Carbon Footprint Declaration

Wezendonk Zand en Grind B.V., Wezendonk Spijk, Spijk

General information

This certificate reports the Global Warming Potential of 1 tonne of aggregate products produced at Wezendonk Spijk situated at Vliegenwaard 2, 6917 AB Spijk, Nederland, Netherlands, within the scope of cradle-to-gate and end-of-life. The data was collected from 01/01/2024 to 31/12/2024.

Aggregate products are manufactured in various fractions, which are divided according to the manufacturing areas.

The products covered by this certificate are aggregates that are used directly in infrastructure construction, civil engineering, gardening and landscaping or similar applications, but also aggregates that are incorporated in another product, such as asphalt or concrete.

The study was prepared in compliance with EN 15804+A2 and ISO 14040 / 14044, with a methodology developed by ORIS in collaboration with and according to the recommendations of CIRAIG.

Date of validity

02 July 2026 (issued on 02 July 2025)

Product technical description

Declared unit : 1 tonne of aggregates

Type of rock and extraction method: sand and gravel (wet extraction method)

GWP-total per product, for the production phase

Global Warming Potential - total, A1-A3 (kg CO_2eq/t)	
Industriezand Grof	0.57
Industriezand Fijn	0.57
Grindzand	0.57
Grind	0.57
Ophoogzand	0.57

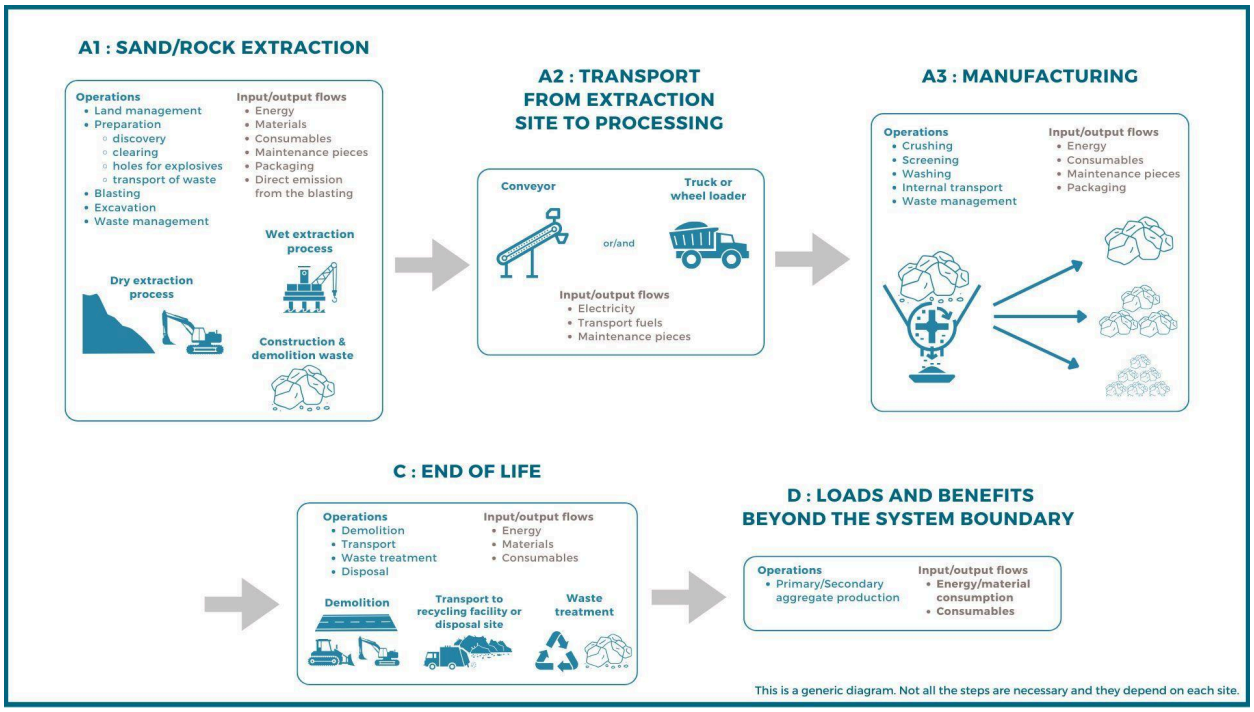
Certified by **ORIS Materials Intelligence**

For **Wezendonk Zand en Grind B.V.**

Product

Description of the production process

The process of rock extraction starts with preparing the operations, for example through earthworks, the removal of the upper layer, or the opening up of extraction areas. The rock can then be extracted (A1). Extracted natural rocks are transported using either conveyor belts or trucks to the product manufacturing areas (A2). Once at the manufacturing areas, a first crushing of the natural rocks is done and crushed rocks are screened to divide into different sizes of aggregate products. The production process (A3) continues from one production area to others, each of which can combine crushers, screeners, washers, transport and small auxiliary equipment. All products manufactured within the same plant and following the same flowsheet as below are declared.



