B-EPD .BE
1234567-123
(contact program operator)

Orbix & Betonagglomeraten Gubbels N.V.

Carbstone Soundblox W, G and A

Sizes: 39/14/19, 39/09/19, 49,5/19/19

ISSUED 06.08.2024
VALID UNTIL 06.08.2029

THIRD PARTY VERIFIED
in accordance with EN 15804+A2
and B-EPD PCR 18.10.2022

MODULES DECLARED
1000 kg of product installed.

A123	A4	A5	B 1-7	C	D
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The intended use of this EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings. This EPD is only valid when registered on www.b-epd.be. The FPS Public Health cannot be held responsible for the information provided by the owner of the EPD.

TABLE OF CONTENTS

1 PRODUCT DESCRIPTION

1.1 Product name

Carbstone Soundblox. Sizes: W: 39/14/19, G: 39/09/19, A: 49,5/19/19

Carbstone Soundblox. Afmetingen: W: 39/14/19, G: 39/09/19, A: 49,5/19/19

1.2 Product description and intended use

Carbstones are carbonated hollow rapid construction bricks and full bricks with dimensions .The applied carbonation technique, developed by Orbix, transforms metal slag from the steel industry into circular building products.

Carbstones have the characteristic of absorbing CO_2 through carbonation. This happens because the Carbstones have metal slag as ingredients, which is a calcium-rich material. The calcium reacts with water and CO_2 to form calcium carbonate, a strong binder. Because of this, the Carbstone has a binding agent of CO_2 instead of cement. The building material has the same characteristics as a concrete block. The difference is in capturing the CO_2.

De Carbstones zijn gecarbonateerde holle snelbouwstenen en volle stenen met afmetingen. De toegepaste carbonatatie techniek, ontwikkeld door Orbix, verandert metaalslak van de staalindustrie naar circulaire bouwproducten.

Carbstones hebben als kenmerk dat ze CO_2 opnemen door carbonatie. Dit gebeurt doordat de Carbstones metaalslak als ingrediënten hebben, dit is een calciumrijk materiaal. Het calcium reageert samen met water en CO_2 waardoor er calciumcarbonaat ontstaat, een sterke binder. Hierdoor, is er voor de Carbstone een bindmiddel van CO_2 in plaats van cement. Het bouwmateriaal heeft dezelfde karakteristieken als een betonblok. Het verschil zit in het vast leggen van de CO_2.

This is an individual EPD from Orbix and Betonagglomeraten Gubbels N.V. for their Carbstone products. The Carbstone production line has 7 product groups:

- Carbstone hollow and hollow calibrated
- Carbstone full
- Carbstone ClimaSono hollow and hollow calibrated
- Carbstone ClimaSono full
- Carbstone Kimblok
- Carbstone Vulsteen
- Carbstone Soundblox.

Each of these product groups has several sizes in which the Carbstones are produced. The Carbstones are attached to each other using a sand/cement based glue, the Carbstone Vulsteen does not require glue and can be attached to each other due its own shape.

Dit is een individueel EPD van Orbix en Betonagglomeraten Gubbels N.V. voor hun Carbstone producten. De Carbstone productielijn heeft 7 productgroepen:

- Carbstone hol en hol gekalibreerd
- Carbstone vol
- Carbstone ClimaSono hol en hol gekalibreerd
- Carbstone ClimaSono vol
- Carbstone Kimblok

- Carbstone Vulsteen
- Carbstone Soundblox.

Elk van deze productgroepen heeft verschillende maten waarin de Carbstones worden geproduceerd. De Carbstones worden aan elkaar bevestigd met een lijm op zand/cementbasis, de Carbstone Vulsteen heeft geen lijm nodig en kan door zijn eigen vorm aan elkaar worden bevestigd. Dit EPD geeft de resultaten voor 1000 kg, om de resultaten om te rekenen naar vierkante meters zie hoofdstuk 3.15 Conversion factors.

The Carbstones can be used for constructive and non-constructive interior walls.

De Carbstones kunnen gebruikt worden voor een constructieve en niet-constructieve binnenmuur.

1.3 Reference flow / declared unit

Packaging is included.
The weight per reference flow is 1000 kg.
The density of the product is as followed:

- Carbstone Soundblox is 2300 kg / m^3.

Verpakking is inbegrepen.
Het gewicht per referentiestroom is 1000 kg.
De dichtheid van het product is als volgt:

- Carbstone Soundblox is 2300 kg /m^3.

1.4 Installation

Materials for fixation and installation are included. This EPD includes the impacts of all processes, fixating materials, jointing material or treatments necessary for installing/mounting the product according to following scenario(s): sand/cement based glue.
Detailed information on this scenario can be found in the chapter “Data of the underlying scenario’s”.

Materialen voor bevestiging en installatie zijn inbegrepen. Dit EPD omvat de effecten van alle processen, bevestigingsmaterialen, voegmateriaal of behandelingen die nodig zijn voor het installeren/montageproces van het product volgens het (de) volgende scenario('s): zand/cementlijm.
Gedetailleerde informatie over dit scenario is te vinden in het hoofdstuk "Gegevens van de onderliggende scenario's".

1.5 Composition and content

Components	Composition / content / ingredients	Quantity
Carbstone Soundblox	– Mixed sand – Stinox 2/6 – Water – Liquid CO_2	– 68% – 22% – 0,5% – 9% - 11%
Fixation materials	NA	
Jointing materials	All Carbstones, use sand/cement based glue.	2 mm on the sides of the stones
Treatments	NA	
Packaging	– Wooden pallet – PET straps	– 10,443 kg – 14,124 kg – 0,0131 kg – 0,0176 kg

Componenten	Samenstelling/inhoud/ingrediënten	Hoeveelheid
Carbstone Soundblox	– Mengzand – Stinox 2/6 – Water – Vloeibaar CO_2	– 61% - 69% – 22% - 29% – 0% - 1% – 9% - 11%
Bevestigingsmaterialen	NA	
Voegmaterialen	Alle Carbstones, gebruiken lijm op basis van zand/cement.	2 mm op de zijkanten van de stenen.
Behandelingen	NA	
Verpakking	– Houten pallet – PET straps	– 10,443 kg – 14,124 kg – 0,0131 kg – 0,0176 kg

The product does not contain materials listed in the “Candidate list of Substances of Very High Concern for authorization”.

