



**epd-norge.no**  
The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Metacon AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1915-839-EN
Registration number:	NEPD-1915-839-EN
ECO Platform reference number:	-
Issue date:	04.11.2019
Valid to:	04.11.2024

## Kaldformedede hulprofiler (Cold formed welded structural hollow sections)

Metacon AS  
[www.epd-norge.no](http://www.epd-norge.no)

**Metacon**



## General information

**Product:**

Kaldformede hulprofiler  
(Cold formed welded structural hollow sections)

**Program operator:**

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: (+47) 23 08 82 92  
e-mail: [post@epd-norge.no](mailto:post@epd-norge.no)

**Declaration number:**

NEPD-1915-839-EN

**ECO Platform reference number:**
**This declaration is based on Product Category Rules:**

CEN Standard EN 15804 serves as core PCR  
NPCR Part A: Construction products and services  
NPCR 013 rev1 08/13  
NPCR 013:2019 Part B for Steel and aluminium construction

**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:**

Per 1kg steel from cradle to gate

**Declared unit with options (A1-A4, C1-C4, D):**

Per 1 kg steel from cradle to gate

**Functional unit:**

Not relevant for cradle-to-gate

**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:

Lars G. F. Tellnes

Independent verifier approved by EPD Norway

**Owner of the declaration:**
**Metacon AS**

Contact person: Henning Klausen  
Phone: +47 69 22 44 11  
e-mail: [firmapost@metacon.no](mailto:firmapost@metacon.no)

**Manufacturer:**
**Metacon AS**

Bredmyra 4, 1739 Borgenhaugen  
Phone: +47 69 22 44 11  
e-mail: [firmapost@metacon.no](mailto:firmapost@metacon.no)

**Place of production:**

Raw material supply from European steel mills  
Manufacturing in Norway

**Management system:**
**Organisation no:**

994 925 954 MVA

**Issue date:**

04.11.2019

**Valid to:**

04.11.2024

**Year of study:**

2019

**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:**

Michael M. Jenssen, Asplan Viak

Approved

Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Circular, square and rectangular sections used in building frame structures.

### Technical data:

Dimensions: Square HS: 40x3-400x20. Rectangular HS: 50x25x2-400x200x12,5 and Circular HS: 21,3x2 - 711x60. Steel grade ≤ S355. EN 10219 EN 1090-2 standards are applied.

### Product specification:

Product composition:

Materials	kg	%
Alloyed steel	0,99	99 %
Paints	0,01	1 %

### Market:

Norway

### Reference service life, product:

Not relevant for cradle to gate

### Reference service life, building:

Not relevant for cradle to gate

## LCA: Calculation rules

### Declared unit:

Per 1 kg steel from cradle to gate

### System boundary:

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

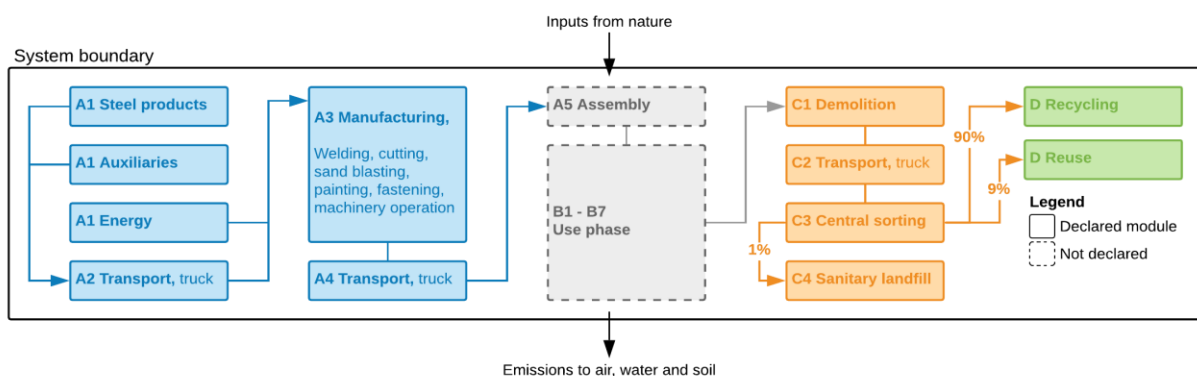


Figure 1: Flowchart showing the system boundaries.

