

# Environmental Product Declaration



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

## Northcone conical pole

from

### Northcone AB



Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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*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](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): <i>PCR 2019:14 Construction products (EN 15804:A2) (1.11)</i> General Programme Instructions of the International EPD® System. Version 4.0
PCR review was conducted by: <i>Claudia A. Peña, University of Concepción, Chile.</i> <i>The review panel may be contacted via the Secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a>.</i>
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: <i>Martyna Mikusinska, Sweco AB, Sweden</i>
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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.

## Company information

Owner of the EPD: Northcone AB

Contact: Anders Blomqvist

Description of the organisation:

Northcone develops crash safe lighting poles with the goal to improve traffic safety and to reduce the environmental impact. Thanks to unique 3D-roll forming and innovative product design, Northcone can produce lighting poles made by 2 mm high-strength steel with Magnelis® alloy. This results in light, and very strong poles with significantly better corrosion and blasting protection.

Product-related or management system-related certifications:

All Northcone's crash safe lighting poles comply with the SS-EN 12767 standard, which is the norm for crash safe poles, the harmonized standard SS-EN-40 for light pole manufacturing, and CE marking.

Manufacturer name and address

Northcone AB  
Lindetorpsvägen 11  
SE-121 63 Johanneshov

Location of production site

Rågåkersgatan 5  
781 74 Borlänge  
Sweden

## Product information

Product name: Northcone conical pole 8m

Product description:

Northcone's lighting poles are made of 2 mm high-strength steel, covered with a coating of zinc, aluminium and 3% magnesium - called Magnelis®. Magnelis® itself is a coating with significantly better protection against corrosion than hot-dipped alternatives on the market. Magnelis® is C5 resistant 20 years, which provides all Northcone's lighting poles with a strong, long-lasting protection in tough environments with acids and ammonia. Northcone produces a large variety of lighting poles for different applications and usages. All products have a conical design, and the height varies between 3 to 12 meters. The conical poles are available with or without arms and lighting armature. This EPD is referring to a standard conical pole of 8 meters height.

The environmental impact for the Magnelis® steel sheet in the EPD originates from the single product EPD ECO-00000826 "Hot dip galvanized steel with Magnelis® coating" by ArcelorMittal.

Northcone is only manufacturing the conical poles, therefore the arms and lighting armatures are excluded from this EPD:

Manufacturing process

The lighting pole steel material is manufactured by ArcelorMittal in Belgium and transported in sheet rolls to Osby, Sweden. A cutting process of the steel sheets takes place and then these plates are bended, and laser welded into a cone. The conic steel pole is then transported to an external factory where the arms and lighting armature are being installed.

UN CPC code: 42

Geographical scope: Product stage: Europe and Sweden; End of life stage: Sweden

## LCA information

### Declared unit:

1 standard lighting pole of 8m height

Conversion factor: 41kg/piece

Time representativeness: The data represents the year 2020.

