

Owner: Uretek Engineering ApS
No.: MD-25154-EN
Issued: 16-01-2026
Valid to: 16-01-2031

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Urettek Engineering ApS
Tværvejen 6, 5580 Nørre Aaby,
Denmark
CVR: 1243787
<https://www.uretek.dk/>


Issued:

16-01-2026

Valid to:

16-01-2031

Programme

EPD Danmark
www.epddanmark.dk



- ☐ Industry EPD
☒ Product EPD

- ☐ Product specific
☐ Average
☐ Worst Case

Declared product(s)

Result 1 - 1 kg of helix for ScrewFast® system
Result 2 - 1 kg of extender for ScrewFast® system
Result 3 - 1 kg of top mounts for ScrewFast® system

Number of declared datasets/product variations: 3

Production site

Denmark, Tværvejen 6, 5580 Nørre Aaby

Use of Guarantees of Origin

- ☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared unit

1 kg of helix for ScrewFast® system
1 kg of extender for ScrewFast® system
1 kg of top mounts for ScrewFast® system

Year of production site data (A3)

2024

EPD version

1.01, 26-11-2025

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:



Linda Højbye
Life Cycle Assessment Consulting



Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)

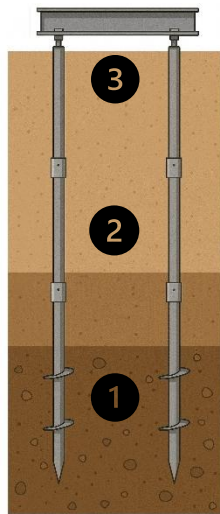
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	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	X	ND	ND	ND	MD	ND	ND	ND	X	X	X	X	X

Product information

Product description

ScrewFast® is a modular steel-based foundation solution designed for quick, vibration-free installation with minimal disruption. It is suitable for both temporary and permanent structural stabilization in a variety of soil conditions. The system is composed of the following modules.

1. Helix Pile: The anchoring element made of black steel, screwed into the ground to initiate installation and provide stability.
2. Extension Piles: Modular black steel segments bolted to the helix to reach the required depth, typically assembled in 2-meter sections.
3. Galvanized Components: These include the uppermost extender, top bracket, and HEB beam. Made of provide corrosion resistance near the surface and in exposed areas.



The main product components are shown in the table below. The % declared weight % material per declared unit.

Material	Unit	Helix piles (MD-25154-EN-1)	Extension piles (MD-25154-EN-2)	Galvanized steel extensions, HEB-beam, and parts (MD-25154-EN-3)
Black Steel (carbon steel)	%/DU	100	100	0.00
Black Steel (carbon steel)	%/DU	0.00	0.00	99.98
Zinc (Galvanization)	%/DU	0.00	0.00	0.02
Sum	%/DU	100	100	100

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight of packaging material (kg)	Weight-% of packaging
Unalloyed steel cage	4.67E-04	100
Total	4.67E-04	100

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of the blacksmith workshop sites located in Denmark and Latvia. In addition to Urettek's site in Denmark. Product specific data are based on average values collected in the calendar year 2024. Background data are based on ecoinvent EN15804 allocation by cut-off, version 3.11 (2024) and are less than 10 years old. Additionally, EPDs from several manufactures located in Europe, and Indonesia are utilized. Applied EPDs can be found in the references. Annex E 1 has been utilized for data quality assessment. Generally, the used background datasets are of high quality, and the majority of the datasets with a large presence in the study are only a couple of years old. The general rules apply for exclusion of inputs and outputs in the LCA, is in compliance with the rules in EN 15804:2012+A2:2019, 6.3.5, where the omission for input-flows pr. module shall be 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that unit process. The total of neglected input flows per module, e.g. per module A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5 % of energy usage and mass.

Hazardous substances

The products in this EPD does not contain >0.1% substances listed on the "Candidate List of Substances of Very High Concern for authorization"

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

REACH declaration available upon request from Uretek.

Product(s) use

ScrewFast® is installed without vibrations, allowing for fast and low-impact foundation work. The system includes a helix anchor, black steel extension piles, a galvanized top extension, a galvanized top bracket, and potentially a galvanized HEB beam.

ScrewFast® piles can be installed to depths of up to 20 meters and offer immediate load-bearing capacity, suitable for various soil conditions and load types.

Essential characteristics

Uretek's ScrewFast® products are designed and manufactured in compliance with Eurocode 3 and

Picture of product(s)



EN 1090-2, and installed according to Eurocode 7. The galvanized steel parts feature a zinc coating of approximately 85 µm, applied via hot-dip galvanization in accordance with ISO 1461. This corresponds to roughly 0.02% zinc per kg of steel, covering both internal and external surfaces of the components.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

<https://www.uretek.dk/>

Reference Service Life (RSL)

Not applicable

LCA background

Declared unit

The LCI and LCIA results in this EPD relate to Uretek's ScrewFast® system.

Name	Unit	Helix piles in black steel (MD-25154-EN-1)	Extension piles in black steel (MD-25154-EN-2)	Galvanized steel extensions, HEB-beam, and components (MD-25154-EN-3)
Declared unit	kg	1	1	1

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019, and utilizes PCR 2019:14. Construction Products. 2.0.1 as inspiration for applied waste scenarios.

