epddanmark

ECO PLATFORM EPD VERIFIED

Owner: Hostrup Sand A/S
No.: MD-24179-EN
Issued: 19-12-2024
Valid to: 19-12-2029

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
Hostrup Sand A/S
Hostrupvej 42B
6710 Esbjerg, Denmark
DK 3294 0625

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
Quartz sand and sand/compost mix.

Number of declared datasets/product variations: 2

Production site
Hostrupvej 42B
DK-6710 Esbjerg

Use of Guarantees of Origin
☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
The declared unit is 1 ton product, at the production site.

Year of production site data (A3)
2023/2024

EPD version
No. 1

Issued: 19-12-2024
Valid to: 19-12-2029

Basis of calculation
This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Mirko Miseljic

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

Product information

Product description

This EPD declares various sand products, including quartz sand and a sand/compost mix. Sand is produced in grain sizes of 0/1 mm, 0/2 mm and 0/4 mm. Since the manufacturing process is identical for all grain sizes, these sand types are reported with the same set of results.

Sand is sold in its natural form, and as a mixed product with compost. The main product components are shown in the table below.

	Sand	Sand/compost mix
Material	**Weight-% of declared product**	
Sand	100%	85%
Compost	-	15%

Product packaging

No sales- and transport packaging of the product is required, as it is transported in bulk, loaded directly onto trucks from stockpiles at the production site in Esbjerg.

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 ton product at the production site of Hostrup Sand A/S in Esbjerg, Denmark. Specific data derived from the production processes at Hostrup Sand, for the reporting period from Q1 2023 to Q2 2024, is used in this study. Background data are based on the LCA for Experts database 2024.1 and are less than 10 years old. Generally, the background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

The products declared within this EPD does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(http://echa.europa.eu/candidate-list-table)

Product(s) use

The sand can be used for various applications, including as sand for the concrete industry, golf courses, sports facilities, and playgrounds. The sand/compost mix can be used as a growth layer, topdressing, and for repair of sports fields and golf courses.

Essential characteristics

Sand 0/1 mm and 0/2 mm are covered by the harmonised technical specification EN 12620:2002+A1. Sand 0/1 mm and 0/4 mm are certified sand for playgrounds (faldunderlag) by Dancert A/S for. Sand 0/1 mm, 0/2 mm and 0/4 mm are certified sandbox sand (sandkassesand) by Dancert A/S.

Product declarations and documentation on sieve curves can be obtained by contacting the manufacturer or on the manufacturer's website: https://hostrupsand.dk/

Reference Service Life (RSL)

No RSL is declared. This EPD is based on a cradle to gate with modules A4, C1 - C4 and D and does not include the use stage.

Picture of product(s)

Sand product

Sand/compost mix

LCA background

Declared unit

The LCI and LCIA results in this EPD relate to environmental impacts for the LCA modules A1-A3, A4, C1-C3 and D of 1 ton sand and sand/compost mix respectively.

	Value	Unit
Declared unit	1	ton
Conversion factor to 1 kg.	0,001	-

Hostrup Sand produces sand in grain sizes of 0/1 mm, 0/2 mm, and 0/4 mm, all of which encompass the same manufacturing processes. Consequently, their environmental impacts are assumed to be equal, and they are declared with the same set of results in this EPD.

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019.

Energy modelling principles

Foreground system:
No Guarantee of Origin (GoO) certificates are used. Consumption of electricity at the product stage (A1-A3) is modelled with the Danish residual grid mix.

