	GWP biogenic (kg CO2 equiv/FU)	9.01E-03	1.12E-03	-3.57E-01	5.39E-03	8.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.34E-05	2.22E-04	0.00E+00	2.13E-03	1.66E-01
	GWP luluc (kg CO2 equiv/FU)	1.49E-03	1.13E-03	3.97E-02	2.68E-03	1.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-05	1.46E-04	0.00E+00	1.18E-04	-3.84E-02
	ODP (kg CFC 11 equiv/FU)	3.69E-07	1.73E-07	4.92E-06	1.49E-06	1.14E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.48E-08	9.47E-08	0.00E+00	8.17E-08	-4.51E-06
	AP (mol H+ equiv/FU)	1.30E-02	5.82E-03	4.64E+00	3.01E-02	3.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-03	1.70E-03	0.00E+00	2.25E-03	-4.41E+00
	EP - freshwater (kg P equiv/FU)	1.71E-05	1.30E-05	6.39E-03	5.18E-05	4.37E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-06	3.27E-06	0.00E+00	4.41E-06	-6.07E-03
	EP - marine (kg N equiv/FU)	5.52E-03	2.11E-03	1.25E-01	9.72E-03	1.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.66E-04	5.05E-04	0.00E+00	7.61E-04	-1.22E-01
	EP - terrestrial (mol N equiv/FU)	6.10E-02	2.33E-02	1.40E+00	1.07E-01	1.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.04E-03	5.59E-03	0.00E+00	8.39E-03	-1.36E+00
	POCP (kg NMVOC equiv/FU)	1.67E-02	6.38E-03	6.15E-01	3.30E-02	4.03E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-03	1.71E-03	0.00E+00	2.42E-03	-5.91E-01
	ADP Elements (kg Sb equiv/FU)	1.93E-06	1.18E-05	7.06E-05	7.31E-05	6.08E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-07	8.00E-06	0.00E+00	1.39E-06	-2.52E-05

	ADP fossil fuels (MJ/FU)	3.93E+01	1.27E+01	7.73E+02	9.91E+01	7.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E+00	6.28E+00	0.00E+00	6.19E+00	-7.36E+02
	WDP (m^3 water eq deprived /FU)	2.34E-01	5.22E-02	7.24E+00	3.25E-01	-9.44E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-03	1.75E-02	0.00E+00	2.68E-01	-6.97E+00

GWP total = total Global Warming Potential (Climate Change); GWP-luluc = Global Warming Potential (Climate Change) land use and land use change; ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; WDP = water use (Water (user) deprivation potential, deprivation-weighted water consumption)

14.1.1.4 Additional Environmental Indicators according to EN 15804 + amendment A2

Additional Impact Categories		Production			Construction process		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	PM (disease incidence)	3.19E-07	4.45E-08	2.88E-05	5.48E-07	4.53E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-08	2.90E-08	0.00E+00	4.30E-08	-2.75E-05
	IRHH (kg U235 eq/FU)	3.37E-01	5.58E-02	4.57E+00	4.34E-01	3.16E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-02	2.75E-02	0.00E+00	2.43E-02	-4.52E+00
	ETF (CTUe/FU)	1.69E+01	1.12E+01	3.53E+02	7.89E+01	7.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.49E+00	5.03E+00	0.00E+00	4.56E+00	-3.24E+02
	HTCE (CTUh/FU)	4.57E-10	3.63E-10	2.93E-08	2.05E-09	7.00E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.51E-10	1.41E-10	0.00E+00	1.63E-10	-2.74E-08
	HTnCE (CTUh/FU)	1.14E-08	9.92E-09	2.51E-07	8.76E-08	2.53E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-09	5.49E-09	0.00E+00	3.39E-09	-2.19E-07

	Land Use Related impacts (dimension less)	7.77E+00	8.69E+00	1.30E+03	1.11E+02	3.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.27E-01	4.33E+00	0.00E+00	1.48E+01	-1.20E+03

HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; ETF = Ecotoxicity – freshwater; (potential comparative toxic unit)
PM = Particulate Matter (Potential incidence of disease due to PM emissions);
IRHH = Ionizing Radiation – human health effects (Potential Human exposure efficiency relative to U235);