Energy modelling principles

Foreground system:

The products of this EPD are produced using residual mixes. For the extenders, and galvanized steel, a Danish residual mix are utilized. For the helixes, a mix of Danish and Latvian residual mix are utilized. No GOs are utilized at any of the sites

and blacksmith workshops included in this EPD. One blacksmith workshop has solar installations which cover 10% of the total energy consumption onsite (this is all utilized on-site and never sold into the grid) .

Information about the energy mix in the foreground system:

Energy mix	EF	Unit
Residual mix, medium voltage, Denmark	0.724	kg CO ₂ e/kWh
Residual mix, medium voltage, Latvia	0.689	kg CO ₂ e/kWh
Residual mix (90%) + Solar (10%), medium voltage, Denmark	0.66	kg CO ₂ e/kWh

Background system:

Upstream processes are modelled using country specific consumption mixes (average mixes). Downstream processes are modelled using scenario relevant mixes.

Flow diagram

Figure 1 – Flow diagram for helix piles in black steel (MD-25154-EN-1)

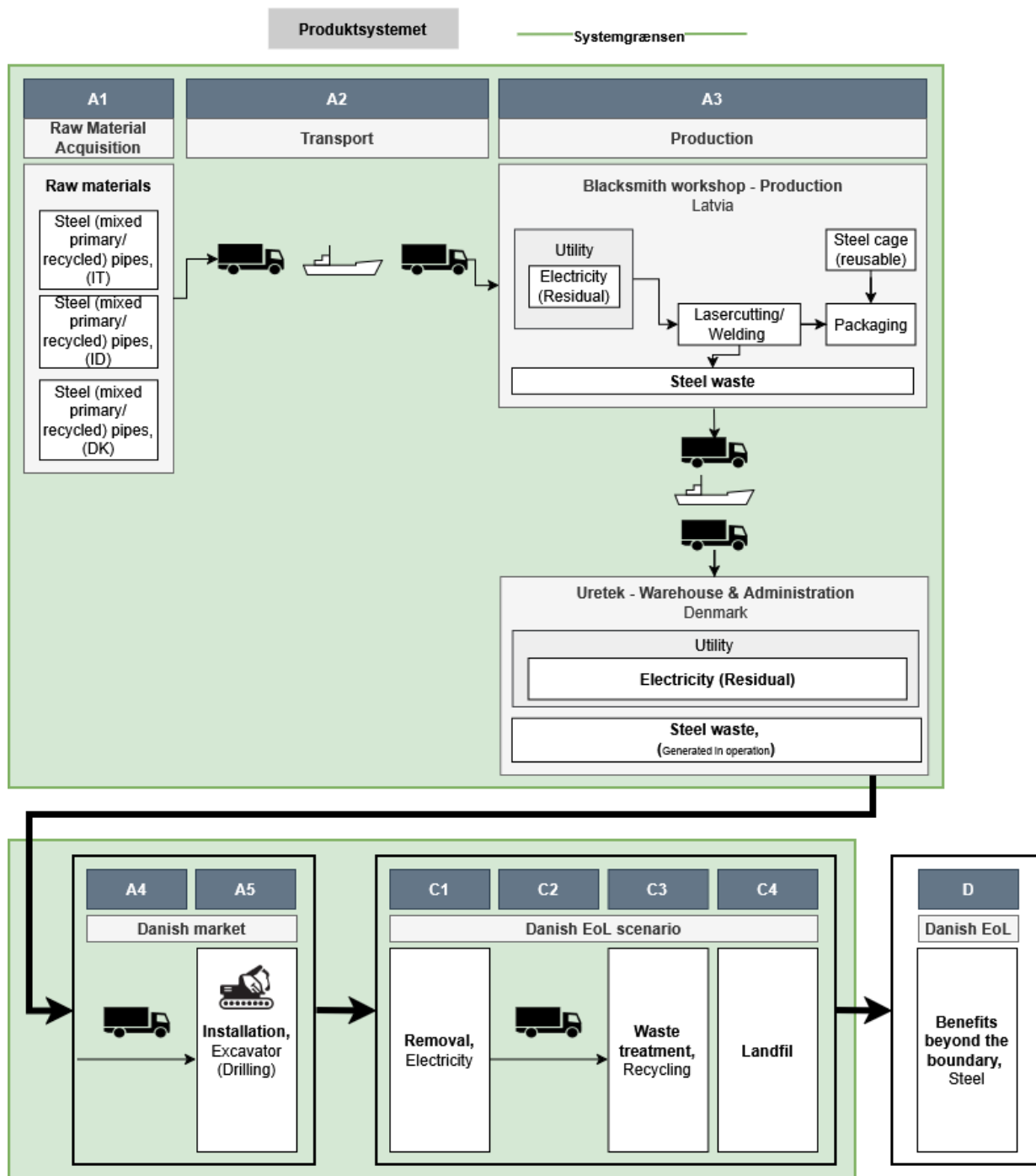


Figure 2 – Flow diagram for extension piles in black steel (MD-25154-EN-2)