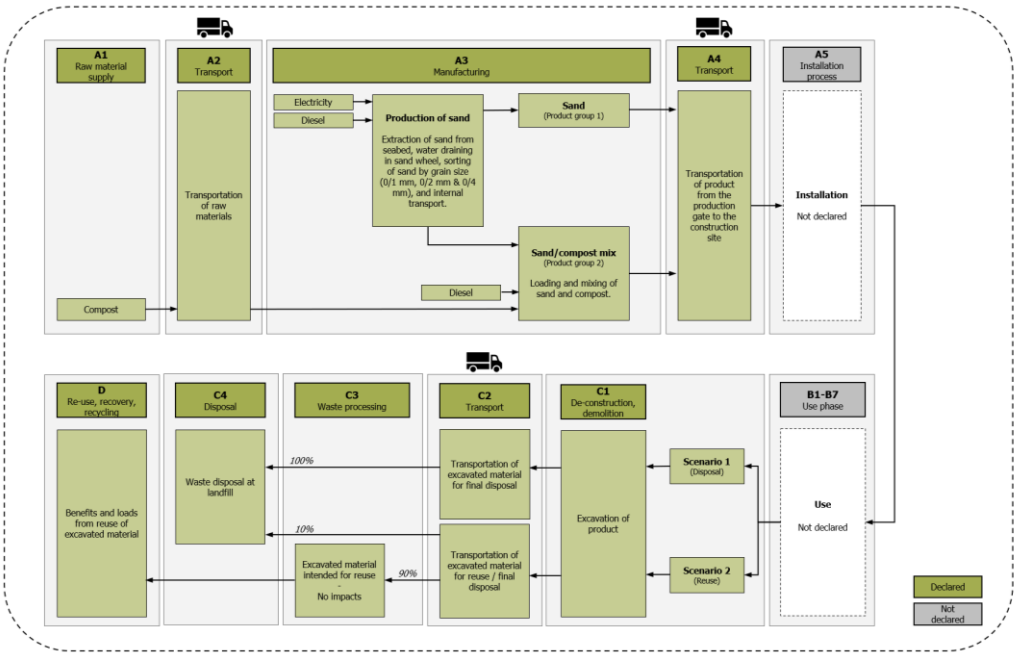
Information about the energy mix in the foreground system:

Dataset
Residual grid mix, DK, ref. year 2021

Background system:
Other processes downstream the production are modelled with processes from the LCA for Experts background database, which is based on average data. Specific energy inputs are modelled using the national or regional grid mix.

Flow diagram

The flow diagram below presents the main processes included in the product system of the declared products. Note that the diagram covers all products declared in this study, and therefore, not all processes are necessarily relevant for each declared product.



System boundary

This EPD is based on a cradle-to-gate study with options, modules C1-C4, and module D. The optional module included is A4. 100 weight-% has been accounted for in this study.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804+A2, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the ”end-of-waste” state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The extraction and processing of sand takes place at the production site of Hostrup Sand A/S in Esbjerg, Denmark.

The sand is sourced from a lake at the production site. It is extracted from the seabed using a dredger, which is a specialized equipment with a powerful pump and suction pipe. The extracted material is transported via a pipeline to a sand wheel on land, which is used to drain water from the wet sand. The water is returned to the lake, whereas the sand is transported on a conveyer belt and stocked in a pile for further drying. After drying, a loader moves the sand from the drying pile to the sorting facility. At the sorting facility, the sand is transported on a conveyer belt to a sieving tower that separates the sand into three fractions based on grain size: 0/1 mm, 0/2 mm, and 0/4 mm. After sorting, the production of sand is complete. The sand is sold directly for use in bound applications (e.g. concrete, mortar or bricks) or unbound applications (e.g. impact-absorbing surfaces or sports facilities).

In addition to pure sand, a sand/compost mix is produced at the site. The sand and compost are mixed and sifted in a trommel (rotary screen) to separate coarse compost materials from the finished product. The sieve can be adjusted to either 3 mm or 6 mm, depending on the use of the final product.

No packaging is required for the storage and transport of sand and sand/compost mix, as it is transported in bulk, loaded directly onto trucks from stockpiles at the production site.

Construction process stage (A4-A5) includes:

A4 – Transport to construction site

A5 – Installation (not declared)

The sand and sand/compost mix supplied by Hostrup Sand A/S, are primarily sold within Denmark and Northern European countries. An average distance of 200 km from the factory gate to the consumer is assumed.