14.1.1.5 Parameters describing resource use according to EN 15804 + amendment A2

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
PERE (MJ/FU, net calorific value)	2.14E+00	3.36E-01	2.88E+02	1.33E+00	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-02	8.87E-02	0.00E+00	1.02E-01	-2.73E+02
PERM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (MJ/FU, net calorific value)	2.14E+00	3.36E-01	2.88E+02	1.33E+00	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-02	8.87E-02	0.00E+00	1.02E-01	-2.73E+02
PENRE (MJ/FU, net calorific value)	4.05E+01	1.33E+01	9.27E+02	1.00E+02	8.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E+00	6.34E+00	0.00E+00	6.39E+00	-8.83E+02
PENRM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (MJ/FU, net calorific value)	4.05E+01	1.33E+01	9.27E+02	1.00E+02	8.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E+00	6.34E+00	0.00E+00	6.39E+00	-8.83E+02
SM (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NRSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (m^3 water eq/FU)	6.95E-03	1.33E-03	1.17E-01	8.26E-03	1.47E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-04	4.80E-04	0.00E+00	6.10E-03	-1.14E-01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water.

14.1.1.6 Environmental information describing output flows and waste categories according to EN 15804 + amendment A2

Waste Categories & Output Flows	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (kg/FU)	1.78E-02	1.44E-02	2.67E-01	6.46E-02	1.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E-03	4.04E-03	0.00E+00	7.44E-03	-2.48E-01
Non-hazardous waste disposed (kg/FU)	1.81E-01	4.91E-01	4.46E+00	8.53E+00	4.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-02	3.30E-01	0.00E+00	2.51E+01	-2.63E+00
Radioactive waste disposed (kg/FU)	3.38E-04	8.11E-05	4.52E-03	6.76E-04	4.90E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.87E-05	4.28E-05	0.00E+00	3.71E-05	-4.39E-03
Components for reuse (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.75E+02	0.00E+00	0.00E+00
Materials for recycling (kg/FU)	0.00E+00	0.00E+00	0.00E+00	8.21E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Materials for energy recovery (kg/FU)	0.00E+00	0.00E+00	0.00E+00	1.36E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Electricity (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	4.99E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Heat (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	2.50E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon content according to EN 15804 + amendment A2

Carbon Content	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
BCCpr (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

14.1.1.7 Potential Environmental Impacts for 1m3 of AR 8/16 – 340 GEO in Lightweight filling applications.

The results of the LCIA are calculated for AR 8/16- 340 GEO lightweight expanded clay aggregate. The results are provided for 1m3 of the lightweight expanded clay aggregate product. The average installed density for the assessed product is 340 kg/m3.

Environmental Indicators according to EN 15804 + amendment A1

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	ADPE (kg Sb equiv/FU)	1.36E-06	8.06E-06	4.85E-05	4.98E-05	4.14E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	5.44E-06	0.00E+00	9.47E-07	-1.77E-05
	ADPF (MJ/FU)	1.57E+01	8.68E+00	4.69E+02	6.66E+01	5.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E+00	4.22E+00	0.00E+00	4.25E+00	-4.36E+02
	GWP (kg CO2 equiv/FU)	1.16E+00	6.12E-01	8.70E+01	4.35E+00	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E-01	2.80E-01	0.00E+00	1.76E-01	-8.23E+01
	ODP (kg CFC 11 equiv/FU)	2.55E-07	9.48E-08	3.41E-06	8.09E-07	6.26E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-08	5.14E-08	0.00E+00	4.44E-08	-3.21E-06
	POCP (kg ethene equiv/FU)	7.11E-04	2.80E-04	8.51E-03	2.29E-03	1.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.90E-05	1.21E-04	0.00E+00	1.40E-04	-8.05E-03
	AP (kg SO2 equiv/FU)	6.36E-03	2.95E-03	1.33E-01	1.57E-02	1.76E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.70E-04	8.99E-04	0.00E+00	1.16E-03	-1.27E-01
	EP (kg (PO4)3- equiv/FU)	1.37E-03	5.56E-04	4.35E-02	2.70E-03	4.48E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-04	1.46E-04	0.00E+00	2.02E-04	-4.19E-02