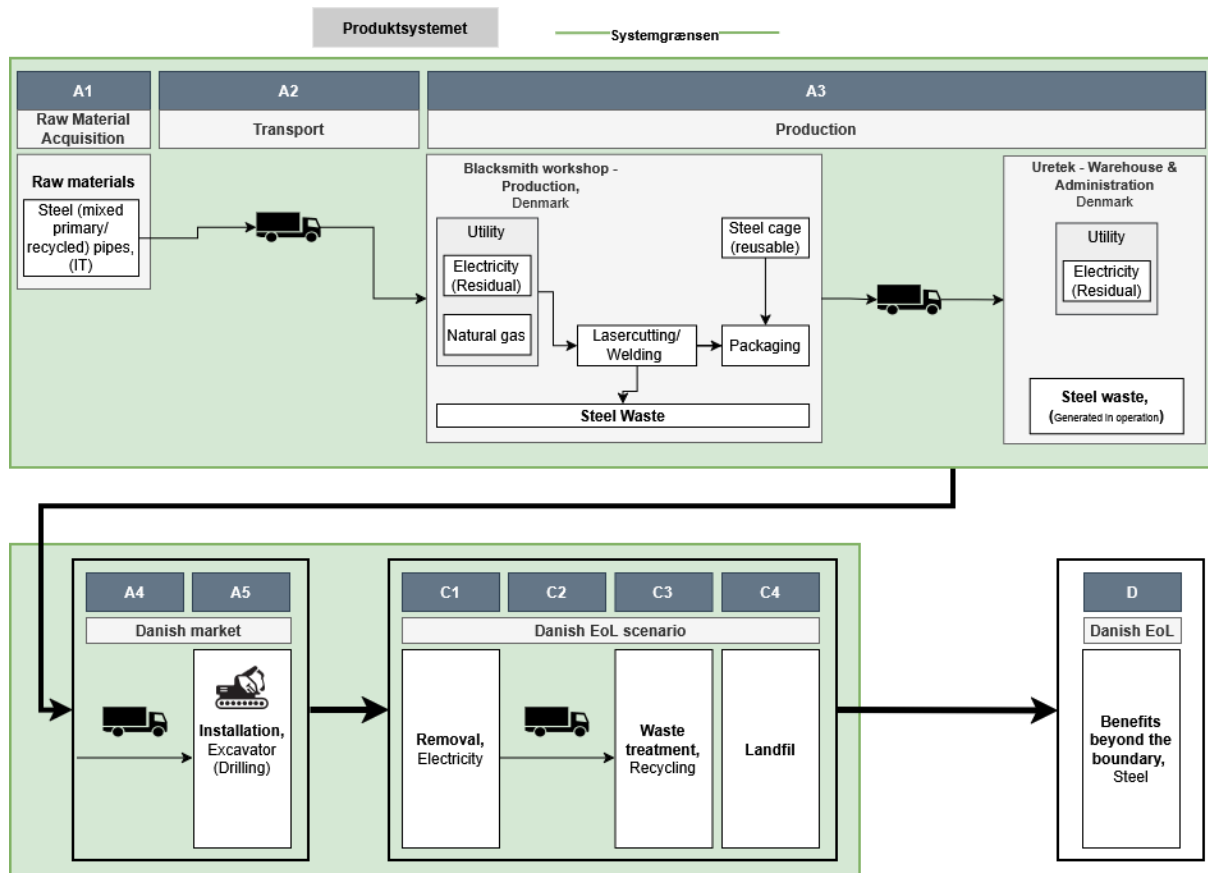
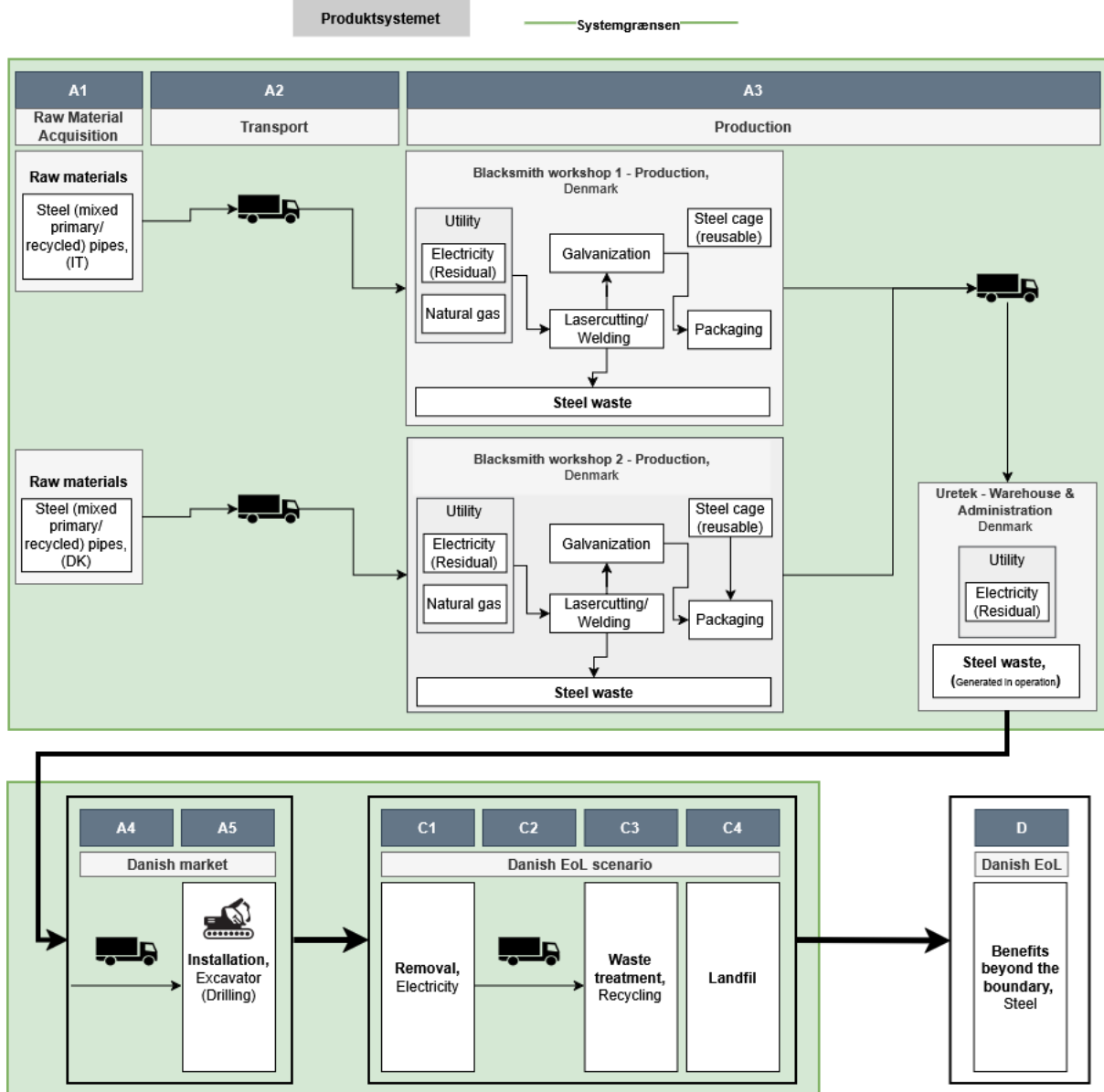


