EMECA

WORLD'S FINEST PILING COMPONENTS

7.4.2021

EPD®

ECO PLATFORM EPD EN 15804 VERIFIED

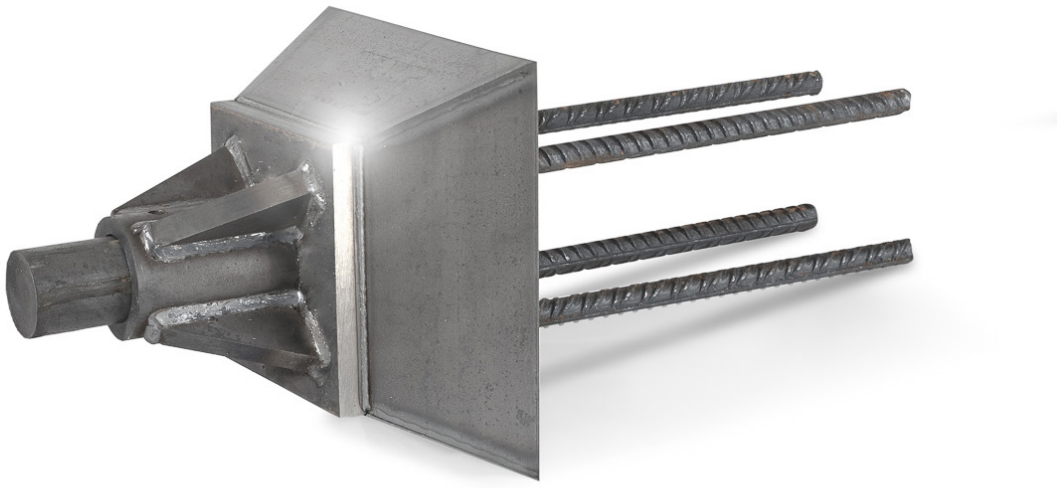
ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

ROCK POINTS FROM EMECA OY

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-03164
Publication date:	2021-04-07
Valid until:	2026-03-02

An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued registration and publication at www.environdec.com



Emeca Oy • Metallitie 47 • FIN-27710 Köyliö, FINLAND • +358 44 3006 783 • emeca.fi

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GENERAL INFORMATION

PROGRAMME INFORMATION

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

EPD®

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products. Version 1.0. 2019-12-20.
UN CPC code: 412.

PCR review was conducted by: The Technical Committee of the International EPD® System.
Chair: Claudia A. Peña
Contact via info@environdec.com

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier: Hannu Karppi, Ramboll Finland Oy

In case of recognised individual verifiers:
Approved by: The International EPD® System

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable.
EPDs of construction products may not be comparable if they do not comply with EN 15804.
For further information about comparability, see EN 15804 and ISO 14025.

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COMPANY INFORMATION

OWNER OF THE EPD:
Emeca Oy

CONTACT:
Petri Koivunen
Metallitie 47
27710 Köyliö, Finland
+358 443000325
petri.koivunen@emeca.fi

DESCRIPTION OF THE ORGANIZATION:
Emeca Oy is the leading manufacturer and supplier of equipment for pre-cast concrete driven piles in Finland. Our main products are pile joints and rock points.

PRODUCT-RELATED OR MANAGEMENT SYSTEM-RELATED CERTIFICATIONS:
Emeca has signed a running agreement of quality control with Eurofins Expert Services.

NAME AND LOCATION OF PRODUCTION SITE:
Emeca Oy
Metallitie 47
27710 Köyliö, Finland

PRODUCT INFORMATION

PRODUCT NAME: Rock Points

PRODUCT IDENTIFICATION: Rock point for concrete piles.

PRODUCT DESCRIPTION: Rock points are made by Emeca in Finland. Rock points are made of structural steel, reinforcement bars and top pins.

UN CPC code: 412 – Products of iron or steel

LCA INFORMATION

DECLARED UNIT: 1 kg of product

REFERENCE SERVICE LIFE: N/A

TIME REPRESENTATIVENESS: The data is collected from 06/2019-05/2020. The database data are from 2019 and 2016 and the used EPDs are from 2019 and 2020.

DATABASE(S) AND LCA SOFTWARE USED: SimaPro (release 9.1.0.11), and database ecoinvent 3.6 and Industry data 2.0. Reinforcement bar data and hot rolled bar steel data are collected from the manufacturers´ EPDs.

DATA QUALITY: The EPD for hot rolled bar steel is based on standard EN 15804:2012 + A1:2013, and it lacks data required in the new standard EN 15804:2012 + A2:2019. This may affect the results in the missing impact categories, i.e. marine and terrestrial eutrophication, abiotic depletion – fossil fuels, and water use, in module A1.