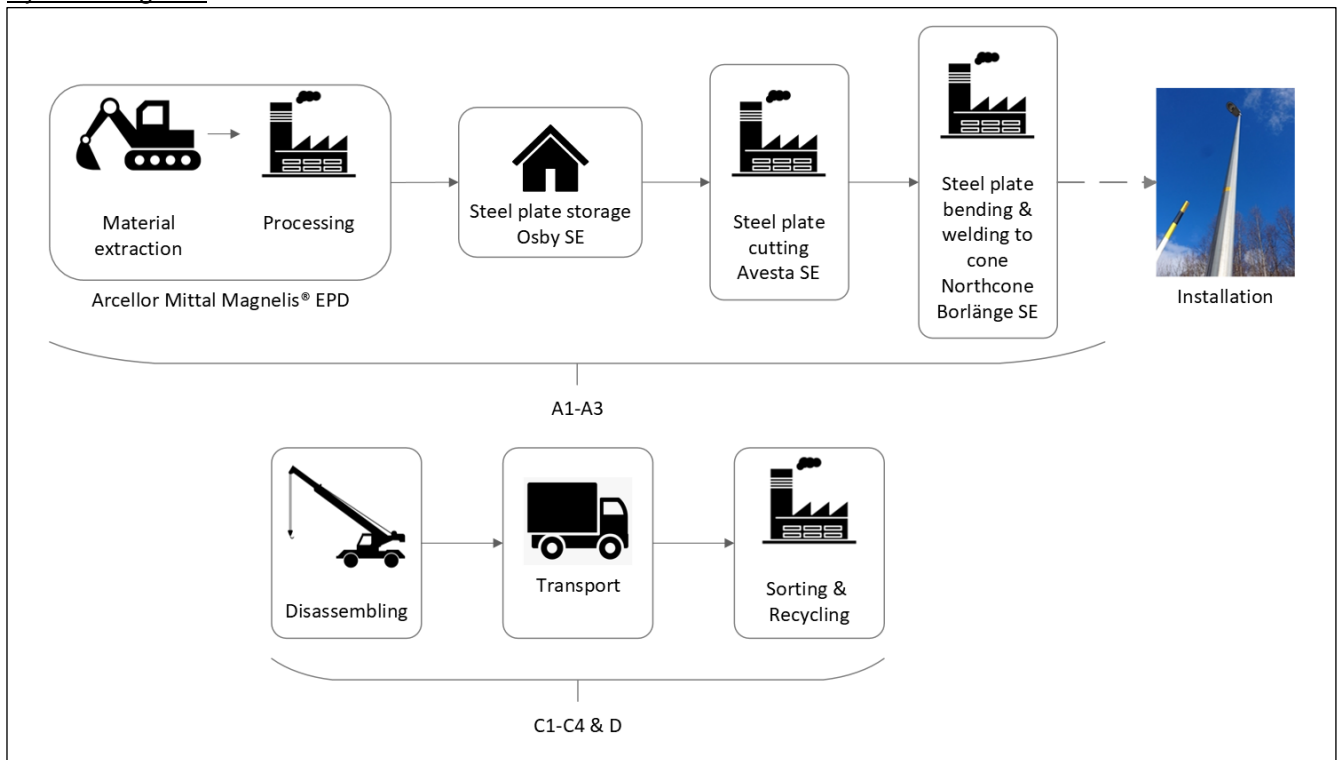
### Database(s) and LCA software used:

The LCA software is SimaPro 9.3.0.3 and the database is EcoInvent 3.8. When modelling in Simapro, Ecoinvent data (updated Februari 2022) has been used for generic data.

### Description of system boundaries:

a) Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

### System diagram:



Included	Excluded
<b>Production (A1-A3)</b> <ul style="list-style-type: none"> <li>Raw materials and production of raw and consumed raw materials. (Arcellor Mittal EDP)</li> <li>Transport of raw materials to the production factory in Belgium. (Arcellor Mittal EDP)</li> <li>Energy and fuel for production (Arcellor Mittal EDP)</li> <li>Transport from Belgium to Northstone's factory in Borlänge.</li> <li>Energy use in Northstone's factory</li> <li>Material spill during the manufacturing process.</li> <li>Production of packaging material</li> <li>Transport of recyclable waste material to recycling facilities*</li> </ul>	
	<b>Installation (A4-A5)</b>
	<b>Use phase (B1-B7)</b>
<b>End of life (C1-C4)</b> <ul style="list-style-type: none"> <li>Disassembly of lighting pole and transportation to waste management facilities.</li> </ul>	
<b>Benefits and loads beyond the system boundary (D)</b> <ul style="list-style-type: none"> <li>Steel recycling</li> </ul>	

More information:

LCA practitioners: Ida Adolfsson and Xenofon Lemperos at Tyréns Sverige AB

Allocations:

The production processes are referred to only one type of product which is the lighting pole. As factory produces a variation of different heights, mass allocation was used for energy consumption and materials in the product in order to determine the environmental impact of the 8 meters high lighting pole.

Assumptions:

- The environmental impact for the steel plates is based on data from single product EPD for "Hot dip galvanized steel with Magnelis® coating" EPD-ARM-20170140-IBD1-EN.
- Assumed density of lubricant oil 0,885 kg /l
- Assumed that one euro pallet weights 20 kg and is used to transport 1 tonne of lighting poles (24 pieces).
- Transport of packing pallets 45 km from Hedemora to Borlänge
- Transport of plastic tape from Kölledda to Borlänge 1 400 km
- Transport of lubricating oil is below the cut-off limit and therefore was not included.
- Laser welding is using premix laser gas, which is a of CO<sub>2</sub>, He and N. The amount of premix gas has been assumed from the Ecoinvent process (4.38 g gas / tonne product) and the time to weld a pole is 1 min.
- Infrastructure (buildings, roads, parking spaces) for Northstone's factory has been modelled with generic data from the Ecoinvent database.
- The time for disassembly of an installed lighting pole was assumed from previous LCA study to 10 min (module C1)
- Transport distance of dismantled post (module C2) was assumed to be 50 km
- Assumed that 100% of the product can be recycled.