Figure 3 – Flow diagram for galvanized steel extensions, HEB-beam, and components (MD-25154-EN-3)



System boundary

This EPD is based on a cradle-to-gate, with options LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 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

Steel used in the product is sourced from Italy, Indonesia, and Denmark, and procured by three blacksmith workshops. These workshops receive semi-finished steel products such as pipes and plates. The environmental data for these materials is based on EPDs, applied according to the supply mix reported by each blacksmith. Where EPDs are unavailable, generic datasets for unalloyed steel in Europe are used (with an ecoinvent-based post-consumer content of 18%). Post-consumer content varies by supplier (EPDs)

and range from 7% (EPD-IES-0019978:002) - 89% (S-P-11662)

A2 – Transport to the production site

Transport of raw materials from foundries to the blacksmith workshops is modelled using EURO 5 and EURO 6 trucks within Europe, and EURO 4 trucks outside Europe. Steel from Indonesia is transported via a combination of truck and container ship. The transport activity is calculated based on the supply mix of each product system, reflecting the actual sourcing routes and distances. The load factor applied is 38% for transport by truck, and 78% for container shipping.

A3 – Manufacturing processes

- Blacksmith Workshop Activities

Manufacturing is performed by three blacksmith workshops. Their activities include laser cutting, welding and hot-dip galvanization, with energy use, loss, galvanization, waste generation, and transport to Uretek included. Data is allocated based on the mass of steel purchased by Uretek. Country-specific modelling is applied: Latvian processes for one workshop and Danish processes for the others. One workshop uses solar energy, covering 10% of its electricity consumption.

- Uretek-Specific Activities

Uretek does not perform any kind of manufacturing but contributes through electricity use, minor steel waste, and logistics. Transport from the blacksmiths to Uretek is modelled based on actual distances and modes, including truck and ferry. Reusable steel cages are used for packaging, with their environmental impact distributed across. Activities at Uretek is repartitioned based on utilized surface area related to the specific product, in Uretek's warehouse.

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.

Construction process stage (A4-A5) includes:

In A4, the transportation to the building site is modelled with an average distance of 300 km covering Uretek's Danish market. Uretek uses two trucks (EURO 5 and EURO 6), equally split in usage, both with a 16–32-ton capacity. The trucks return empty, resulting in a 38% load factor. Transport emissions are calculated based on this scenario. Bolts required for installation are included in this transport stage.

For A5, installation is performed using a 6.5-ton diesel excavator, selected based on actual usage. The process involves screwing steel piles into the ground, with 1 meter installed every 2 minutes. Fuel consumption is estimated at 0.141 liters per meter, corresponding to 0.04 MJ/kg or 0.01 kWh/kg. Bolts are used to couple pile segments, with 1.5 bolts per meter, each weighing 0.48 kg. Steel transport cages are sent back into the system after delivery and reused.