Het product bevat geen materialen die voorkomen op de "Candidate list of Substances of Very High Concern for authorization".

1.6 Reference service life

The reference service life is estimated at 100 years.

The RSL is based on SBR 2011, update 2019: 21 Buitwanden, spouwbladen, binnenblad, steenachtig, betonsteen, blokken gelijmd.

The conditions under which this RSL is valid are as following: natural aging conditions, no moisture uptake.

De referentie levensduur is geschat op 100 jaar.

De RSL is gebaseerd op SBR 2011, update 2019: 21 Buitwanden, spouwbladen, binnenblad, steenachtig, betonsteen, blokken gelijmd.

De condities om de RSL te halen zijn als volgt: natuurlijke verouderingsomstandigheden, geen vochtopname.

1.7 Description of geographical representativity

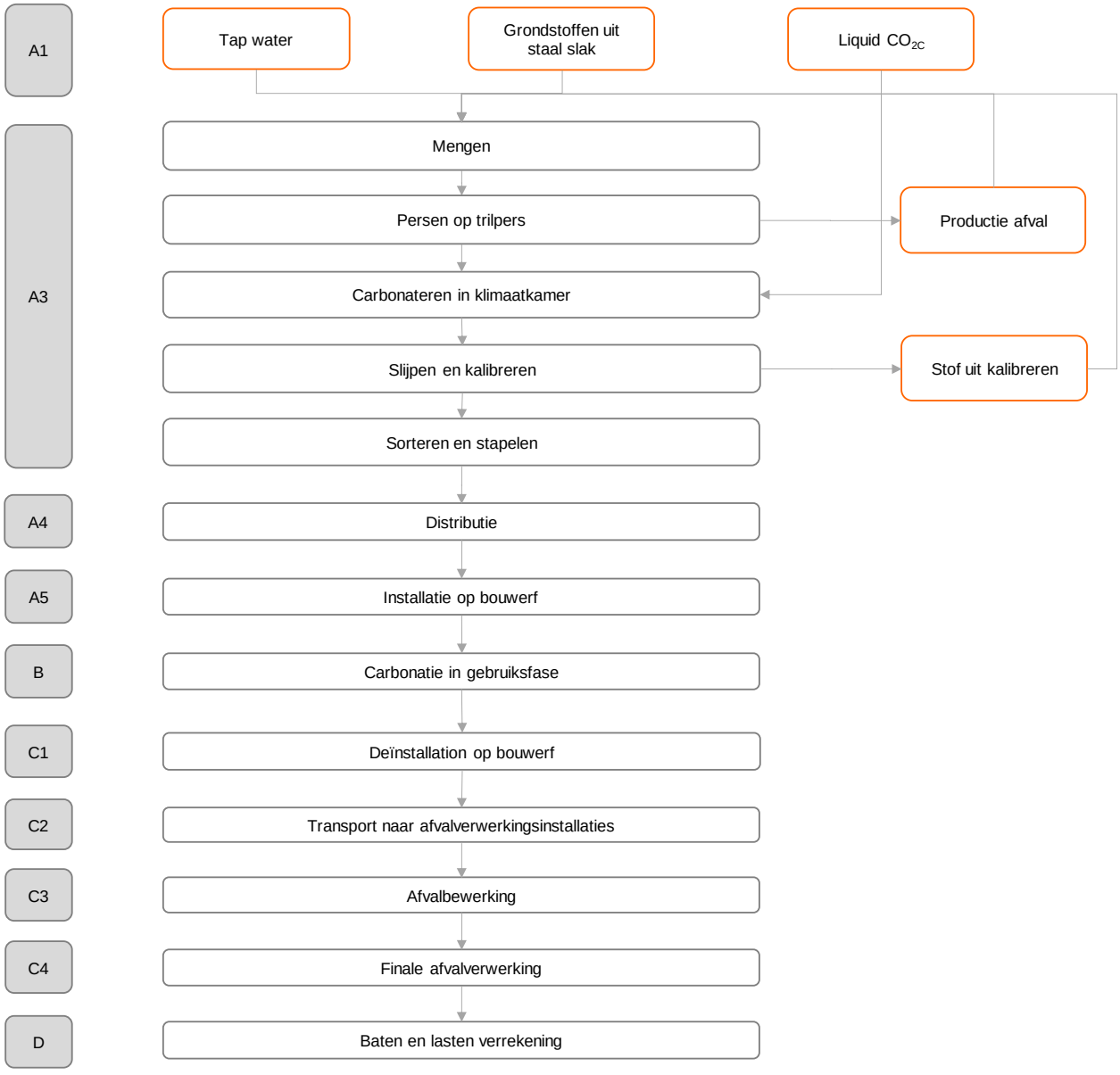
The EPD is representative for the Belgian market.
The Carbstones are produced at the manufacturing facility in Maasmechelen, Belgium.

De EPD is representatief voor de Belgische markt.
De Carbstones worden geproduceerd bij de productielocatie in Maasmechelen, België.

1.8 Description of the production process and technology

Betonagglomeraten Gubbels N.V. mixes the raw materials and presses this mixture into a block shape on a vibrating press. Next, this pressed mix goes to a climate chamber, in this chamber these bricks remain for 24 hours, here the liquid CO_2 is injected into the process. It is measured how much CO_2 enters the chamber and how much remains after 24 hours, the difference is then, taking into account the losses in the chamber and the process, absorbed by the stones through carbonation and calcium carbonate is created. After this, the stones are polished if necessary. Finally, they go to a stacking/packing machine, which sorts the Carbstones for storage and transport to customers.