DESCRIPTION OF SYSTEM BOUNDARIES: The EPD type is cradle to gate with options, modules C1–C4, and module D (A1–A3, C, D and additional modules). The additional module is A4.

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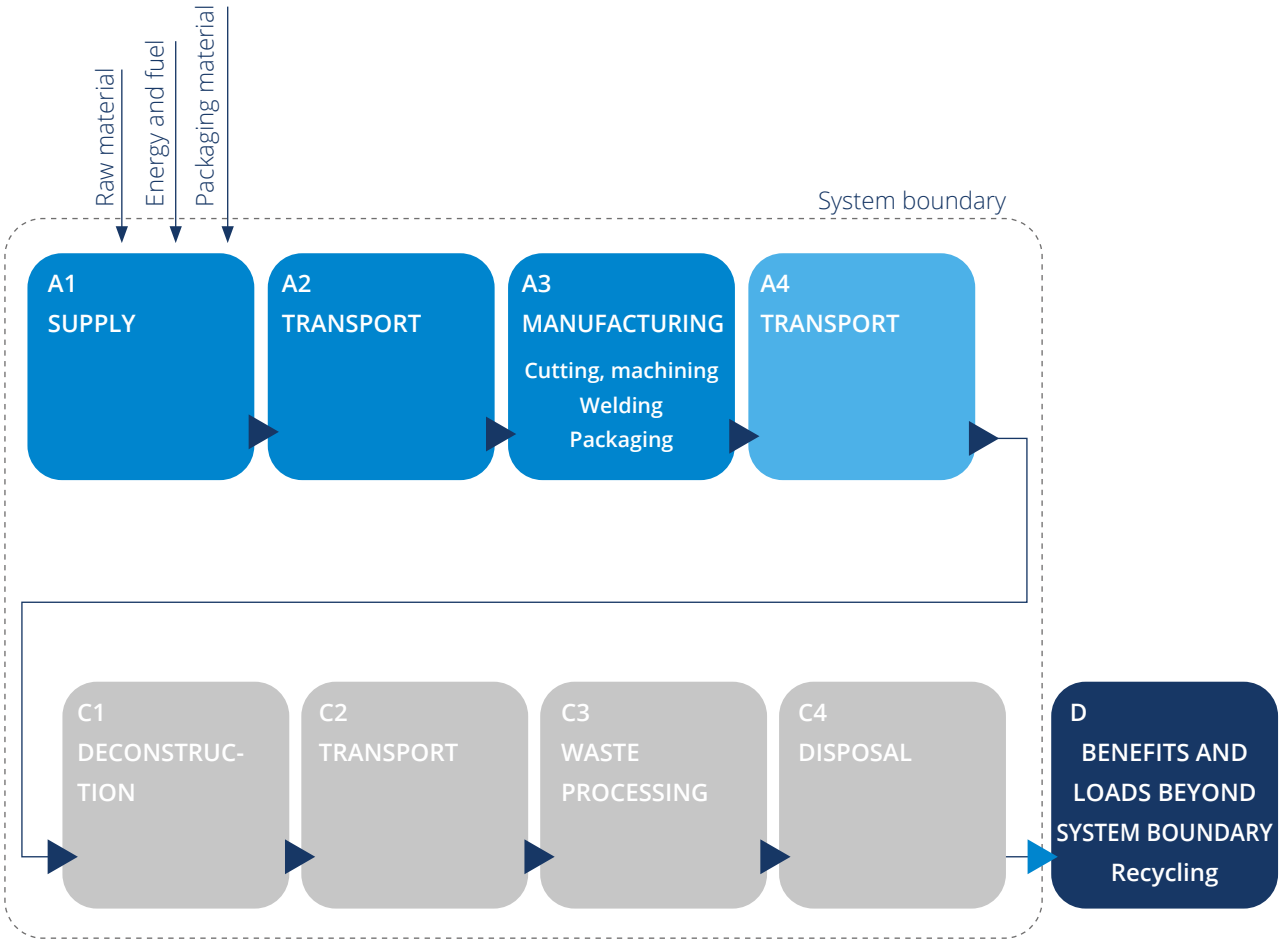
EXCLUDED LIFECYCLE STAGES: Modules A5 and B1-B5 are not assessed. In B1-B5, only minimal maintenance is required. The excluded modules are very dependent on particular scenarios for a specific building or construction work.

NUMBERS: Numbers are expressed using the French style (comma as the decimal separator).