### Data quality:

General requirements and guidelines concerning the use of generic and specific data and the quality of those are as described in EN 15804: 2012+A1:2013, clause 6.3.6 and 6.3.7. The data is representative according to temporal, geographical and technological requirements. Databases used have been ecoinvent v3.4 and a supplier EPD (NEPD-475-331-EN). Calculations have been carried out using Simapro v8.5.

### Temporal:

Data for use in module A3 is supplied by the manufacturer and consists of recorded and calculated amounts of specific material and energy consumption for the site. Specific data has been collected for 2018. Generic data has been created or updated within the last 10 years. Any exceptions are documented in the LCA-report.

### Geographical:

The product included in this EPD is manufactured in Norway and is representative for the Norwegian market. Best available proximations are used where Norwegian-specific data are unavailable.

### Technological:

Data represents technology in use.

### 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.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Input flows, wastes and emissions are allocated equally among all products through mass allocation.

### Benefits and loads beyond the system boundary (module D):

Module D is provided by the supplier (NEPD-475-331-EN), and is calculated using the worldsteel methodology, taking into account the potential environmental benefit and burden from net new scrap consumption.

## LCA: Scenarios and additional technical information

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

### Transportation scenarios

Transport in A2 describes the transport of steel products from Europe, via a nearby supplier, to Metacon at Rakkestad.

Transportation scenarios for waste are based on the recorded distance to the waste management company used. Distances to final waste handling provided by Avfall Norge (Raadal et al., 2009).

Distance to building site according to NPCR 013 Part B. For an estimation of impacts from distances to site other than the one provided in A4, please use the transport calculator provided by Østfoldforskning AS on behalf of EPD-Norway. It can be found here: <https://lca.no/transportkalkulator/>

Capacity utilization has been calculated by dividing the average load by the maximum load as they are reported in ecoinvent v3.4. Fuel consumption as given in ecoinvent v3.4. Load factor as reported by ecoinvent.

### End of life scenario

A 99% recovery rate assumed with 88% going to recycling, 9% to reuse, leaving 1% to landfilling.

### Transport from production place to user (A4)

Type	Module	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit
Truck	A4	44	Lorry >32t EURO5	300	0,022	l/tkm
Waste collection	C2	50	Lorry 21t	19	0,391	l/tkm
Truck	C2	26	Lorry 7,5-16t EURO5	278	0,044	l/tkm

### End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0,09
Recycling	kg	0,90
Energy recovery	kg	0
To landfill	kg	0,01

### Benefits and loads beyond the system boundaries (D)

	Unit	Value
Net new scrap	kg	0,7

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

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries
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 <sub>2</sub> -eqv	2,78E+00	2,59E-02	2,15E-02	6,86E-02	2,19E-04	5,30E-05	-1,36E+00	
ODP	kg CFC11-eqv	1,92E-08	5,11E-09	3,87E-09	1,23E-08	2,61E-11	1,77E-11	4,31E-08	
POCP	kg C <sub>2</sub> H <sub>4</sub> -eqv	6,47E-04	4,13E-06	4,30E-06	1,14E-05	5,97E-08	1,94E-08	-6,75E-04	
AP	kg SO <sub>2</sub> -eqv	5,90E-03	8,37E-05	1,63E-04	2,47E-04	1,25E-06	3,95E-07	-2,10E-03	
EP	kg PO <sub>4</sub> <sup>3-</sup> -eqv	5,94E-04	1,42E-05	3,51E-05	4,63E-05	2,73E-07	6,81E-08	-9,20E-05	
ADPM	kg Sb-eqv	2,75E-05	5,06E-08	7,21E-09	1,54E-07	2,15E-09	6,10E-11	-1,37E-05	
ADPE	MJ	2,85E+01	4,08E-01	3,09E-01	9,89E-01	2,91E-03	1,51E-03	-1,44E+01	