Betonagglomeraten Gubbels N.V. mengt de grondstoffen en perst dit mengsel in een blokvorm op een trilpers.. Vervolgens gaat deze geperste mix naar een klimaatkamer, in deze kamer blijven deze stenen voor 24 uur, hier wordt de liquid CO_2 bij het proces geïnjecteerd.. Er wordt gemeten hoeveel CO_2 er in de kamer gaat en hoeveel er na de 24 uur over is, het verschil is dan, rekening houdend met de verliezen in de kamer en het proces, opgenomen door de stenen d.m.v carbonatie en calciumcarbonaat is ontstaan. Hierna worden de stenen eventueel nog geslepen. Als laatste gaan ze naar een stapel/verpakkingsmachine, die de Carbstones sorteert voor opslag en vervoer naar klanten.



2 TECHNICAL DATA / PHYSICAL CHARACTERISTICS

Technical property	Standard	Value	Unit	Comment
Gross dry volume mass	EN1991-1-2 ANB (2012)	2300	Kg/m^3	
Calculated value of thermal conductivity coefficient λ_{Ui}	EN1991-1-2 ANB (2012)	1,33	W/m.k	
Normalised compressive strength		10	n/mm^2	
Reaction to fire	EN1991-1-2 ANB (2012)	A1	/	
Frost/thaw resistance	NBN B15-231	Sufficient	/	

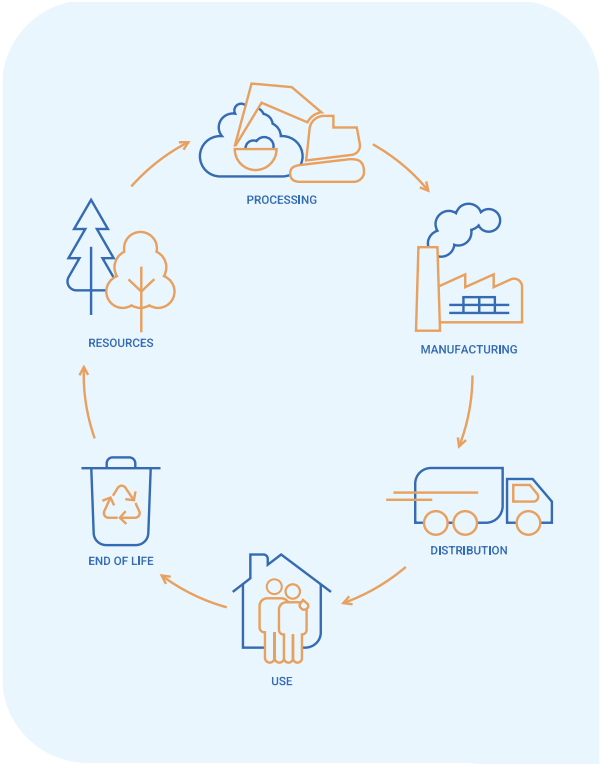
Technische eigenschap	Standaard	Hoeveelheid	Eenheid	Opmerking
Bruto droge volumemassa	EN1991-1-2 ANB (2012)	2300	Kg/m^3	
Rekenwaarde van warmtegeleidingscoëfficient λ_{Ui}	EN1991-1-2 ANB (2012)	1,33	W/m.k	
Genormaliseerde druksterkte		10	n/mm^2	
Brandreactieklasse	EN1991-1-2 ANB (2012)	A1	/	
Vorst/dooibestandheid	NBN B15-231	Sufficient	/	

3 LCA-STUDY

3.1 Date of LCA-study

March 2024

Maart 2024



3.2 Software

For the calculation of the LCA results, the software program SimaPro v9.4 has been used.

Voor de berekeningen van de LCA resultaten is het programma SimaPro v9.4 gebruikt.

3.3 Information on allocation

For the raw materials sourced from Orbix used in the Carbstones, allocation takes place in their production. At the production location of Beton Agglomeraten Gubbels, the amount of materials, energy and auxiliary materials in the production processes are allocated per brick based on production quantities from the year 2022.

Voor de grondstoffen afkomstig van Orbix die gebruikt worden in de Carbstones vindt er allocatie plaats in de hun productie. Op de productie locatie van Beton Agglomeraten Gubbels zijn de hoeveelheid materialen, energie en hulpstoffen in de processen op basis van productiehoeveelheden uit het jaar 2022 gealloceerd per steen.

3.4 Informatie on cut off

The following processes are considered below cut-off:

- Maintenance and use of auxiliary materials and equipment, excluding such processes included in the Ecoinvent background processes.
- Capital equipment and infrastructure processes, excluding such processes included in the Ecoinvent background processes. However, the capital goods of the crushing, screening and separation process at Orbix are included.
- PMD, paper and cardboard, and waste oil are not included because the masses are lower than 0.008%, and these are mainly office waste.

De volgende processen zijn niet opgenomen omdat de bijdrage aan de verschillende milieueffecten naar verwachting kleiner is dan 1%:

- Onderhoud en gebruik van hulpmaterialen en apparatuur, met uitzondering van dergelijke processen die zijn opgenomen in de Ecoinvent-achtergrondprocessen.

- Kapitaalgoederen en infrastructuurprocessen, met uitzondering van dergelijke processen die zijn opgenomen in de Ecoinvent-achtergrondprocessen. De kapitaalgoederen van het breek-, zeef- en scheidingsproces bij Orbix zijn wel meegenomen.
- PMD, papier en karton, en afvalolie zijn niet meegenomen omdat de massa's lager dan 0,008% zijn, en het hier voornamelijk afval van het kantoor betreft.

