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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Mincon Nordic Oy
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2593-1306-EN
Registration number:	NEPD-2593-1306-EN
ECO Platform reference number:	-
Issue date:	17.12.2020
Valid to:	17.12.2025

Pilot bit

Mincon Nordic Oy



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General information

Product:

Pilot bit

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-2593-1306-EN

ECO Platform reference number:**Owner of the declaration:**

Mincon Nordic Oy
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Manufacturer:

Mincon Nordic Oy
Menotie 1, 33470 Ylöjärvi, Finland
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e-mail: samieskelin@mincon.com

Place of production:

Menotie 1
33470 Ylöjärvi, Finland

Management system:

ISO9001, ISO14001

This declaration is based on Product Category Rules:

CEN Standard EN 15804 serves as core PCR
NPCR 013, Part B for steel and aluminium
construction products, Version 3.0. 2019.

Statement of liability:

The owner of the declaration shall be liable for the
underlying information and evidence. EPD Norway shall
not be liable with respect to manufacturer information, life
cycle assessment data and evidences.

Declared unit:

1 kg Pilot bit

Declared unit with option:

Cradle-to-gate with options: A1-A4, C1-C4, D

Functional unit:**Business ID (Finland):**

2818814-8

Issue date:

17.12.2020

Valid to:

17.12.2025

Year of study:

2020

Comparability:

EPD of construction products may not be comparable if they
not comply with EN 15804 and seen in a building context.

The EPD has been worked out by:

Ecobio Oy



Neea Huttunen

Verification:

The CEN Norm EN 15804 serves as the core PCR.
Independent verification of the declaration and data,
according to ISO14025:2010

internal external

Third party verifier:



David Althoff Palm, Ramboll Sweden AB
(Independent verifier approved by EPD Norway)

Approved



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Ring bit systems including pilot bit and ring bit are designed for drilling and bearing piles to bed rock.

Product specification:

Pilot bit produced by Mincon Nordic Oy in a factory in Ylöjärvi, Finland. The product is made mainly of steel and nails that are made of tungsten carbide.

Material content of Pilot bit

Materials	%
Steel	91,0
Tungsten carbide with cobalt binder	4,9
Paint	0,5
Plastic	3,6

Technical data:

The weight of a pilot bit is 9,7-75 kg and diam 140-323 mm.



Market:

Norway, Finland, Sweden, Denmark, Estonia, Latvia and Lithuania

Reference service life, product:

N/A

Reference service life, building:

LCA: Calculation rules

Declared unit:

1 kg Pilot bit

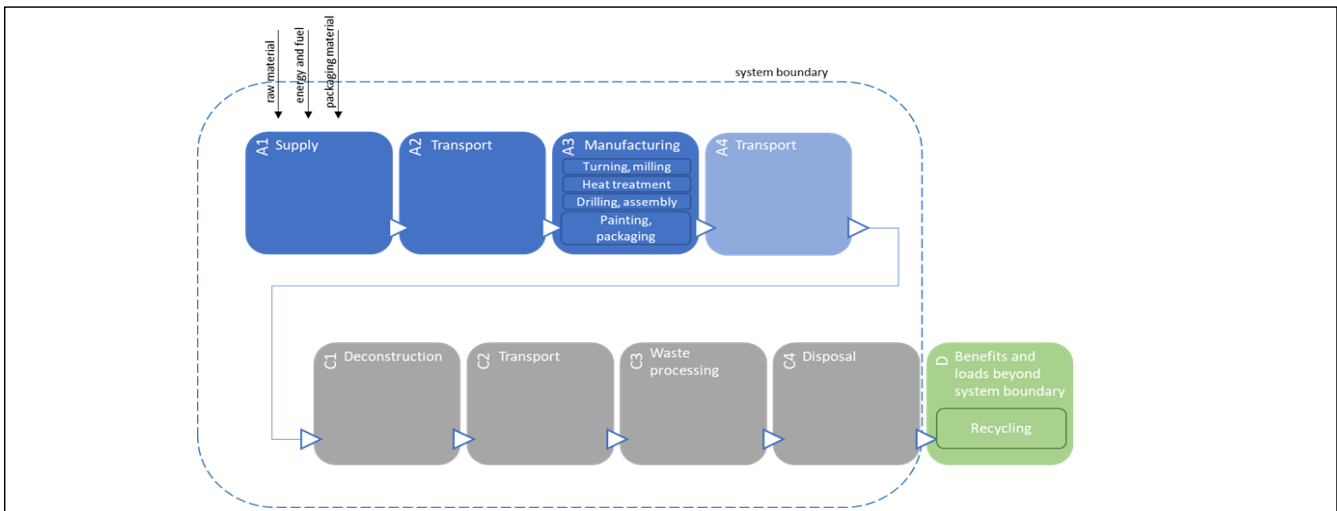
System boundary:

Cradle-to-gate with options: A1-A4, C1-C4, D

Recycling scenario:

100 % of the steel in the product is recycled in the end-of-life stage.

Figure 1: Flow diagram describing the system boundaries.



Data quality:

Manufacturing data is one year average from year 2019. The database data are from 2019 and 2015. EPD data and LCA study data are from 2019.

Data source: SimaPro (Release 9.1.0.11) and databases Ecoinvent 3.6 and ELCD. The data for steel is from an EPD (2019) and LCA data for tungsten carbide from LCA study by Furerg et al (2019).

The LCA study for tungsten carbide is partial, and some of the required data for tungsten carbide is missing. This can cause notable inaccuracy to the impact categories with missing data, i.e. abiotic depletion, abiotic depletion – fossil fuels, energy consumption, and waste, in module A1.