**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	9,80E-01	6,51E-03	1,66E-03	1,02E-02	1,51E-02	2,80E-05	7,90E-01	
RPEM	MJ	1,38E-14	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
TPE	MJ	9,80E-01	6,51E-03	1,66E-03	1,02E-02	1,51E-02	2,80E-05	7,90E-01	
NRPE	MJ	1,63E+01	4,20E-01	3,12E-01	1,01E+00	3,78E-03	1,54E-03	-1,10E+00	
NRPM	MJ	1,31E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,20E+01	
TRPE	MJ	3,01E+01	4,20E-01	3,12E-01	1,01E+00	3,78E-03	1,54E-03	-1,28E+01	
SM	kg	2,00E-01	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 <sup>3</sup>	3,90E-02	8,91E-05	4,22E-05	4,22E-05	4,22E-05	1,69E-06	-3,53E-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	8,57E-02	2,13E-07	1,39E-07	5,10E-07	5,54E-09	1,08E-09	1,00E-02	
NHW	kg	3,99E-02	3,66E-02	3,40E-04	3,46E-02	1,05E-04	1,00E-02	3,69E-02	
RW	kg	5,64E-02	2,95E-06	2,17E-06	7,01E-06	2,12E-08	9,96E-09	4,61E-04	

**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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E-02	0,00E+00	0,00E+00	
MR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E-01	0,00E+00	0,00E+00	
MER	kg	7,39E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
EEE	MJ	5,71E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
ETE	MJ	4,65E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**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

The electricity mix used in the manufacturing stage (A3) is specific to Norwegian electricity production and imports, transformed to medium voltage (including the transmission network; direct emissions to air; electricity losses during transmission). Reference year: 2014.

Data source	Amount	Unit
ecoinvent v3.4	0,0276	kg CO <sub>2</sub> -eqv/kWh

### Dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.<sup>1</sup>
- 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 (Avfallsforsikten, Annex III), see table.

<sup>1</sup>No substances as given by REACH are used or have been added to the production.

### Indoor environment





No tests have been carried out on the product concerning indoor climate.

### Carbon footprint

Carbon footprint has not been worked out for the product.

## Bibliography

EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
EN 10210	<i>Cold formed welded structural hollow sections of non-alloy and fine grain steels - Part 1: Technical delivery conditions</i>
EN 1090-2:2018	<i>Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures</i>
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>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
Jenssen, M. M. (2019)	<i>LCA-rapport, Metacon AS: Stålkomponenter</i>
NEPD-475-331-EN	<i>Structural hollow sections, precision tubes, line pipes, steel sections and piles - SSAB Europe Oy</i>
NPCR 013rev1 (2013)	<i>Product Category Rules Steel as Construction Material</i>
NPCR Part A (2017)	<i>Construction products and services</i>
Raadal et al. (2009)	<i>Klimaregnskap for avfallshåndtering. Fase I og II: Glassemballasje, metalemballasje, papir, papp, plastemballasje, våtorganisk avfall, treavfall og restavfall fra husholdninger. Avfall Norge–Rapport 5/2009</i>
Worldsteel (2017)	<i>World Steel Association Life Cycle Inventory Methodology Report, Brussels: World Steel Association</i>

 <b>epd-norge.no</b> The Norwegian EPD Foundation	<b>Program operator</b> The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norway	Phone: +47 97722020  e-mail: <a href="mailto:post@epd-norge.no">post@epd-norge.no</a> web: <a href="http://www.epd-norge.no">www.epd-norge.no</a>
 <b>epd-norge.no</b> The Norwegian EPD Foundation	<b>Publisher</b> The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norway	Phone: +47 97722020  e-mail: <a href="mailto:post@epd-norge.no">post@epd-norge.no</a> web: <a href="http://www.epd-norge.no">www.epd-norge.no</a>
	<b>Owner of the declaration</b> Metacon AS Bredmyra 4, 1739 Borgenhaugen Norway	Phone: +47 69 22 44 11 Fax e-mail: <a href="mailto:firmapost@metacon.no">firmapost@metacon.no</a> web: <a href="http://www.metacon.no">www.metacon.no</a>
	<b>Author of the Life Cycle Assessment</b> Asplan Viak AS Michael Myrvoid Jenssen Abels gate 9 7030 Trondheim	Phone: +47 41 79 94 17  e-mail: <a href="mailto:michael.jenssen@asplanviak.no">michael.jenssen@asplanviak.no</a>  web: <a href="http://www.asplanviak.no">www.asplanviak.no</a>