3.5 Information on excluded processes

Only the processes considered below cut-off are excluded from the study. No additional processes are excluded.

Alleen de processen die onder de cut-off liggen, worden uitgesloten van het onderzoek. Er worden geen extra processen uitgesloten.

3.6 Information on biogenic carbon modelling

The liquid CO_2 in the Carbstones is from biogenic carbon dioxide. The biogenic carbon uptake of the Carbstones is dependent on the, e.g., the amount of carbon reactive materials and the surface area of the Carbstones that is able to react with water to create calcium carbonate. The biogenic carbon is bound to the Carbstones and is not released when the product is processed during the waste treatment.

The wooden pallet also contains biogenic carbon content.

De vloeibare CO_2 in de Carbstones is afkomstig van biogeen koolstofdioxide. De biogene koolstofopname van de Carbstones is afhankelijk van bijvoorbeeld de hoeveelheid koolstof reactieve materialen en het oppervlak van de Carbstones dat kan reageren met water om calciumcarbonaat te maken. De biogene koolstof is gebonden aan de Carbstones en komt niet vrij wanneer het product tijdens de afvalbehandeling wordt voorbewerkt.

De houten pallet bevat ook biogene koolstof.

Biogenic carbon content	(kg C / FU)
Biogenic carbon content in product (at the gate)	25,103 – 25,308
Biogenic carbon content in accompagnying packaging (at the gate)	0.232 – 0.314

Biogene koolstofgehalte	(kg C / FU)
Biogene koolstofgehalte in het product (bij de gate)	25,103 – 25,308
Biogene koolstofgehalte in bijbehorende verpakking (bij de gate)	0.232 – 0.314

3.7 Information on carbon offsetting

Carbon offsetting is not allowed in the EN 15804 and hence not taken into account in the calculations.

Koolstofcompensatie is niet toegestaan in de EN 15804 en wordt daarom niet meegenomen in de berekeningen.

3.8 Additional or deviating characterisation factors

The characterization factors from EC-JRC were applied. No additional or deviating characterisation factors were used.

De karakterisatiefactoren van EC-JRC werden toegepast. Er werden geen extra of afwijkende karakterisatiefactoren gebruikt.

3.9 Description of the variability

The declared unit is 1000 kg. The sizes of the stones can vary from:

- Length between 39 cm – 49,5 cm;
- Hight between 09 cm – 19 cm;
- Width : 19 cm.

In this EPD, the Carbstone Soundblox W, G and A are reported with the sizes: 39/14/19, 39/09/19, 49,5/19/19,

The amount of glue and the amount of carbstone (in mass) differ when other sizes are used. The carbstone has the most influence on environmental impact categories Climate change – total, Resource use minerals and metals, and Respiratory inorganics.

De gedeclareerde eenheid is 1000 kg. De grootte van de stenen kunnen verschillen van:

- Lengte tussen 39 cm – 49,5 cm;
- Hoogte tussen 09 cm – 19 cm;
- Breedte : 19 cm.

In deze EPD zijn de Carbstone Soundblox W, G en A gerapporteerd met de afmetingen: 39/14/19, 39/09/19, 49,5/19/19.

De hoeveelheid lijm en Carbstone (in massa) veranderen wanneer andere groottes worden gebruikt. De Carbstone heeft de meeste invloed op de milieu impact categorieën Climate change – total, Resource use minerals and metals, en Respiratory inorganics.

3.10 Specificity

The data used for the LCA are specific for this product which is manufactured by a single manufacturer in a single production site.

De gegevens die worden gebruikt voor de LCA zijn specifiek voor dit product dat wordt vervaardigd door één fabrikant op één productielocatie.

3.11 Period of data collection

Manufacturer specific data have been collected for the year 2022.

Er zijn fabrikant specifieke gegevens verzameld voor het jaar 2022.

3.12 Information on data collection

Company specific data for the product stage have been collected by Betonagglomeraten Gubbels N.V. and were provided to SGS Search.

Bedrijf specifieke data voor de productie fase werden verzameld door Betonagglomeraten Gubbels N.V. en gegeven aan SGS Search.

3.13 Database used for background data

The Ecoinvent v3.6 database is used for background data. The database was released in 2019.

De Ecoinvent v3.6 is gebruikt voor achtergrondgegevens. De database was uitgebracht in 2019.

3.14 Energy mix

All electricity used during production comes from renewable sources by generating energy on-site with PV panels.

All electricity used during production comes from renewable sources by generating energy on-site with PV panels.

3.15 Conversion factors

The results are reported for Carbstone Soundblox W 39/14/19. By multiplying the results with the conversion factors, the results per squared meter can be calculated.

De resultaten worden gerapporteerd voor Carbstone Soundblox W 39/14/19. Door de resultaten te vermenigvuldigen met de conversiefactoren kunnen resultaten per vierkante meter berekend worden.

Carbstone	Conversion factor to m^2
Carbstone Soundblox W 39/14/19	0,202
Carbstone Soundblox G 39/09/19	0,141
Carbstone Soundblox A 49,5/19/19	0,247

4 PRODUCTION SITES

Manufacturing site located in Maasmechelen, Belgium.

De productieplaats is in Maasmechelen, België.

5 SYSTEM BOUNDARIES

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	De-construction 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
☐ = module not declared

ADD A CLEAR DESCRIPTION OF THE SYSTEM BOUNDARIES, WITH SPECIAL ATTENTION FOR COPRODUCTS, EOW, WASTE PROCESSING, INPUT OF RECOVERED RAW MATERIALS, ...