SYSTEM DIAGRAM:



MORE INFORMATION:

LCA PRACTITIONER: Ecobio Oy, info@ecobio.fi
Explanatory material can be obtained from the EPD owner and/or LCA practitioner.

CUT-OFF RULE: 1% cut-off rule was applied for input flows in the inventory. The material used is as up-to-date as possible and at most five years old for producer specific data and at most ten years old for generic data.

ELECTRICITY SOURCE: The electricity is market priced electricity from Finland. The emission factor used for the electricity is 327 g CO_2-eq./kWh. The emission factor includes the total CO_2 eq. emissions from electricity production and building the power plants.

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MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION:

	Product stage		Construction process stage			Use stage						End of life stage					Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	EU27	EU27	EU27	EU27	-	-	-	-	-	-	-	-	EU27	EU27	EU27	EU27	EU27
Specific data	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	not relevant					-	-	-	-	-	-	-	-	-	-	-	-

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CONTENT INFORMATION

PRODUCT COMPONENTS	Weight kg	Post-consumer material weight-%	Renewable material weight-%
Hot rolled steel, low alloyed	0,39	0 %	
Cold formed steel	0,001	0 %	
Reinforcement bar	0,20	100 %	
Hot rolled bar steel	0,41	50 %	
TOTAL	1	47 %	0 %

PACKAGING MATERIALS	Weight kg	Weight-% (versus the product)
Wood	0,02	2 %
Steel	9E-04	0,09 %
Plastic (PE)	6E-05	0,006 %
TOTAL	0,02	2 %

The precision tubes do not contain substances which exceed the limits for registration with the European Chemicals Agency regarding the "Candidate List of Substances of Very High Concern for Authorisation".

PACKAGING

DISTRIBUTION PACKAGING: The products are packed with steel straps to bind the products and wooden pallets. The wooden pallets are reusable. Packaging tape and stickers are made of plastic.

MANUFACTURING

The products manufacturing processes consist of the following phases: The steel materials are cut or sawed to required shape. A forming or a machining process is made for needed parts. The final assembly is performed by welding.

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ENVIRONMENTAL INFORMATION

POTENTIAL ENVIRONMENTAL IMPACT - MANDATORY INDICATORS ACCORDING TO EN 15804

RESULTS PER DECLARED UNIT

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1,20E+00	1,03E-01	8,85E-02	1,39E+00	4,05E-02	7,53E-04	8,26E-03	0	7,23E-04	-7,94E-01
GWP-biogenic	kg CO_2 eq.	2,73E-02	5,73E-04	2,49E-02	5,28E-02	2,64E-04	2,02E-06	5,39E-05	0	5,91E-06	5,26E-03
GWP-luluc	kg CO_2 eq.	1,09E-03	4,29E-05	6,21E-04	1,76E-03	1,45E-05	8,50E-08	2,96E-06	0	2,19E-07	4,34E-05
GWP-total	kg CO_2 eq.	1,23E+00	1,04E-01	1,14E-01	1,45E+00	4,08E-02	7,55E-04	8,32E-03	0	7,30E-04	-7,89E-01
ODP	kg CFC 11 eq.	8,27E-08	1,86E-08	1,44E-08	1,16E-07	7,41E-09	1,27E-10	1,51E-09	0	2,41E-10	2,58E-08
AP	mol H^+ eq.	9,64E-03	1,09E-03	4,15E-04	1,11E-02	1,67E-04	7,78E-06	3,41E-05	0	7,00E-06	-1,67E-03
EP-freshwater	kg P eq.*	6,86E-04	6,81E-06	4,68E-05	7,39E-04	3,01E-06	4,29E-08	6,15E-07	0	7,64E-08	1,33E-04
EP-marine	kg N eq.	1,12E-03	2,89E-04	7,87E-05	1,49E-03	5,01E-05	3,41E-06	1,02E-05	0	2,42E-06	-3,43E-04
EP-terrestrial	mol N eq.	1,13E-02	3,19E-03	7,98E-04	1,53E-02	5,48E-04	3,73E-05	1,12E-04	0	2,65E-05	-3,66E-03
POCP	kg NMVOC eq.	4,49E-03	8,67E-04	2,05E-04	5,56E-03	1,64E-04	1,02E-05	3,34E-05	0	7,52E-06	-1,36E-03
ADP-minerals &metals**	kg Sb eq.	2,16E-05	2,34E-06	5,12E-07	2,45E-05	1,11E-06	1,32E-09	2,26E-07	0	6,75E-09	2,75E-06
ADP-fossil**	MJ	1,14E+01	1,51E+00	8,83E-01	1,38E+01	6,03E-01	1,03E-02	1,23E-01	0	2,04E-02	-7,21E+00
WDP	m^3	1,25E-02	-1,84E-04	3,33E-04	1,27E-02	-9,29E-05	-7,78E-08	-1,89E-05	0	2,79E-06	-1,38E-02
Acronyms	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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* The EP-freshwater indicator is calculated in unit kg P eq.