Concept of production areas

The production of aggregates often takes place in several stages, e.g. there may be several washing, crushing or screening stages, which may be arranged in sequence or in parallel. As not all aggregate products pass through all of these stages, it is necessary to subdivide the A3 manufacturing process into different so-called production areas and assign these to the respective products. This may result in different CO2 footprints for these products or product groups from these production areas, as different or additional processing units with different energy and maintenance requirements are used in each case.

LCA calculation rules

Declared unit

The declared unit is 1 tonne of aggregates.

Software and database

ORIS carbon footprint calculator and its background database for GWP factor originally from ecoinvent version 3.10 have been used.

System boundary

The present document includes the cradle-to-gate and the end of life that correspond to the modules A1 to A3 and C1 to C4 according to the standard EN 15804+A2. This system includes the raw material extraction (e.g., extraction with machine, dredging), their transport from the extraction site to the manufacturing areas, their manufacturing process (e.g. screening, crushing, on-site transportation) and treatment of waste produced within the whole process at the plant.

Data that represents the current production process at the plant is used. All input data for the core modules and for raw materials under control of the quarry are site specific data for the production from 01/01/2024 to 31/12/2024. The GWP impacts from the infrastructure related to administration buildings and operations, land discovery and closure, equipment production and its transport are considered out of system. However, equipment maintenance and annual land operations are included. The plant operation requires a non-negligible quantity of consumables in machines, which are included.

Key assumptions

The electricity mix is specific to the production site and is composed of wind. The aggregate products are declared to be used i.e. as materials for road sub base course as well as raw materials in other finished products of buildings. According to the EN 15804+A2 (section 5.2), in the latter case, the aggregate can not be physically separated from the demolition waste. Therefore, the modules C and D are declared only for the aggregate used in the former case. For module C, two scenarios are considered: 1) 100% recycling (most common scenario) and 2) 100% landfill (in the case of contaminated aggregates for example). The D module considers the production of secondary aggregate where the functional equivalence was set to 0.65 by default, deduced by comparing the economic value between the primary and secondary aggregates from the literature.

Cut-off criteria

All known reference flows have been included in the LCA modeling. Both in the specific and generic data, the same cut-off criteria (1% of mass and energy contribution regarding each process) was used when available data was insufficient.

Allocation

The operation of the gravel pit in A3 phase is composed of several production areas that divide the aggregates into different sizes. Each subdivided unit has its own process and machinery where the energy and consumables are consumed. The impact of processing operations was thus allocated to the aggregate products according to the subdivision. Meanwhile, the other phases of the life cycle (A1, A2) have only one operation line through which all the excavated materials pass. As co-products produced have no economic value, no allocation is applied to them. Therefore, the flow of raw materials, energy, and the associated emissions are exclusively related to the aggregate production.

Data quality

The specific data collected by the manufacturer is all based on the materials/energy/transport required and the waste generated through the whole operation process within the period of production. No specific data collected is older than three years. Their temporal, geographical and technological representativeness is judged as good or very good. All necessary life cycle inventories for the energy and materials flows are available in the ecoinvent database adopting the systematic evaluation of the generic data quality. No generic datasets used are older than five years. Based on the internal examination, the completeness and consistency are judged as good. To evaluate the technological representativeness of generic data, the current technologies used in the production areas were taken into consideration.

Additional information

No dangerous substances from the candidate list of SVHC *(Substance of Very High Concern)* for Authorisation are used in the aggregate products

Production stege			Construction stage		Use stage							End of life stage				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C	C2	C3	C4	D
Raw material production	Transport	Manufacturing	Transport	Construction	Use	Maintenance	Repair	Replacement	Refurbishement	Operational energy use	Operational water use	Demolition	Transport	Waste processing	Disposal	Reuse / Recovery / Recycling potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

X : Included, MND : Module Non Declared

Results

Declared life cycle stages

These tables can be read as follows:

- For **1 tonne of aggregate** not incorporated in another product, with **recycling scenario (scenario 1)**: consider the columns A1-A3, C1, C2, C3[1], D.
- For **1 tonne of aggregate** not incorporated in another product, with **landfill scenario (scenario 2)**: consider the columns A1-A3, C1, C2, C4[2], D.
- For **1 tonne of aggregate** incorporated in another product: consider the columns A1-A3.

Module D calculates the potential benefit that can be obtained by recovering demolished aggregates. It cannot be added to the A1-A3 result, nor does it represent the impact of the recycled aggregate.

Interpretation of the results per production area

The results give the GWP of the aggregates leaving the production area indicated. They already take into account the route taken by the aggregates through the different production areas to the production area in question. Therefore, the GWP figures at step A3 are independent and should not be combined. For example, if an aggregate has to pass through areas 1 and 2 before reaching area 3, the A3 value for the 3rd area already takes into account the fact that the aggregate has passed through area 1 and 2. The impacts of areas 1, 2 and 3 should therefore not be added together in this case.

Results per production area

Electricity mix: The electricity mix is specific to the production site and is composed of wind.