6 POTENTIAL ENVIRONMENTAL IMPACTS PER REFERENCE FLOW

	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
GWP total (kg CO2 equiv/FU)	-4,65E+01			1,32E+01	1,41E-01	-3,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,26E+00	4,14E+00	5,51E-02	-3,40E+00
GWP fossil (kg CO2 equiv/FU)	4,51E+01			1,32E+01	1,40E-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	5,26E+00	4,14E+00	5,50E-02	-3,39E+00
GWP biogenic (kg CO2 equiv/FU)	-9,16E+01			7,04E-03	1,21E-04	-3,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,80E-03	1,15E-03	1,09E-04	-1,29E-02
GWP luluc (kg CO2 equiv/FU)	2,37E-02			4,61E-03	3,99E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,84E-03	3,26E-04	1,53E-05	-1,91E-03
ODP (kg CFC 11 equiv/FU)	2,98E-06			3,00E-06	2,37E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,19E-06	8,93E-07	2,26E-08	-7,10E-07
AP (mol H+ eq/FU)	1,97E-01			5,39E-02	4,54E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,15E-02	4,33E-02	5,22E-04	-2,88E-02
EP - freshwater (kg (PO4)3- equiv/FU)	1,83E-03			1,04E-04	1,13E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,13E-05	1,51E-05	6,16E-07	-3,06E-05
EP - marine (kg (PO4)3- equiv/FU)	4,42E-02			1,60E-02	1,33E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,37E-03	1,91E-02	1,79E-04	-1,20E-02
EP - terrestrial (kg (PO4)3- equiv/FU)	5,18E-01			1,77E-01	1,47E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,05E-02	2,10E-01	1,98E-03	-1,34E-01
POCP (kg Ethene equiv/FU)	1,38E-01			5,41E-02	4,70E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,16E-02	5,76E-02	5,75E-04	-3,65E-02
ADP Elements (kg Sb equiv/FU)	1,88E-03			3,57E-04	1,72E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-04	6,34E-06	5,03E-07	-7,74E-05
ADP fossil fuels (MJ/FU)	4,33E+02			1,99E+02	1,63E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,93E+01	5,69E+01	1,54E+00	-6,31E+01
WDP (m³ water eq deprived /FU)	5,66E+00			5,54E-01	6,10E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,21E-01	7,62E-02	6,89E-02	-3,92E-01

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)

7 RESOURCE USE

	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
PERE (MJ/FU, net calorific value)	8,52E+01			2,81E+00	2,97E-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	1,12E+00	3,08E-01	1,24E-02	-2,54E+00
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
PERT (MJ/FU, net calorific value)	8,52E+01			2,81E+00	2,97E-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	1,12E+00	3,08E-01	1,24E-02	-2,54E+00
PENRE (MJ/FU, net calorific value)	4,60E+02			2,11E+02	1,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,41E+01	6,05E+01	1,63E+00	-6,61E+01
PENRM (MJ/FU, net calorific value)	4,39E-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	0,00E+00
PENRT (MJ/FU, net calorific value)	4,60E+02			2,11E+02	1,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,41E+01	6,05E+01	1,63E+00	-6,61E+01
SM (kg/FU)	8,93E+02			0,00E+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	0,00E+00	0,00E+00	-2,65E+02	-6,18E+02	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
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
FW (m^3 water eq/FU)	2,99E-01			2,09E-02	2,33E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,35E-03	2,93E-03	1,64E-03	-2,67E-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

8 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)	1,28E-03			5,21E-04	3,80E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,08E-04	1,55E-04	2,30E-06	-1,22E-04
Non-hazardous waste disposed (kg/FU)	6,67E+00			9,51E+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	3,79E+00	6,74E-02	1,04E+01	-2,43E-01
Radioactive waste disposed (kg/FU)	1,74E-03			1,36E-03	1,09E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,40E-04	3,95E-04	1,01E-05	-5,02E-04
Components for re-use (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
Materials for recycling (kg/FU)	0,00E+00			0,00E+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	0,00E+00	0,00E+00	2,93E+02	0,00E+00	0,00E+00
Materials for energy recovery (kg/FU)	0,00E+00			0,00E+00	4,42E-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
Exported energy (MJ/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

9 IMPACT CATEGORIES ADDITIONAL TO EN 15804

		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
	PM (disease incidence)	1,30E-06			9,18E-07	9,25E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,66E-07	5,24E-06	1,01E-08	-7,16E-07
	IRHH (kg U235 eq/FU)	1,57E+00			8,69E-01	7,20E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,46E-01	2,44E-01	6,31E-03	-4,49E-01
	ETF (CTUe/FU)	9,46E+02			1,59E+02	1,35E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,34E+01	3,43E+01	9,97E-01	-3,56E+01
	HTCE (CTUh/FU)	3,16E-08			4,48E-09	3,74E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,78E-09	1,20E-09	2,30E-11	-1,47E-09
	HTnCE (CTUh/FU)	9,31E-07			1,74E-07	1,50E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,92E-08	2,95E-08	7,09E-10	-3,14E-08
	Land Use Related impacts (dimensionless)	3,19E+02			1,37E+02	1,79E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,46E+01	7,27E+00	3,22E+00	-1,26E+01

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);