End of Life (C1-C4) includes:

At end-of-life, the foundation system is dismantled (C1), including removal of HEB beams, top brackets, and screw piles. A standard electricity use of 1.1 kWh/ton is applied to represent deconstruction activities, in line with PCR 2019:14 guidelines. The EoL scenario applied is based on a Danish scenario, as the product primarily is sold within that context.

Following dismantling, all components are transported to recycling facilities (C2) using EURO 5 trucks over an average distance of 80 km, reflecting a Danish scenario. Bolts are included in the transported weight, and the total transport activity is 0.08 tkm/declared unit.

In the waste processing phase (C3), all steel components are collected separately and undergo shredding and magnetic sorting before reaching end-of-waste (EoW). A 100% recycling scenario is applied, assuming no material loss due to steel's permanence. While reuse is technically feasible, no takeback system is currently in place due to the long product lifespan.

No activities are modelled in Module C4, as all materials are assumed to be recycled.

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

Steel recovered at end-of-life is credited in Module D, substituting virgin steel on a one-to-one basis due to its recyclability, and the scenario applied. Recycled content already present in the product is not credited, as it is accounted for in Modules A1–A3. The impact in Module D is primarily determined by the recycled content reported in the EPDs used cf. EN15804+A2 Annex D.

LCA results – 1 – Helix piles (Black steel)

ENVIRONMENTAL IMPACTS PER 1 kg of MD-25154-EN-1									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2.86E+00	5.66E-02	4.76E-02	2.87E-03	1.52E-02	2.28E-02	0.00E+00	-1.37E+00
GWP-fossil	[kg CO ₂ eq.]	2.85E+00	5.65E-02	4.76E-02	2.87E-03	1.52E-02	2.31E-02	0.00E+00	-1.37E+00
GWP-biogenic	[kg CO ₂ eq.]	3.85E-03	3.75E-05	-1.06E-04	2.67E-06	1.00E-05	-3.27E-04	0.00E+00	3.11E-03
GWP-luluc	[kg CO ₂ eq.]	1.10E-03	1.89E-05	1.42E-05	5.84E-07	5.05E-06	2.85E-05	0.00E+00	-4.10E-04
ODP	[kg CFC 11 eq.]	8.26E-08	1.23E-09	2.98E-10	2.94E-10	3.32E-10	3.07E-10	0.00E+00	-6.40E-09
AP	[mol H ⁺ eq.]	1.62E-02	1.52E-04	1.64E-04	1.22E-05	4.89E-05	2.76E-04	0.00E+00	-4.69E-03
EP-freshwater	[kg P eq.]	7.18E-04	3.89E-06	2.23E-05	1.38E-07	1.04E-06	1.54E-05	0.00E+00	-6.52E-04
EP-marine	[kg N eq.]	3.63E-03	4.53E-05	3.92E-05	2.04E-06	1.65E-05	6.12E-05	0.00E+00	-1.13E-03
EP-terrestrial	[mol N eq.]	4.00E-02	4.92E-04	4.21E-04	2.14E-05	1.79E-04	6.91E-04	0.00E+00	-1.22E-02
POCP	[kg NMVOC eq.]	1.41E-02	2.34E-04	1.51E-04	2.65E-05	7.41E-05	2.05E-04	0.00E+00	-4.22E-03
ADPm ¹	[kg Sb eq.]	1.00E-05	1.92E-07	3.21E-08	1.89E-09	5.12E-08	1.63E-06	0.00E+00	-9.23E-07
ADPf ¹	[MJ]	3.29E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.40E+01
WDP ¹	[m ³ world eq. deprived]	7.42E-01	4.08E-03	1.12E-02	1.84E-04	1.09E-03	5.62E-03	0.00E+00	-3.27E-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 = Acidification; 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 kg of MD-25154-EN-1									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease incidence]	3.86E-02	4.38E-09	3.52E-09	1.03E-10	1.22E-09	3.77E-09	0.00E+00	-1.02E-07
IRP ²	[kBq U235 eq.]	2.08E+01	9.63E-04	1.35E-03	5.22E-05	2.57E-04	2.68E-03	0.00E+00	-3.92E-02
ETP-fw ¹	[CTUe]	8.03E+00	1.07E-01	1.24E-01	5.68E-03	2.87E-02	1.79E-01	0.00E+00	-3.59E+00
HTP-c ¹	[CTUh]	1.91E-08	9.59E-12	6.61E-11	4.26E-13	2.60E-12	2.05E-11	0.00E+00	-1.93E-09
HTP-nc ¹	[CTUh]	3.53E+00	5.04E-10	1.49E-10	1.38E-11	1.35E-10	1.40E-09	0.00E+00	-4.24E-09
SQP ¹	-	3.66E+00	4.78E-01	1.07E-01	8.90E-03	1.28E-01	5.98E-01	0.00E+00	-3.05E+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 kg of MD-25154-EN-1									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1.49E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-5.25E-01
PERM	[MJ]	4.93E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERT	[MJ]	1.49E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-5.25E-01
PENRE	[MJ]	3.03E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.40E+01
PENRM	[MJ]	1.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.03E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.40E+01
SM	[kg]	2.08E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.86E-01
RSF	[MJ]	4.19E-05	4.74E-06	1.81E-06	1.05E-07	1.27E-06	1.77E-05	0.00E+00	-5.21E-05
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
FW	[m³]	4.25E-02	1.01E-04	2.69E-04	4.51E-06	2.70E-05	1.44E-04	0.00E+00	-7.83E-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 kg of MD-25154-EN-1