Use stage (B1-B7) includes:

Not declared.

End of Life (C1-C4) includes:

C1 – Deconstruction/demolition

C2 – Transport to recycling

C3 – Waste processing

C4 – Landfilling

For all bound uses of sand, module C and D is not declared under the exemption stated in section 5.2 of EN 15804:2012+A2:2019. For information on end-of-life for these products, please refer to a relevant EPD for the specific application.

Given the multiple uses for unbound sand and sand/compost mix, two scenarios, deemed most likely for these products in a European context, are presented.

Scenario 1: The product is disposed of in a landfill at EoL, e.g. due to exposure to contamination throughout the use phase. Results are applicable for sand only.

In this scenario, the end-of-life is modeled as the extraction of product from construction, transport to a landfill, and disposal of product in a landfill. An average distance of 50 km from the construction site to the landfill is assumed.

Scenario 2: The product is reused at a new location at EoL. Results are applicable for sand and sand/compost mix.

In this scenario, the end-of-life is modeled as the extraction of product from construction. It is assumed transported directly for reuse without any intermediate storage, and therefore the transport to reuse is considered outside the system boundary. Reuse of product is declared in module D.

Based on a conservative approach, losses of 10% are assumed for the product over its use and during removal at EoL. These losses are modelled as being disposed of in a landfill.

Re-use, recovery and recycling potential (D) includes:

Module D represents benefits or loads beyond the system boundary. Given the end-of-life scenario 2 for module C, the unbound sand is assumed to displace the use of virgin sand. In accordance with the guidelines in EN15804+A2, only virgin materials are credited in module D. The compost used in the sand/compost mix is recycled material and therefore not credited.

LCA results

LCA results for sand

ENVIRONMENTAL IMPACTS PER 1 TON SAND													
				Scenario 1 (Disposal)					Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	2,77E+00	1,82E+01	4,46E+00	4,55E+00	0,00E+00	1,50E+01	0,00E+00	4,46E+00	4,55E-01	0,00E+00	1,50E+00	-1,77E+00
GWP-fossil	[kg CO_2 eq.]	2,73E+00	1,78E+01	4,37E+00	4,46E+00	0,00E+00	1,50E+01	0,00E+00	4,37E+00	4,46E-01	0,00E+00	1,50E+00	-1,77E+00
GWP-biogenic	[kg CO_2 eq.]	9,25E-03	4,27E-02	2,36E-02	1,07E-02	0,00E+00	-1,03E-01	0,00E+00	2,36E-02	1,07E-03	0,00E+00	-1,03E-02	1,62E-02
GWP-luluc	[kg CO_2 eq.]	2,83E-02	3,00E-01	7,18E-02	7,51E-02	0,00E+00	8,98E-02	0,00E+00	7,18E-02	7,51E-03	0,00E+00	8,98E-03	-1,48E-02
ODP	[kg CFC 11 eq.]	9,78E-12	2,63E-12	6,30E-13	6,58E-13	0,00E+00	4,04E-11	0,00E+00	6,30E-13	6,58E-14	0,00E+00	4,04E-12	-1,30E-11
AP	[mol H^+ eq.]	2,32E-02	2,80E-02	5,77E-02	7,01E-03	0,00E+00	1,06E-01	0,00E+00	5,77E-02	7,01E-04	0,00E+00	1,06E-02	-8,78E-03
EP-freshwater	[kg P eq.]	7,30E-06	7,63E-05	1,82E-05	1,91E-05	0,00E+00	3,40E-05	0,00E+00	1,82E-05	1,91E-06	0,00E+00	3,40E-06	-6,31E-06
EP-marine	[kg N eq.]	1,04E-02	1,07E-02	2,61E-02	2,69E-03	0,00E+00	2,74E-02	0,00E+00	2,61E-02	2,69E-04	0,00E+00	2,74E-03	-3,13E-03
EP-terrestrial	[mol N eq.]	1,15E-01	1,26E-01	2,88E-01	3,15E-02	0,00E+00	3,01E-01	0,00E+00	2,88E-01	3,15E-03	0,00E+00	3,01E-02	-3,45E-02
POCP	[kg NMVOC eq.]	3,38E-02	2,79E-02	8,49E-02	6,96E-03	0,00E+00	8,37E-02	0,00E+00	8,49E-02	6,96E-04	0,00E+00	8,37E-03	-8,82E-03
ADPm[1]	[kg Sb eq.]	2,01E-07	1,56E-06	3,72E-07	3,89E-07	0,00E+00	9,70E-07	0,00E+00	3,72E-07	3,89E-08	0,00E+00	9,70E-08	-1,89E-07
ADPf[1]	[MJ]	3,55E+01	2,35E+02	5,63E+01	5,88E+01	0,00E+00	1,97E+02	0,00E+00	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,72E+01
WDP[1]	[m^3 world eq. deprived]	3,55E-02	2,77E-01	6,62E-02	6,92E-02	0,00E+00	1,71E+00	0,00E+00	6,62E-02	6,92E-03	0,00E+00	1,71E-01	-2,14E-01
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential												
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.												
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.												