9.1 Environmental impact categories explained

Global Warming Potential	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1. It is split up in 4: – Global Warming Potential total (GWP-total) which is the sum of GWP-fossil, GWP-biogenic and GWP-luluc – Global Warming Potential fossil fuels (GWP-fossil) : The global warming potential related to greenhouse gas (GHG) emissions to any media originating from the oxidation and/or reduction of fossil fuels by means of their transformation or degradation (e.g. combustion, digestion, landfilling, etc). – Global Warming Potential biogenic (GWP-biogenic) : The global warming potential related to carbon emissions to air (CO2, CO and CH4) originating from the oxidation and/or reduction of aboveground biomass by means of its transformation or degradation (e.g. combustion, digestion, composting, landfilling) and CO2 uptake from the atmosphere through photosynthesis during biomass growth - i.e. corresponding to the carbon content of products, biofuels or above ground plant residues such as litter and dead wood. – Global Warming Potential land use and land use change (GWP-luluc): The global warming potential related to carbon uptakes and emissions (CO2, CO and CH4) originating from carbon stock changes caused by land use change and land use. This sub-category includes biogenic carbon exchanges from deforestation, road construction or other soil activities (including soil carbon emissions).
Ozone Depletion	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbonsor halons), Which break down when they reach the stratosphere and then catalytically destroy ozone molecules.
Acidification potential	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.
Eutrophication potential	The potential to cause over-fertilization of water and soil, which can result in increased growth of biomass and following adverse effects. It is split up in 3: – Eutrophication potential - freshwater: The potential to cause over-fertilization of freshwater, which can result in increased growth of biomass and following adverse effects. – Eutrophication potential - marine: The potential to cause over-fertilization of marine water, which can result in increased growth of biomass and following adverse effects. – Eutrophication potential - terrestrial: The potential to cause over-fertilization of soil, which can result in increased growth of biomass and following adverse effects.
Photochemical ozone creation	Chemical reactions brought about by the light energy of the sun creating photochemical smog. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.
Abiotic depletion potential for non-fossil ressources	Consumption of non-renewable resources, thereby lowering their availability for future generations. Expressed in comparison to Antimonium (Sb). The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
Abiotic depletion potential for fossil ressources	Measure for the depletion of fossil fuels such as oil, natural gas, and coal. The stock of the fossil fuels is formed by the total amount of fossil fuels, expressed in Megajoules (MJ). The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Ecotoxicity for aquatic fresh water	The impacts of chemical substances on ecosystems (freshwater). The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
Human toxicity (carcinogenic effects)	The impacts of chemical substances on human health via three parts of the environment: air, soil and water. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
Human toxicity (non-carcinogenic effects)	The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
Particulate matter	Accounts for the adverse health effects on human health caused by emissions of Particulate Matter (PM) and its precursors (NOx, SOx, NH3)
Resource depletion (water)	Accounts for water use related to local scarcity of water as freshwater is a scarce resource in some regions, while in others it is not. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
Ionizing radiation - human health effects	This impact category deals mainly with the eventual impact on human health of low dose ionizing radiation 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.
Land use related impacts	The indicator is the “soil quality index” which is the result of an aggregation of following four aspects: – Biotic production – Erosion resistance – Mechanical filtration – Groundwater The aggregation is done based on a JRC model. The four aspects are quantified through the LANCA model for land use. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

10 DETAILS OF THE UNDERLYING SCENARIOS USED TO CALCULATE THE IMPACTS

10.1 A1 - raw material supply

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process. These are materials of Orbix. Primary data of the production process at Orbix has been used to model the materials.

Deze module houdt rekening met de winning en de verwerking van alle grondstoffen en energie stroomopwaarts van het bestudeerde fabricageproces. Dit zijn grondstoffen van Orbix. Primaire data van het productieproces van Orbix is gebruikt om de materialen te modelleren.

10.2 A2 – transport to the manufacturer

The raw materials are transported to the manufacturing site.

De grondstoffen worden naar de productielocatie vervoerd.

10.3 A3 – manufacturing

This module takes into account the production process.

At Betonagglomeraten Gubbels, Orbix raw materials are mixed and pressed as a mixture in a block form on a vibrating press. Then this pressed mix goes to a climate chamber, in this chamber these bricks remain for 24 hours, here liquid CO2 is injected into the process. It is measured how much CO2 enters the chamber and how much remains after 24 hours, the difference is then, taking into account the losses in the chamber and the process, absorbed by the stones through carbonation and calcium carbonate is created. After this, the stones are polished if necessary. Finally, they go to a stacking/packing machine, which sorts the Carbstones for storage and transport to customers.

Deze module houdt rekening met het productieproces.

Bij Betonagglomeraten Gubbels worden de grondstoffen van Orbix gemengd en als mengsel geperst in een blokvorm op een trilpers. Vervolgens gaat deze geperste mix naar een klimaatkamer, in deze kamer blijven deze stenen voor 24 uur, hier wordt de liquid CO2 bij het proces geïnjecteerd. Er wordt gemeten hoeveel CO2 er in de kamer gaat en hoeveel er na de 24 uur over is, het verschil is dan, rekening houdend met de verliezen in de kamer en het proces, opgenomen door de stenen d.m.v carbonatie en calciumcarbonaat is ontstaan. Hierna worden de stenen eventueel nog geslepen. Als laatste gaan ze naar een stapel/verpakkingsmachine, die de Carbstones sorteert voor opslag en vervoer naar klanten.

10.4 A4 – transport to the building site

Fuel type and consumption of vehicle or vehicle	Truck 16-32 ton 0,256 l diesel / km		

type used for transport			
Distance	75 km		
Capacity utilisation (including empty returns)	50%		
Bulk density of transported products	Ecoinvent		
Volume capacity utilisation factor	Ecoinvent		

Brandstoftype en verbruik van voertuig of voertuigtype dat voor transport wordt gebruikt	Truck 16-32 ton 0,256 l diesel / km		
Afstand	75 km		
Bezettingsgraad (inclusief lege retouren)	50%		
Bulkdichtheid van vervoerde producten	Ecoinvent		
Volume bezettingsgraad factor	Ecoinvent		

Betonagglomeraten Gubbels NV had reported that deliveries are made to several locations to distributors. The average distance to the middlemen is 40 km.

There is also flat rate that should be used in the absence of specific data, which is the case here. This distance from the distributor to the construction site is 35 km.

Betonagglomeraten Gubbels NV had doorgegeven dat er aan verschillende locaties wordt geleverd aan tussenhandelaren. De gemiddelde afstand naar de tussenhandelaren is 40 km.

Daarbij is er ook forfaitaire waarde die gebruikt dient te horen bij gebrek aan specifieke data, wat hier het geval is. Deze afstand is van de tussenhandelaar naar de bouwplaats 35 km.