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	1.11E-01	1.16E-03	9.06E-03	4.89E-05	3.09E-04	2.06E-03	0.00E+00	-2.64E-01
NHWD	[kg]	2.45E+00	2.48E-02	1.23E-01	1.02E-03	6.63E-03	8.09E-02	0.00E+00	-3.59E+00
RWD	[kg]	2.33E-05	2.38E-07	3.42E-07	1.27E-08	6.35E-08	6.85E-07	0.00E+00	-9.92E-06

CRU	[kg]	3.22E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00
MER	[kg]	9.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	2.37E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.22E-03	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 kg of MD-25154-EN-1

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	0.00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

LCA results 2 – Extension piles (Black steel)

ENVIRONMENTAL IMPACTS PER 1 kg of MD-25154-EN-2									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2.27E+00	5.66E-02	4.76E-02	2.87E-03	1.52E-02	2.28E-02	0.00E+00	-1.09E+00
GWP-fossil	[kg CO ₂ eq.]	2.26E+00	5.65E-02	4.76E-02	2.87E-03	1.52E-02	2.31E-02	0.00E+00	-1.09E+00
GWP-biogenic	[kg CO ₂ eq.]	7.03E-03	3.75E-05	-1.06E-04	2.67E-06	1.00E-05	-3.27E-04	0.00E+00	2.48E-03
GWP-luluc	[kg CO ₂ eq.]	1.14E-03	1.89E-05	1.42E-05	5.84E-07	5.05E-06	2.85E-05	0.00E+00	-3.27E-04
ODP	[kg CFC 11 eq.]	1.31E-07	1.23E-09	2.98E-10	2.94E-10	3.32E-10	3.07E-10	0.00E+00	-5.11E-09
AP	[mol H ⁺ eq.]	8.23E-03	1.52E-04	1.64E-04	1.22E-05	4.89E-05	2.76E-04	0.00E+00	-3.74E-03
EP-freshwater	[kg P eq.]	7.94E-04	3.89E-06	2.23E-05	1.38E-07	1.04E-06	1.54E-05	0.00E+00	-5.20E-04
EP-marine	[kg N eq.]	1.94E-03	4.53E-05	3.92E-05	2.04E-06	1.65E-05	6.12E-05	0.00E+00	-9.02E-04
EP-terrestrial	[mol N eq.]	2.06E-02	4.92E-04	4.21E-04	2.14E-05	1.79E-04	6.91E-04	0.00E+00	-9.69E-03
POCP	[kg NMVOC eq.]	8.88E-03	2.34E-04	1.51E-04	2.65E-05	7.41E-05	2.05E-04	0.00E+00	-3.36E-03
ADPm ¹	[kg Sb eq.]	5.98E-06	1.92E-07	3.21E-08	1.89E-09	5.12E-08	1.63E-06	0.00E+00	-7.36E-07
ADPf ¹	[MJ]	2.71E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.12E+01
WDP ¹	[m ³ world eq. deprived]	4.28E-01	4.08E-03	1.12E-02	1.84E-04	1.09E-03	5.62E-03	0.00E+00	-2.60E-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 = Acidification; 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 kg of MD-25154-EN-2									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease incidence]	1.26E-07	4.38E-09	3.52E-09	1.03E-10	1.22E-09	3.77E-09	0.00E+00	-8.15E-08
IRP ²	[kBq U235 eq.]	1.33E-01	9.63E-04	1.35E-03	5.22E-05	2.57E-04	2.68E-03	0.00E+00	-3.13E-02
ETP-fw ¹	[CTUe]	3.78E+01	1.07E-01	1.24E-01	5.68E-03	2.87E-02	1.79E-01	0.00E+00	-2.86E+00
HTP-c ¹	[CTUh]	2.62E-08	9.59E-12	6.61E-11	4.26E-13	2.60E-12	2.05E-11	0.00E+00	-1.54E-09
HTP-nc ¹	[CTUh]	3.86E-08	5.04E-10	1.49E-10	1.38E-11	1.35E-10	1.40E-09	0.00E+00	-3.38E-09
SQP ¹	-	7.53E+00	4.78E-01	1.07E-01	8.90E-03	1.28E-01	5.98E-01	0.00E+00	-2.43E+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 kg of MD-25154-EN-2									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1.11E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-4.18E-01
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

PERT	[MJ]	1.11E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-4.18E-01
PENRE	[MJ]	2.71E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.12E+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
PENRT	[MJ]	2.71E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.12E+01
SM	[kg]	3.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.48E-01
RSF	[MJ]	3.03E-05	4.74E-06	1.81E-06	1.05E-07	1.27E-06	1.77E-05	0.00E+00	-4.16E-05
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
FW	[m³]	5.61E-02	1.01E-04	2.69E-04	4.51E-06	2.70E-05	1.44E-04	0.00E+00	-6.24E-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 kg of MD-25154-EN-2