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X	
Geography	SE/EU	SE/EU	SE	ND	ND	ND	ND	ND	ND	ND	ND	ND	SE	SE	SE	SE	SE	
Specific data used	82%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-	-

## Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Magnelis® coated steel	41	20	0
TOTAL	41	20	0
Packaging materials	Weight, kg	Weight-% (versus the product)	
Plastic straps	0.0205	0.0005	
Wood	0.82	0.02	
TOTAL	0.8405	0.0205	

The product does not include any dangerous substances from the candidate list of SVHC.

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C2	C3	D
GWP-fossil	kg CO <sub>2</sub> eq.	1.58E+02	6.10E-01	3.34E-01	1.65E-01	-5.51E+01
GWP-biogenic	kg CO <sub>2</sub> eq.	1.43E+01	5.23E-04	8.96E-04	2.94E-03	2.16E-01
GWP-luluc	kg CO <sub>2</sub> eq.	2.67E-01	6.04E-05	1.34E-04	1.61E-04	-1.45E-02
GWP-total	kg CO <sub>2</sub> eq.	1.73E+02	6.11E-01	3.35E-01	1.68E-01	-5.49E+01
ODP	kg CFC 11 eq.	4.17E-06	1.29E-07	7.74E-08	2.95E-08	-2.22E-06
AP	mol H <sup>+</sup> eq.	5.22E-01	3.40E-03	9.49E-04	1.00E-03	-1.95E-01
EP-freshwater	kg P eq.	2.98E-02	1.87E-05	2.19E-05	5.20E-05	-2.14E-02
EP-marine	kg N eq.	1.51E-01	1.37E-03	1.93E-04	3.24E-04	-4.67E-02
EP-terrestrial	mol N eq.	1.31E+00	1.50E-02	2.10E-03	3.46E-03	-4.94E-01
POCP	kg NMVOC eq.	4.64E-01	4.25E-03	8.07E-04	9.80E-04	-2.75E-01
ADP-minerals&metals*	kg Sb eq.	3.03E-03	3.11E-07	1.18E-06	8.27E-07	5.30E-05
ADP-fossil*	MJ	1.79E+03	8.30E+00	5.06E+00	2.72E+00	-5.57E+02
WDP	m <sup>3</sup>	1.20E+01	1.18E-02	1.49E-02	1.72E-02	-2.75E+00
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					

\* 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.



## Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C2	C3	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	1.60E+02	6.05E-01	3.31E-01	1.64E-01	-5.26E+01

## Use of resources

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C1	C3	D
PERE	MJ	3.56E+02	4.67E-02	7.24E-02	2.04E-01	-9.99E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.56E+02	4.67E-02	7.24E-02	2.04E-01	-9.99E+00
PENRE	MJ	1.83E+03	8.81E+00	5.37E+00	2.88E+00	-5.87E+02
PENRM	MJ.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.83E+03	8.81E+00	5.37E+00	2.88E+00	-5.87E+02
SM	kg	8.20E+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
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	1.26E+01	1.18E-02	1.49E-02	1.72E-02	-2.75E+00
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					

<sup>1</sup> 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 almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Waste production and output flows

### Waste production

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C2	C3	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Output flows

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C2	C3	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	9.00E+00	0.00E+00	0.00E+00	4.10E+01	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Information on biogenic carbon content

Results per declared unit		
BIOTIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0.47

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

## Additional information

### Additional environmental impact indicators from EN 15804

Results per declared unit						
Indicator	Unit	Tot.A1-A3	C1	C2	C3	D
Particulate matter	disease inc.	3.99E-06	5.69E-08	2.11E-08	1.24E-08	-3.43E-06
Ionising radiation	kBq U-235 eq	3.19E+01	3.74E-02	2.61E-02	3.32E-02	-9.26E-01
Ecotoxicity, freshwater	CTUe	3.73E+03	4.86E+00	3.97E+00	2.13E+00	-1.62E+03
Human toxicity, cancer	CTUh	1.30E-06	6.91E-10	1.28E-10	1.08E-10	-2.95E-07
Human toxicity, non-cancer	CTUh	3.02E-06	4.00E-09	4.01E-09	2.28E-09	-1.09E-06
Land use	Pt	1.03E+03	1.06E+00	3.53E+00	2.33E+00	-9.52E+01

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