The following transport steps apply:

- 100% is transported over 40 km from supplier to distributors with a 16-32 ton lorry (ecoinvent record: 'Transport, freight, lorry 16-32 metric ton, EURO5 {RER}| transport, freight, lorry 16-32 metric ton, EURO5 | Cut-off, U')

- 100% is transported over 35 km from distributor to construction site with a 16-32 ton lorry (ecoinvent record: 'Transport, freight, lorry 16-32 metric ton, EURO5 {RER}| transport, freight, lorry 16-32 metric ton, EURO5 | Cut-off, U')

De volgende transportstappen zijn van toepassing:

- 100% van leverancier naar tussenhandelaar over 40 km met een vrachtwagen van 16-32 ton (ecoinvent-record: 'Transport, vracht, vrachtwagen 16-32 ton, EURO5 [RER] | transport, vracht, vrachtwagen 16-32 ton, EURO5 | Cut-off, U ')
- 100% van tussenhandelaar naar de bouwplaats over 35 km met een vrachtwagen van 16-32 ton (ecoinvent-record: 'Transport, vracht, vrachtwagen 16-32 ton, EURO5 [RER] | transport, vracht, vrachtwagen 16-32 ton, EURO5 | Cut-off, U ')

10.5 A5 – installation in the building

At the construction site, packaging materials are released. Also 3% material losses have been taken into account of the Carbstone and 15% of the glue.

The Carbstone has a similar function to concrete, therefore it was also chosen to follow this waste scenario. This means 99% recycling and 1% landfill. This differs from the concrete waste scenario prescribed by B-EPD, the OVAM prescribes (based on Article 4.3.2 Vlarema) that construction rubble must be completely separated and recycled. As it is difficult in practice to recycle all construction rubble 100%, a conservative approach of 1% landfill has been assumed.

Op de bouwplaats komen verpakkingsmaterialen vrij. Er is ook rekening gehouden met 3% verliezen van de Carbstone en 15% van de lijm

De Carbstone heeft een vergelijkbare functie als beton, er is daarom ook gekozen om dit afvalscenario te volgen. Dit betekent dat er voor 99% wordt gerecycled en 1% gestort. Dit wijkt af van het door B-EPD voorgeschreven afvalscenario van beton, het OVAM schrijft voor (op basis van artikel 4.3.2 Vlarema) dat bouwpuin geheel gescheiden en gerecycled moet worden. Aangezien het in de praktijk moeilijk is om al het bouwpuin 100% te recyclen, is er uitgegaan van een conservatieve aanpak waarbij er 1% stort is.

Parts of the installation	quantity	Description
Material losses – Carbstone Material losses – glue	*3%* *15%*	THE QUANTITY OF MATERIAL LOST DUE TO CUTTING IT IN THE RIGHT SHAPE
Packaging – Wooden Pallet Packaging – PET straps	10,443 kg – 14,124 kg 0,0131 kg – 0,0176 kg	THE PACKAGING WASTE AT THE CONSTRUCTION SITE

Onderdelen van de installatie	Aantal stuks	Omschrijving
Materiële verliezen – Carbstone Materiële verliezen – lijm	*3%* *15%*	DE HOEVEELHEID MATERIAAL DIE VERLOREN GAAT DOOR HET IN DE JUISTE VORM TE SNIJDEN
Verpakking – houten pallet Verpakking – PET straps	10,443 kg – 14,124 kg 0,0131 kg – 0,0176 kg	HET VERPAKKINGSAFVAL OP DE BOUWPLAATS

10.6 B – use stage (excluding potential savings)

In the use phase, carbonation also takes place over the years. This is because there are still CaOH present that will eventually react withCO2 from the ambient air, this is converted to calcium carbonates. The carbonation of the blocks in the use phase is still 0.39%.

In de gebruiksfase vindt er ook nog carbonatie plaats over de jaren heen. Dit komt doordat er nog CaOH aanwezig zijn die op termijn gaan reageren met CO_2 uit de omgevingslucht, dit wordt omgezet naar calciumcarbonaten. De carbonatie van de blokken in de gebruiksfase is nog 0,39%.

10.7 C: End of life

The Carbstone has a similar function to concrete, therefore it was also chosen to follow this waste scenario. This means 99% recycling and 1% landfill. This differs from the concrete waste scenario prescribed by B-EPD, the OVAM prescribes (based on Article 4.3.2 Vlarema) that construction rubble must be completely separated and recycled. As it is difficult in practice to recycle all construction rubble 100%, a conservative approach of 1% landfill has been assumed.

The adhesive follows the scenario finishing layers stuck to stony waste. It is assumed that the glue follows the same scenario, they are also not separated so therefore follow the same processes.

De Carbstone heeft een vergelijkbare functie als beton, er is daarom ook gekozen om dit afvalscenario te volgen. Dit betekent dat er voor 99% wordt gerecycled en 1% gestort. Dit wijkt af van het door B-EPD voorgeschreven afvalscenario van beton, het OVAM schrijft voor (op basis van artikel 4.3.2 Vlarema) dat bouwpuin geheel gescheiden en gerecycled moet worden. Aangezien het in de praktijk moeilijk is om al het bouwpuin 100% te recyclen, is er uitgegaan van een conservatieve aanpak waarbij er 1% stort is.

De lijm volgt het scenario afwerkingslagen verkleefd aan steenachtig afval. Er wordt aangenomen dat de lijm hetzelfde scenario volgt, ze worden ook niet gescheiden dus volgen ze dan ook dezelfde processen.