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	3.44E-02	1.16E-03	9.06E-03	4.89E-05	3.09E-04	2.06E-03	0.00E+00	-2.11E-01
NHWD	[kg]	1.48E+00	2.48E-02	1.23E-01	1.02E-03	6.63E-03	8.09E-02	0.00E+00	-2.86E+00
RWD	[kg]	4.94E-05	2.38E-07	3.42E-07	1.27E-08	6.35E-08	6.85E-07	0.00E+00	-7.91E-06

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
MFR	[kg]	9.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+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
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
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
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 kg of MD-25154-EN-2

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	0.00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

LCA results 3 – Galvanized steel parts

ENVIRONMENTAL IMPACTS PER 1 kg of MD-25154-EN-3									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2.21E+00	5.66E-02	4.76E-02	2.87E-03	1.52E-02	2.28E-02	0.00E+00	-1.20E+00
GWP-fossil	[kg CO ₂ eq.]	2.20E+00	5.65E-02	4.76E-02	2.87E-03	1.52E-02	2.31E-02	0.00E+00	-1.20E+00
GWP-biogenic	[kg CO ₂ eq.]	6.26E-03	3.75E-05	-1.06E-04	2.67E-06	1.00E-05	-3.27E-04	0.00E+00	2.73E-03
GWP-luluc	[kg CO ₂ eq.]	1.32E-03	1.89E-05	1.42E-05	5.84E-07	5.05E-06	2.85E-05	0.00E+00	-3.60E-04
ODP	[kg CFC 11 eq.]	9.75E-08	1.23E-09	2.98E-10	2.94E-10	3.32E-10	3.07E-10	0.00E+00	-5.62E-09
AP	[mol H ⁺ eq.]	8.64E-03	1.52E-04	1.64E-04	1.22E-05	4.89E-05	2.76E-04	0.00E+00	-4.11E-03
EP-freshwater	[kg P eq.]	9.04E-04	3.89E-06	2.23E-05	1.38E-07	1.04E-06	1.54E-05	0.00E+00	-5.72E-04
EP-marine	[kg N eq.]	2.04E-03	4.53E-05	3.92E-05	2.04E-06	1.65E-05	6.12E-05	0.00E+00	-9.92E-04
EP-terrestrial	[mol N eq.]	2.18E-02	4.92E-04	4.21E-04	2.14E-05	1.79E-04	6.91E-04	0.00E+00	-1.07E-02
POCP	[kg NMVOC eq.]	8.49E-03	2.34E-04	1.51E-04	2.65E-05	7.41E-05	2.05E-04	0.00E+00	-3.70E-03
ADPm ¹	[kg Sb eq.]	5.82E-05	1.92E-07	3.21E-08	1.89E-09	5.12E-08	1.63E-06	0.00E+00	-8.09E-07
ADPf ¹	[MJ]	2.56E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.23E+01
WDP ¹	[m ³ world eq. deprived]	5.47E-01	4.08E-03	1.12E-02	1.84E-04	1.09E-03	5.62E-03	0.00E+00	-2.86E-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 = Acidification; 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 kg of MD-25154-EN-3									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease incidence]	1.37E-07	4.38E-09	3.52E-09	1.03E-10	1.22E-09	3.77E-09	0.00E+00	-8.97E-08
IRP ²	[kBq U235 eq.]	1.24E-01	9.63E-04	1.35E-03	5.22E-05	2.57E-04	2.68E-03	0.00E+00	-3.44E-02
ETP-fw ¹	[CTUe]	4.21E+01	1.07E-01	1.24E-01	5.68E-03	2.87E-02	1.79E-01	0.00E+00	-3.15E+00
HTP-c ¹	[CTUh]	1.88E-08	9.59E-12	6.61E-11	4.26E-13	2.60E-12	2.05E-11	0.00E+00	-1.69E-09
HTP-nc ¹	[CTUh]	3.97E-08	5.04E-10	1.49E-10	1.38E-11	1.35E-10	1.40E-09	0.00E+00	-3.72E-09
SQP ¹	-	7.33E+00	4.78E-01	1.07E-01	8.90E-03	1.28E-01	5.98E-01	0.00E+00	-2.68E+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 kg of MD-25154-EN-3									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1.23E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-4.60E-01
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

PERT	[MJ]	1.23E+00	1.31E-02	1.81E-02	5.92E-04	3.51E-03	5.71E-02	0.00E+00	-4.60E-01
PENRE	[MJ]	2.56E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.23E+01
PENRM	[MJ]	5.31E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.56E+01	8.03E-01	5.25E-01	1.72E-01	2.16E-01	3.12E-01	0.00E+00	-1.23E+01
SM	[kg]	4.98E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	4.76E-05	4.74E-06	1.81E-06	1.05E-07	1.27E-06	1.77E-05	0.00E+00	-4.57E-05
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
FW	[m³]	4.44E-02	1.01E-04	2.69E-04	4.51E-06	2.70E-05	1.44E-04	0.00E+00	-6.87E-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 kg of MD-25154-EN-3