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 TON SAND													
				Scenario 1 (Disposal)					Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	9,09E-07	2,96E-07	2,31E-06	7,39E-08	0,00E+00	1,33E-06	0,00E+00	2,31E-06	7,39E-09	0,00E+00	1,33E-07	-5,38E-07
IRP[2]	[kBq U235 eq.]	8,08E-02	6,22E-02	1,49E-02	1,55E-02	0,00E+00	2,40E-01	0,00E+00	1,49E-02	1,55E-03	0,00E+00	2,40E-02	-2,89E-01
ETP-fw[1]	[CTUe]	1,78E+01	1,75E+02	4,19E+01	4,37E+01	0,00E+00	1,14E+02	0,00E+00	4,19E+01	4,37E+00	0,00E+00	1,14E+01	-1,41E+01
HTP-c[1]	[CTUh]	4,37E-10	3,53E-09	8,43E-10	8,82E-10	0,00E+00	2,69E-09	0,00E+00	8,43E-10	8,82E-11	0,00E+00	2,69E-10	-4,09E-10
HTP-nc[1]	[CTUh]	1,81E-08	1,58E-07	3,88E-08	3,96E-08	0,00E+00	1,04E-07	0,00E+00	3,88E-08	3,96E-09	0,00E+00	1,04E-08	-1,26E-08
SQP[1]	-	1,14E+01	1,16E+02	2,77E+01	2,89E+01	0,00E+00	5,44E+01	0,00E+00	2,77E+01	2,89E+00	0,00E+00	5,44E+00	-7,66E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)												
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.												
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.												
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.												

RESOURCE USE PER 1 TON SAND													
				Scenario 1 (Disposal)					Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	5,17E+00	2,03E+01	4,85E+00	5,07E+00	0,00E+00	3,44E+01	0,00E+00	4,85E+00	5,07E-01	0,00E+00	3,44E+00	-9,69E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	5,17E+00	2,03E+01	4,85E+00	5,07E+00	0,00E+00	3,44E+01	0,00E+00	4,85E+00	5,07E-01	0,00E+00	3,44E+00	-9,69E+00
PENRE	[MJ]	3,55E+01	2,35E+02	5,63E+01	5,88E+01	0,00E+00	1,97E+02	0,00E+00	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,72E+01
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,55E+01	2,35E+02	5,63E+01	5,88E+01	0,00E+00	1,97E+02	0,00E+00	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,72E+01
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	3,85E-03	2,26E-02	5,40E-03	5,65E-03	0,00E+00	5,23E-02	0,00E+00	5,40E-03	5,65E-04	0,00E+00	5,23E-03	-8,67E-03
Caption	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												
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.												