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

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POTENTIAL ENVIRONMENTAL IMPACT - ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

RESULTS PER DECLARED UNIT

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	1,20E+00	1,03E-01	8,91E-02	1,39E+00	4,05E-02	7,53E-04	8,26E-03	0	7,24E-04	-7,94E-01

USE OF RESOURCES

RESULTS PER DECLARED UNIT

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1,50E+00	1,91E-02	5,83E-01	2,10E+00	8,69E-03	8,33E-05	1,77E-03	0	1,67E-04	1,91E-01
PERM	MJ	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1,50E+00	1,91E-02	5,83E-01	2,10E+00	8,69E-03	8,33E-05	1,77E-03	0	1,67E-04	1,91E-01
PENRE	MJ	1,89E+01	1,54E+00	2,55E+00	2,30E+01	6,21E-01	1,05E-02	1,27E-01	0	2,07E-02	-5,66E+00
PENRM	MJ	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,89E+01	1,54E+00	2,55E+00	2,30E+01	6,21E-01	1,05E-02	1,27E-01	0	2,07E-02	-5,66E+00
SM	kg	3,94E-01	0	0	3,94E-01	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m^3	1,55E-02	1,42E-04	3,10E-03	1,87E-02	6,49E-05	6,44E-07	1,32E-05	0	2,20E-05	-8,07E-02
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

[1]The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

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WASTE PRODUCTION AND OUTPUT FLOWS

WASTE PRODUCTION

RESULTS PER DECLARED UNIT

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,33E-03	3,51E-06	9,42E-07	2,34E-03	1,61E-06	2,87E-08	3,29E-07	0	3,08E-08	1,94E-06
Non-hazardous waste disposed	kg	3,74E-01	5,87E-02	3,48E-01	7,81E-01	2,94E-02	1,90E-05	6,01E-03	0	1,40E-01	1,41E-02
Radioactive waste disposed	kg	2,52E-04	1,05E-05	2,17E-05	2,84E-04	4,20E-06	7,08E-08	8,57E-07	0	1,35E-07	1,87E-05

OUTPUT FLOWS

RESULTS PER DECLARED UNIT

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	0,17	0,17	0	0	0	0,86	0	0
Materials for energy recovery	kg	0	0	0,006	0,006	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0

INFORMATION ON BIOGENIC CARBON CONTENT

RESULTS PER FUNCTIONAL OR DECLARED UNIT

BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0,01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

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ADDITIONAL INFORMATION

TRANSPORT TO CONSTRUCTION SITE (A4)

The products are transported to the construction site by road and by sea. The module is based on a scenario defined for the product transport to construction (A4) separating the scenarios of road and sea transport. The transport distances were estimated based on 2019-2020 data for Emeca Oy's product taking into account the country-specific transport scenarios and adjusting the distribution of sales in the respective countries.

TRANSPORTS TO THE CONSTRUCTION SITE, ROAD

Parameter	Unit
Vehicle type	Lorry, 16-32 metric ton
Load capacity	37 % (ecoinvent 3.6)
Distance	34-1735 km
Bulk density	700 kg/m^3

TRANSPORTS TO THE CONSTRUCTION SITE, SEA

Parameter	Unit
Vehicle type	Ferry
Load capacity	65 % (LIPASTO)
Distance	265 km
Bulk density	700 kg/m^3

END-OF-LIFE (C)

The products are collected from their point of installation after their expected service life. They are transported to treatment or to landfill in the end-of-life phase.

Parameter	Unit
Collection process	collected separately
Transportation	50 km road
Recovery system	86 % recycled
Disposal	14 % to landfill

In the scenario, the product is collected in the demolition process, and 86 % of the products are recycled and rest is transported to landfill. Alternatively, the products can also be left to the ground and not collected.

RECYCLING AND REUSE (D)

The recycled steel substitutes primary steel with a ratio of 1:1. The amount of post-consumer steel scrap entering the product system is subtracted from the amount of steel going to recycling as it has already been recovered from a previous system.

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REFERENCES

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PCR 2019:14 Construction products. Version 1.0.
EPD: NLMK-Kaluga LLC. Carbon steel reinforcement bars. Publication date 2020-03-26.
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SteelConstruction.info (2013): The recycling and reuse survey (link https://www.steelconstruction.info/The_recycling_and_reuse_survey).