Indicator: Global Warming Potential - total (kg CO_2eq./t)	Product stage				End-of-life stage				D	Total (A+C) Recycling	Total (A+C) Landfill
	A1	A2	A3	**A1-A3**	C1	C2	C3[1]	C4[2]			
Voorraad Depot Industriezand Fijn	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.55	-1.95	**5.92**	**10.83**
Voorraad Depot Grindzand	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.55	-1.95	**5.92**	**10.83**
Voorraad Depot Grind	0.28	0.37	0.52	**1.15**	0.52	3.19	1.63	6.55	-1.95	**6.49**	**11.40**
Voorraad Depot Ophoogzand	0.04	0.01	0.59	**0.57**	0.52	3.19	1.63	6.55	-1.95	**5.92**	**10.83**
Voorraad Depot Industriezand Grof	0.04	0.01	0.59	**0.57**	0.52	3.19	1.63	6.55	-1.95	**5.92**	**10.83**

Indicator: Global Warming Potential - fossil (kg CO_2eq./t)	Product stage				End-of-life stage				D	Total (A+C) Recycling	Total (A+C) Landfill
	A1	A2	A3	**A1-A3**	C1	C2	C3[1]	C4[2]			
Voorraad Depot Industriezand Fijn	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.54	-1.94	**5.91**	**10.83**
Voorraad Depot Grindzand	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.54	-1.94	**5.91**	**10.83**
Voorraad Depot Grind	0.28	0.01	0.50	**0.79**	0.52	3.19	1.63	6.54	-1.94	**6.13**	**11.04**
Voorraad Depot Ophoogzand	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.54	-1.94	**5.91**	**10.83**
Voorraad Depot Industriezand Grof	0.04	0.01	0.52	**0.57**	0.52	3.19	1.63	6.54	-1.94	**5.91**	**10.83**

Indicator: Global Warming Potential - biogenic (kg CO_2eq./t)											
	Product stage				End-of-life stage				D	Total (A+C) Recycling	Total (A+C) Landfill
	A1	A2	A3	**A1-A3**	C1	C2	C3[1]	C4[2]			
Voorraad Depot Industriezand Fijn	0.00	0.00	0.00	**0.00**	0.00	0.00	0.09	0.00	0.08	**0.09**	**0.00**
Voorraad Depot Grindzand	0.00	0.00	0.00	**0.00**	0.00	0.00	0.09	0.00	0.08	**0.09**	**0.00**
Voorraad Depot Grind	0.00	0.00	0.00	**0.00**	0.00	0.00	0.09	0.00	0.08	**0.09**	**0.00**
Voorraad Depot Ophoogzand	0.00	0.00	0.00	**0.00**	0.00	0.00	0.09	0.00	0.08	**0.09**	**0.00**
Voorraad Depot Industriezand Grof	0.00	0.00	0.00	**0.00**	0.00	0.00	0.09	0.00	0.08	**0.09**	**0.00**

Indicator: Global Warming Potential - luluc (land use and land use change) (kg CO_2eq./t)											
	Product stage				End-of-life stage				D	Total (A+C) Recycling	Total (A+C) Landfill
	A1	A2	A3	**A1-A3**	C1	C2	C3[1]	C4[2]			
Voorraad Depot Industriezand Fijn	0.00	0.00	0.00	**0.00**	0.00	0.00	0.08	0.00	0.08	**0.08**	**0.00**
Voorraad Depot Grindzand	0.00	0.00	0.00	**0.00**	0.00	0.00	0.08	0.00	0.08	**0.08**	**0.00**
Voorraad Depot Grind	0.00	0.00	0.00	**0.00**	0.00	0.00	0.08	0.00	0.08	**0.08**	**0.00**
Voorraad Depot Ophoogzand	0.00	0.00	0.00	**0.00**	0.00	0.00	0.08	0.00	0.08	**0.08**	**0.00**
Voorraad Depot Industriezand Grof	0.00	0.00	0.00	**0.00**	0.00	0.00	0.08	0.00	0.08	**0.08**	**0.00**

[1]C3 is a waste treatment phase and taken into account for the total result with recycling scenario (scenario 1)
[2]C4 is a waste disposal phase and taken into account for the total result with landfill scenario (scenario 2)

The energy associated with transport from extraction to manufacturing (A2) couldn't be isolated. Consequently, this transport energy was allocated to A3 (manufacturing).

Table of GWP results for final products:

The following results are calculated from the table above, which gives the Global Warming Potential impact results of the production of aggregates by production area. As some products are issued from a mix of intermediate aggregates coming from different production areas, the table below calculates the GWP impact for these final products. Please note that it gives only the results of the total-GWP over the A1 to A3 life cycle stages.

Product	Product standard	Global Warming Potential - total A1-A3 (kg CO_2eq/t)
Industriezand Grof	EN12620	0.57
Industriezand Fijn	EN12620, EN13139	0.57
Grindzand	EN12620	0.57
Grind	EN12620	0.57
Ophoogzand	EN13242	0.57