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 TON SAND													
				Scenario 1 (Disposal)					Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	9,36E-09	9,01E-09	2,16E-09	2,25E-09	0,00E+00	4,92E-08	0,00E+00	2,16E-09	2,25E-10	0,00E+00	4,92E-09	-1,74E-08
NHWD	[kg]	9,23E-03	3,84E-02	9,19E-03	9,61E-03	0,00E+00	1,00E+03	0,00E+00	9,19E-03	9,61E-04	0,00E+00	1,00E+02	-3,75E+01
RWD	[kg]	7,19E-04	4,29E-04	1,03E-04	1,07E-04	0,00E+00	2,07E-03	0,00E+00	1,03E-04	1,07E-05	0,00E+00	2,07E-04	-1,78E-03
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E+02	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy												
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.												

BIOGENIC CARBON CONTENT PER 1 TON SAND		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	0,00E+00
Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

LCA results for sand/compost mix

ENVIRONMENTAL IMPACTS PER 1 TON SAND/COMPOST MIX								
				Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	7,60E+00	1,82E+01	4,46E+00	4,55E-01	0,00E+00	1,50E+00	-1,50E+00
GWP-fossil	[kg CO_2 eq.]	7,46E+00	1,78E+01	4,37E+00	4,46E-01	0,00E+00	1,50E+00	-1,50E+00
GWP-biogenic	[kg CO_2 eq.]	-2,72E+00	4,27E-02	2,36E-02	1,07E-03	2,48E+00	2,65E-01	1,38E-02
GWP-luluc	[kg CO_2 eq.]	1,09E-01	3,00E-01	7,18E-02	7,51E-03	0,00E+00	8,98E-03	-1,26E-02
ODP	[kg CFC 11 eq.]	9,07E-12	2,63E-12	6,30E-13	6,58E-14	0,00E+00	4,04E-12	-1,11E-11
AP	[mol H^+ eq.]	7,20E-02	2,80E-02	5,77E-02	7,01E-04	0,00E+00	1,06E-02	-7,46E-03
EP-freshwater	[kg P eq.]	2,78E-05	7,63E-05	1,82E-05	1,91E-06	0,00E+00	3,40E-06	-5,36E-06
EP-marine	[kg N eq.]	3,24E-02	1,07E-02	2,61E-02	2,69E-04	0,00E+00	2,74E-03	-2,66E-03
EP-terrestrial	[mol N eq.]	3,57E-01	1,26E-01	2,88E-01	3,15E-03	0,00E+00	3,01E-02	-2,93E-02
POCP	[kg NMVOC eq.]	1,05E-01	2,79E-02	8,49E-02	6,96E-04	0,00E+00	8,37E-03	-7,49E-03
ADPm[1]	[kg Sb eq.]	6,12E-07	1,56E-06	3,72E-07	3,89E-08	0,00E+00	9,70E-08	-1,61E-07
ADPf[1]	[MJ]	9,70E+01	2,35E+02	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,31E+01
WDP[1]	[m^3 world eq. deprived]	1,10E-01	2,77E-01	6,62E-02	6,92E-03	0,00E+00	1,71E-01	-1,82E-01
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential							
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.							
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.							

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 TON SAND/COMPOST MIX								
				Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2,80E-06	2,96E-07	2,31E-06	7,39E-09	0,00E+00	1,33E-07	-4,57E-07
IRP[2]	[kBq U235 eq.]	8,66E-02	6,22E-02	1,49E-02	1,55E-03	0,00E+00	2,40E-02	-2,46E-01
ETP-fw[1]	[CTUe]	6,47E+01	1,75E+02	4,19E+01	4,37E+00	0,00E+00	1,14E+01	-1,20E+01
HTP-c[1]	[CTUh]	1,37E-09	3,53E-09	8,43E-10	8,82E-11	0,00E+00	2,69E-10	-3,48E-10
HTP-nc[1]	[CTUh]	6,11E-08	1,58E-07	3,88E-08	3,96E-09	0,00E+00	1,04E-08	-1,07E-08
SQP[1]	-	4,24E+01	1,16E+02	2,77E+01	2,89E+00	0,00E+00	5,44E+00	-6,51E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)							
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.							
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.							
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.							