Module C2 – Transport to waste processing

Type of vehicle (truck/boat/etc.)	Fuel consumption (litres/km)	Distance (km)	Capacity utilisation (%)	Density of products (kg/m3)	Assumptions
Truck 16-32 ton	0,256 l diesel/km	130	50%	Ecoinvent scenario	Ecoinvent scenario
Truck 16-32 ton	0,256 l diesel/km	130	50%	Ecoinvent scenario	Ecoinvent scenario
Truck 16-32 ton	0,256 l diesel/km	80	50%	Ecoinvent scenario	Ecoinvent scenario

End-of-life modules – C3 and C4

Parameter	Value (%)
Wastes collected separately	
Wastes collected as mixed construction waste	
Waste for re-use	
Waste for recycling	99%
Waste for energy recovery	
Waste for final disposal	1%

Module C2 - Transport naar afvalverwerking

Type voertuig (vrachtwagen / boot / en zo voort.)	Brandstof-verbruik (liter/km)	Afstand (km)	Capaciteits-benutting (%)	Dichtheid van producten (kg/m³)	Veronder-stellingen
Truck 16-32 ton	0,256 l diesel/ km	130	50%	Ecoinvent scenario	Ecoinvent scenario
Truck 16-32 ton	0,256 l diesel/ km	130	50%	Ecoinvent scenario	Ecoinvent scenario
Truck 16-32 ton	0,256 l diesel/ km	80	50%	Ecoinvent scenario	Ecoinvent scenario

Einde levensfase modules – C3 en C4

Parameter	Waarde (%)
Afval gescheiden ingezameld	
Afval ingezameld als gemengd bouwafval	
Afval voor hergebruik	
Afval voor recycling	99%
Afval voor energieterugwinning	
Afval voor definitieve verwijdering	1%

10.8 D – Benefits and loads beyond the system boundaries

QUANTITATIVE DESCRIPTION OF THE LOADS BEYOND THE SYSTEM BOUNDARIES	No loads
QUANTITATIVE DESCRIPTION OF THE BENEFITS BEYOND THE SYSTEM BOUNDARIES	Avoided production of stone granulates.

KWANTITATIEVE BESCHRIJVING VAN DE BELASTINGEN BUITEN DE SYSTEEMGRENZEN	Geen lasten
KWANTITATIEVE BESCHRIJVING VAN DE VOORDELEN BUITEN DE SYSTEEMGRENZEN	Vermeden productie van steen granulaten.

11 RELEASE OF DANGEROUS SUBSTANCES TO INDOOR AIR, SOIL AND WATER DURING THE USE STAGE

11.1 Indoor air

Not applicable.

Niet van toepassing.

11.2 Soil and water

Not applicable.

Niet van toepassing.

12 DEMONSTRATION OF VERIFICATION

EN 15804+A2 serves as the core PCR

Independent verification of the environmental declaration and data according to standard EN ISO 14025:2010
Internal ☐ External ☒

Third party verifier:
Vinçotte nv
Ramses Sterckx
Jan Olieslagerslaan 35 1800 Vilvoorde
rsterckx@vincotte.be

13 APPLICATION UNIT

This table gives information on the applied product and how the reference flow and table with impacts relate to different sizes of the Carbstones. The table gives information on the length, width, height and multiplier from the declared unit of the EPD (1000 kg) to the application unit (1 m^2).

Deze tabel geeft informatie over het toegepaste product en hoe de referentiestroom en de tabel met effecten zich verhouden tot verschillende maten van de Carbstones. De tabel geeft informatie over de lengte, breedte, hoogte en vermenigvuldigingsfactor van de functionele eenheid van het EPD (1000 kg) tot de eenheid van toepassing (1 m^2).

Product group	Length	Width	Height	Multiplier from 1000 kg to 1 m^2
Carbstone Soundblox	*32 – 49,5 cm*	*9 – 19 cm*	*19 cm*	*0,141 – 0,247*

Product groep	Lengte	Breedte	Hoogte	Vermenigvuldigingsfactor van 1000 kg naar 1 m^2
Carbstone Soundblox	*32 – 49,5 cm*	*9 – 19 cm*	*19 cm*	*0,141 – 0,247*

For more information, please check the Additional rules complimentary to B-EPD PCR v18.10.2022 on www.b-epd.be

14 ADDITIONAL INFORMATION ON REVERSIBILITY

Description	Type of fixing	Level of reversibility	Simplicity of disassembly	Speed of disassembly	Ease of handling (size and weight)	Robustness of material (material resistance to disassembly)
Stones joint together to form an internal wall	Sand/cement based glue	Reversible connections with light repairable damage.	Simple, but collecting the material is a bit more intensive	Speed of assembly varies from quick to slow depending on element dimensions.	Easy to manupulate by hand : one worker should be sufficient	Disassembly is possible but should be done carefully in order not to generate any damage
Stenen samengevoegd tot een binnenmuur	Lijm op basis van zand/cement	Omkeerbare verbindingen met lichte herstelbare schade.	Eenvoudig, maar het verzamelen van het materiaal is iets intensiever.	De montagesnelheid varieert van snel tot langzaam, afhankelijk van de afmetingen van het element.	Eenvoudig met de hand te bedienen: één arbeider zou voldoende moeten zijn.	Demontage is mogelijk, maar moet voorzichtig gebeuren om geen schade te veroorzaken.

15 BIBLIOGRAPHY

ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
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NBN EN 15804+A2:2019
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OVAM, Sorteren, inzamelen en verwerken van bouw- en sloopafval.
https://ovam.vlaanderen.be/sortereneninzamelenbouwensloop.
Afval en mest verwerkingsselectiesysteem, houtafval. Bron:
https://afss.emis.vito.be/afvalstroom/houtafval#group_legislation.

General information

Owner of the EPD, Responsible for the data, LCA and information

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Project report: 29.23.00039

Verifier

Ramses Sterckx Vinçotte nv
Date of verification: 06.08.2024
External independent verification of the declaration and data according to EN ISO 14025 and relevant PCR documents

Comparing EPDs is not possible unless they are conform to the same PCR and taking into account the building context.
The program operator cannot be held responsible for the information supplied by the owner of the EPD nor LCA practitioner.

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