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	1.58E-01	1.16E-03	9.06E-03	4.89E-05	3.09E-04	2.06E-03	0.00E+00	-2.32E-01
NHWD	[kg]	2.79E+00	2.48E-02	1.23E-01	1.02E-03	6.63E-03	8.09E-02	0.00E+00	-3.15E+00
RWD	[kg]	4.28E-05	2.38E-07	3.42E-07	1.27E-08	6.35E-08	6.85E-07	0.00E+00	-8.70E-06

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
MFR	[kg]	6.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00
MER	[kg]	3.98E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	2.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	7.22E-04	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 kg of MD-25154-EN-3

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	0.00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

LCA interpretation

The environmental profile of the product systems within this LCA study is primarily determined by modules A1–A3, as upstream processes in the applied EPDs are not disclosed and therefore cannot be interpreted. Broadly, steel production in A1 represents the dominant contribution to overall impacts, with significant variation in global warming potential between sources (EPD utilized), largely due to differences in energy use. Activities in A3, such as welding and, in some cases, galvanization, add minor impacts, though galvanization increases the relative share of A3 where applied. Transport impacts in A2 and A3 (transport from Blacksmiths to Uretek) are marginal, typically around 0.25–0.30 kg CO₂-eq/kg and are further reduced by the proximity of suppliers to manufacturing sites. Modules A4 and A5 contribute negligibly due to minimal fuel consumption, while end-of-life stages (C1–C4) have little influence except for minor resource use in C3. Module D offers potential benefits based on the remaining virgin material content, with systems containing lower recycled content showing higher recovery potential. Overall, the results depend strongly on the EPD data applied, which are considered valid and precise, though differences in database versions and release dates may affect comparability, with newer EPDs likely providing greater accuracy.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type (50/50 split)	EURO5/EURO6	-
Transport distance	300	km
Capacity utilization (including empty runs)	38	%
Applied transport activity	0.3	kg/m ³

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials –M20 Bolts	2.71E-02	kg/DU
Energy consumption	1.12E-02	kWh/DU
Fuel type	Diesel	-

End of life (C1–C4)

Scenario information	Unit	Helix piles [Amount/DU]	Extension piles [Amount/DU]	Galvanized steel parts [Amount/DU]
Collected separately	kg	1.03	1.03	1.03
Collected with mixed waste	kg	0.00	0.00	0.00
For reuse	kg	0.00	0.00	0.00
For recycling	kg	1.03	1.03	1.03
For energy recovery	kg	0.00	0.00	0.00
For final disposal	kg	0.00	0.00	0.00
Assumptions for scenario development	As appropriate	Realistic – The product is assumed to be dug up by professionals, and waste managed professionally due to the inherent scrap value. Shredding is done cf. Stena Recycling, as all big elements go through such processes.		

Re-use, recovery and recycling potential (D)

Scenario information/Material	Unit	Helix piles [Amount/DU]	Extension piles [Amount/DU]	Galvanized steel parts [Amount/DU]
Post-consumer steel left to be substituted at EoW	kg	0.79	0.63	0.69

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 2025.1
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	 NRGi Rådgivning A/S Hedeager 5, 8200 Aarhus N Project lead: Jesper Kokborg Lassen Project support: Philip Mckay Boyle
LCA software / background data	<i>SimaPro 10.2</i> <i>Ecoinvent 3.11 – Allocation, e-off, EN 15804 (2024)</i> <i>EN 15804 reference package 3.1</i>
3rd party verifier	Linda Højbye Life Cycle Assessment Consulting Verified according to Verification Checklist 1 v. 2.9.

General programme instructions

General Programme Instructions, version 3.0, spring 2025

www.epddanmark.dk

Technical Rules and Guidelines

Technical Rules and Guidelines, version 1.0, spring 2025

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"

PCR 2019:14. Construction Products. 2.0.1

EN 15804 reference package 3.1

SimaPro 10.2

Ecoinvent 3.11 (2024)

EN 15942

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

ISO 14025

DS/EN ISO 14025:2010 – "Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – "Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

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

Excavator drill

<https://ankerlokken.dk/info/vare/auger-25000-max/>

Hitachi excavator

<https://www.hitachicm.com/eu/en/machinery/excavators/mini-excavators/product.zx65usb-6/>

S-P-06004, Valid until 2027-05-24

https://www.arvedi.it/fileadmin/user_upload/ata/schede/2023/EPD_rev2a.pdf

S-P-12203, Valid until 2029-01-09

https://www.padanatubi.it/wp-content/uploads/2024/01/Tubo-Carbonio_Black-carbon-steel-tube.pdf

EPD-IES-0019978:002, Valid until 2030-05-20

<https://api.environdec.com/api/v1/EPDLibrary/Files/67c8fd8e-1719-4615-48a9-08dd9f46e11b/Data>

S-P-11662, Valid until 2029-03-04

<https://www.environdec.com/library/epd11662>

Eurofer, 2025

<https://www.eurofer.eu/about-steel/learn-about-steel/what-is-steel-and-how-is-steel-made>