14.1.1.8 Indicators describing toxicity (specific for Dutch market)

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
HTP (kg DCB-eq)	6.23E-01	2.39E-01	2.14E+01	2.21E+00	6.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.27E-02	1.28E-01	0.00E+00	1.45E-01	-2.02E+01
FAETP (kg DCB-eq)	4.70E-04	4.09E-04	1.11E-02	3.52E-03	1.54E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-04	2.10E-04	0.00E+00	1.65E-04	-9.89E-03
MAETP (kg DCB-eq)	6.21E-04	1.34E-03	1.59E-02	1.93E-02	5.92E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-04	1.01E-03	0.00E+00	1.99E-04	-1.02E-02
TETP (kg DCB-eq)	2.86E-04	2.15E-04	1.69E-02	2.98E-03	5.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-05	1.56E-04	0.00E+00	3.74E-05	-1.54E-02

14.1.1.9 Indicators shown on the MRPI®-EPD

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
ADPF (kg Sb eq)	7.57E-03	4.18E-03	2.26E-01	3.21E-02	2.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-03	2.03E-03	0.00E+00	2.05E-03	-2.10E-01

14.1.1.10 Core Environmental Indicators according to EN 15804 + amendment A2

Potential Environmental Impacts		Production			Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
	GWP total (kg CO2 equiv/FU)	1.17E+00	6.21E-01	8.73E+01	4.40E+00	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.06E-01	2.84E-01	0.00E+00	1.81E-01	-8.26E+01
	GWP fossil (kg CO2 equiv/FU)	1.17E+00	6.19E-01	8.75E+01	4.39E+00	4.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-01	2.83E-01	0.00E+00	1.79E-01	-8.27E+01
	GWP biogenic (kg CO2 equiv/FU)	6.13E-03	7.61E-04	-2.43E-01	3.66E-03	5.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.67E-05	1.51E-04	0.00E+00	1.45E-03	1.13E-01
	GWP luluc (kg CO2 equiv/FU)	1.01E-03	7.67E-04	2.70E-02	1.82E-03	8.72E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E-05	9.91E-05	0.00E+00	7.99E-05	-2.61E-02
	ODP (kg CFC 11 equiv/FU)	2.51E-07	1.17E-07	3.34E-06	1.01E-06	7.77E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.40E-08	6.44E-08	0.00E+00	5.56E-08	-3.07E-06
	AP (mol H+ equiv/FU)	8.86E-03	3.96E-03	3.16E+00	2.05E-02	2.39E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.49E-04	1.16E-03	0.00E+00	1.53E-03	-3.00E+00
	EP - freshwater (kg P equiv/FU)	1.16E-05	8.84E-06	4.34E-03	3.52E-05	2.97E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.43E-07	2.23E-06	0.00E+00	3.00E-06	-4.12E-03
	EP - marine (kg N equiv/FU)	3.76E-03	1.44E-03	8.53E-02	6.61E-03	9.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.49E-04	3.44E-04	0.00E+00	5.17E-04	-8.28E-02
	EP - terrestrial (mol N equiv/FU)	4.14E-02	1.59E-02	9.51E-01	7.30E-02	1.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E-03	3.80E-03	0.00E+00	5.70E-03	-9.23E-01
	POCP (kg NMVOC equiv/FU)	1.13E-02	4.34E-03	4.18E-01	2.24E-02	2.74E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.43E-04	1.16E-03	0.00E+00	1.65E-03	-4.02E-01
	ADP Elements (kg Sb equiv/FU)	1.31E-06	8.05E-06	4.80E-05	4.97E-05	4.14E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-07	5.44E-06	0.00E+00	9.44E-07	-1.72E-05

	ADP fossil fuels (MJ/FU)	2.67E+01	8.64E+00	5.26E+02	6.74E+01	5.43E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E+00	4.27E+00	0.00E+00	4.21E+00	-5.01E+02
	WDP (m^3 water eq deprived /FU)	1.59E-01	3.55E-02	4.93E+00	2.21E-01	-6.42E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E-03	1.19E-02	0.00E+00	1.82E-01	-4.74E+00

GWP total = total Global Warming Potential (Climate Change); GWP-luluc = Global Warming Potential (Climate Change) land use and land use change; ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; WDP = water use (Water (user) deprivation potential, deprivation-weighted water consumption)