The actual share of post-consumer scrap is not provided in the supplier EPD which may influence the results.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

The products are transported to the construction site by road and by sea. The transport distances were estimated based on 2019 data for Mincon Nordic Oy's products taking into account the country-specific transport scenarios for Norway. The scenario includes 300 km transport distance (road) from storage location to the building site. A4 for markets other than Norway must be calculated separately.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (kg/t)
Truck	37 % (Ecoinvent 3.6)	Truck, 16-32 ton, EURO5	1280	37 g/tkm	47,4
Railway			0	kWh/tkm	
Boat	65%	Ferry	266	29 g/tkm	7,7

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	1,0
Energy recovery	kg	0
To landfill	kg	0

The product is totally recycled in the end-of-life stage.

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (kg/t)
Truck	37 % (Ecoinvent 3.6)	Truck, 16-32 ton, EURO5	100	37 g/tkm	3,7
Railway				kWh/tkm	
Boat				l/tkm	

Benefits and loads beyond the system boundaries (D)

	Unit	Value
Net new scrap	kg	-0,72

Recycled steel input* MR_{in} = 1,63 kg

Steel output to recycling MR_{out} = 0,91 kg

Net new scrap = MR_{out} - MR_{in} = 0,91 kg - 1,63 kg = -0,72 kg

*The actual share of post-consumer scrap is unknown and has for the calculation of net new scrap been estimated to 50%.

Additional technical information

LCA: Results

System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage							End of life stage				Beyond the
Raw materials	Transport	Manufacturing	Transport	Assembly	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	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x

Environmental impact

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP	kg CO ₂ -eqv	3,74E+00	2,40E-01	0,00E+00	1,65E-02	1,37E-06	0,00E+00	8,44E-01
ODP	kg CFC11-eqv	5,76E-07	4,34E-08	0,00E+00	3,02E-09	2,95E-01	0,00E+00	3,28E-08
POCP	kg C ₂ H ₄ -eqv	4,42E-03	4,82E-05	0,00E+00	2,23E-06	2,40E-04	0,00E+00	5,51E-04
AP	kg SO ₂ -eqv	5,76E-02	1,44E-03	0,00E+00	5,29E-05	9,16E-05	0,00E+00	3,72E-03
EP	kg PO ₄ ³⁻ -eqv	6,69E-03	2,39E-04	0,00E+00	1,20E-05	2,42E-02	0,00E+00	2,52E-03
ADPM	kg Sb-eqv	4,84E-05	5,97E-06	0,00E+00	4,51E-07	3,05E-09	0,00E+00	1,56E-05
ADPE	MJ	1,71E+01	3,52E+00	0,00E+00	2,46E-01	9,01E-06	0,00E+00	8,36E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
RPEE	MJ	2,32E+01	4,78E-02	0,00E+00	3,55E-03	5,37E-02	0,00E+00	6,04E-01
RPEM	MJ	3,39E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	5,71E+01	4,78E-02	0,00E+00	3,55E-03	5,37E-02	0,00E+00	6,04E-01
NRPE	MJ	6,95E+01	3,61E+00	0,00E+00	2,53E-01	3,81E-01	0,00E+00	1,13E+01
NRPM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	6,95E+01	3,61E+00	0,00E+00	2,53E-01	3,81E-01	0,00E+00	1,13E+01
SM	kg	3,12E+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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m ³	1,10E-01	3,57E-04	0,00E+00	2,65E-05	1,62E-04	0,00E+00	1,91E-03

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HW	kg	1,55E-02	8,76E-06	0,00E+00	6,59E-07	1,03E-06	0,00E+00	6,20E-05
NHW	kg	2,52E+00	1,55E-01	0,00E+00	1,20E-02	1,00E-02	0,00E+00	3,77E-01
RW	kg	5,20E-04	2,45E-05	0,00E+00	1,71E-06	2,03E-06	0,00E+00	2,82E-07

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life - Output flow

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
CR	kg	0	0	0	0	0	0	0
MR	kg	2,34	0	0	0	1,0	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0
ETE	MJ	0	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: $9,0 \text{ E-}03 = 9,0 \cdot 10^{-3} = 0,009$

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

National production mix from import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process(A3).

The electricity is market priced electricity, produced from renewable (32%), nuclear (40%) and fossil and peat (27%) energy sources. The emission factor used for the electricity is 237 g CO₂-eq./kWh. The value includes total CO₂-eq. emissions from both electricity production and building the power plants.

Data source	Amount	Unit
Ecoinvent v3.6 (September 2019)	0,327	kg CO ₂ -eqv/kWh

Dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforsiften, Annex III), see table.

Indoor environment





Not relevant

Release of substances to ground water or soil

No substances are released to ground water or soil during the use of the product.

Bibliography

ISO 14025:2010	<i>Environmental labels and declarations - Type III environmental declarations - Principles and procedures</i>
ISO 14044:2006	<i>Environmental management - Life cycle assessment - Requirements and guidelines</i>
EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
Ecobio Oy	<i>LCA Report - Mincon Nordic Oy. Pilot bit & Ring bit. 2020.</i>
NPCR Part A	<i>Construction products and services. Version 1.0. 2017, EPD-Norge.</i>
NPCR 013 Part B	<i>Steel and Aluminium Construction Products. Version 3.0. 2019, EPD-Norge.</i>
Ovako	<i>EPD. Hot-rolled bar steel production in Imatra, Ovako. Publication date 2019-03-20. EPD International AB. EPD registration number S-P-01369.</i>
A. Furberg & R. Arvidsson & S. Molander	<i>Environmental life cycle assessment of cemented carbide (WC-Co) production. Journal of Cleaner Production, Volume 209, 1 February 2019, Pages 1126-1138. DOI: https://doi.org/10.1016/j.jclepro.2018.10.272</i>

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