RESOURCE USE PER 1 TON SAND/COMPOST MIX								
				Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1,01E+01	2,03E+01	4,85E+00	5,07E-01	0,00E+00	3,44E+00	-8,24E+00
PERM	[MJ]	1,66E+03	0,00E+00	0,00E+00	0,00E+00	-1,49E+03	0,00E+00	0,00E+00
PERT	[MJ]	1,67E+03	2,03E+01	4,85E+00	5,07E-01	-1,49E+03	3,44E+00	-8,24E+00
PENRE	[MJ]	9,70E+01	2,35E+02	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,31E+01
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	9,70E+01	2,35E+02	5,63E+01	5,88E+00	0,00E+00	1,97E+01	-2,31E+01
SM	[kg]	1,50E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	9,69E-03	2,26E-02	5,40E-03	5,65E-04	0,00E+00	5,23E-03	-7,37E-03
Caption	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							
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.							

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 TON SAND/COMPOST MIX								
				Scenario 2 (Reuse)				
Parameter	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,05E-08	9,01E-09	2,16E-09	2,25E-10	0,00E+00	4,92E-09	-1,48E-08
NHWD	[kg]	1,88E-02	3,84E-02	9,19E-03	9,61E-04	0,00E+00	1,00E+02	-3,19E+01
RWD	[kg]	7,34E-04	4,29E-04	1,03E-04	1,07E-05	0,00E+00	2,07E-04	-1,51E-03
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E+02	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy							
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.							

BIOGENIC CARBON CONTENT PER 1 TON SAND/COMPOST MIX		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	1,01E+01
Biogenic carbon content in accompanying packaging	[kg C]	0,00E+00
Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

Additional information

LCA interpretation

A contribution analysis has been conducted to identify which processes and materials contribute the most to the core environmental impacts.

For the **sand** product system, the results of the analysis covering module A1 – A3 (product stage) indicate that diesel and electricity consumption are the main contributors to the environmental impacts. Overall, the impact from the product stage is minor compared to all declared life cycle modules, with transport to the construction site (A4) being a primary contributor. When considering EoL scenario 1, landfilling of the product waste (C4) is a primary contributor to several impact categories. For EoL scenario 2, diesel combustion for material extraction from construction (C1) is a primary contributor to several impact categories.

In addition to impacts from energy consumption to produce sand, the production of **sand/compost mix** also includes impacts from transportation and mixing of compost. Similar to sand, the analysis shows that the product stage impact is minor compared to all declared life cycle modules, with the greatest impacts in most impact categories related to downstream processes, such as transport to the construction site and end-of-life activities.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck, Euro 6, 28 - 32t gross weight / 22t payload capacity	-
Transport distance	200	km
Capacity utilisation (including empty runs)	55	%
Gross density of products transported	1500	kg sand/m^3
	1325	kg sand/compost mix/m^3
Capacity utilisation volume factor	1	-

End of life (C1-C4)

Scenario information	Scenario 1	Scenario 2	Unit
Collected separately	1000	1000	kg
Collected with mixed waste	0	0	kg
For reuse	0	900	kg
For recycling	0	0	kg
For energy recovery	0	0	kg
For final disposal	1000	100	kg
Assumptions for scenario development	Europe	Europe	-

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Sand	Sand/compost mix	Unit
Displaced material, sand	900	765*	kg
**Only the sand (virgin material) of the sand/compost mix is credited in module D.*			

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	www.epddanmark.dk Template version 2024.1
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General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
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ISO 14040
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ISO 14044
DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"