14.1.1.11 Additional Environmental Indicators according to EN 15804 + amendment A2

Additional Impact Categories		Production			Construction process		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	PM (disease incidence)	2.17E-07	3.02E-08	1.96E-05	3.73E-07	3.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-08	1.97E-08	0.00E+00	2.92E-08	-1.87E-05
	IRHH (kg U235 eq/FU)	2.29E-01	3.79E-02	3.11E+00	2.95E-01	2.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-02	1.87E-02	0.00E+00	1.65E-02	-3.07E+00
	ETF (CTUe/FU)	1.15E+01	7.59E+00	2.40E+02	5.37E+01	5.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E+00	3.42E+00	0.00E+00	3.10E+00	-2.20E+02
	HTCE (CTUh/FU)	3.11E-10	2.47E-10	1.99E-08	1.40E-09	4.76E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-10	9.62E-11	0.00E+00	1.11E-10	-1.86E-08
	HTnCE (CTUh/FU)	7.72E-09	6.75E-09	1.71E-07	5.96E-08	1.72E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-09	3.73E-09	0.00E+00	2.31E-09	-1.49E-07

	Land Use Related impacts (dimension less)	5.28E+00	5.91E+00	8.81E+02	7.55E+01	2.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.58E-01	2.95E+00	0.00E+00	1.01E+01	-8.17E+02

HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; ETF = Ecotoxicity – freshwater; (potential comparative toxic unit)
PM = Particulate Matter (Potential incidence of disease due to PM emissions);
IRHH = Ionizing Radiation – human health effects (Potential Human exposure efficiency relative to U235);

14.1.1.12 Parameters describing resource use according to EN 15804 + amendment A2

Resource Use	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
PERE (MJ/FU, net calorific value)	1.45E+00	2.29E-01	1.96E+02	9.07E-01	7.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-02	6.03E-02	0.00E+00	6.95E-02	-1.86E+02
PERM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (MJ/FU, net calorific value)	1.45E+00	2.29E-01	1.96E+02	9.07E-01	7.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-02	6.03E-02	0.00E+00	6.95E-02	-1.86E+02
PENRE (MJ/FU, net calorific value)	2.75E+01	9.04E+00	6.30E+02	6.80E+01	5.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E+00	4.31E+00	0.00E+00	4.35E+00	-6.01E+02
PENRM (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (MJ/FU, net calorific value)	2.75E+01	9.04E+00	6.30E+02	6.80E+01	5.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E+00	4.31E+00	0.00E+00	4.35E+00	-6.01E+02
SM (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NRSF (MJ/FU, net calorific value)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (m^3 water eq/FU)	4.72E-03	9.07E-04	7.98E-02	5.61E-03	9.97E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-04	3.27E-04	0.00E+00	4.15E-03	-7.77E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water.

14.1.1.13 Environmental information describing output flows and waste categories according to EN 15804 + amendment A2

Waste Categories & Output Flows	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (kg/FU)	1.21E-02	9.79E-03	1.82E-01	4.39E-02	1.08E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-03	2.75E-03	0.00E+00	5.06E-03	-1.69E-01
Non-hazardous waste disposed (kg/FU)	1.23E-01	3.34E-01	3.03E+00	5.80E+00	2.99E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-02	2.25E-01	0.00E+00	1.71E+01	-1.79E+00
Radioactive waste disposed (kg/FU)	2.30E-04	5.52E-05	3.07E-03	4.59E-04	3.33E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-05	2.91E-05	0.00E+00	2.52E-05	-2.99E-03
Components for reuse (kg/FU)	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.23E+02	0.00E+00	0.00E+00
Materials for recycling (kg/FU)	0.00E+00	0.00E+00	0.00E+00	5.58E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Materials for energy recovery (kg/FU)	0.00E+00	0.00E+00	0.00E+00	9.24E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Electricity (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	3.39E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy Heat (MJ/FU)	0.00E+00	0.00E+00	0.00E+00	1.70E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00

14.1.1.14 Information on biogenic carbon content according to EN 15804 + amendment A2

Carbon Content	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
BCCpr (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa (kg C)	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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- ISO 14025:2006: Étiquettes et déclarations environnementales-Déclarations environnementales de type III-Principes et procédures environnementaux.
- EN 15804+A2:2019
- Bepalingsmethode Milieuprestatie Bouwwerken - Stichting NMD
- Background report Expanded clay aggregate ARGEX v3.8

EPD Owner	ARGEX Kruibeeksesteenzeg162 B-2070 Burcht Belgium	
Author of the LCA	WeLOOP 254 Rue du Bourg 59130 - Lambersart France	
Confidential Report	Background Report Expanded Clay Aggregate V3.8	
Verification **Verifier name** **Date**	15804:2012+A2:2019 Agrodome 06 October 2021	