ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Owner of declaration	Eesti Traat OÜ
Program operator	The Building Information Foundation RTS sr
Declaration number	RTS_304_24
Publishing date	29.8.2024
EPD valid until	29.8.2029

COLD AND HOT FORMED STEEL REINFORCEMENT MESH AND REBAR PRODUCTS

EESTI TRAAT
REINFORCEMENT

ECO PLATFORM EPD VERIFIED

THE BUILDING INFORMATION FOUNDATION RTS · EPD

LCA SUPPORT



GENERAL INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPDs within the same product category but from different programs may not be comparable.

EPD program operator

The Building Information Foundation RTS sr

Rakennustietosäätiö RTS sr, Malminkatu 16 A, 00100 Helsinki, Finland

https://ymparisto.rakennustieto.fi/en/rakennustieto-epds



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Managing Director

Publishing date

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Valid until

29.8.2029

Product category rules

The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) is used.

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Vesta Consulting UAB

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Verification date

20.06.2024

Independent verification of this EPD and data, according to ISO 14025:2010:

☐ Internal ☑ External

Manufacturer

Eesti Traat OÜ

Address

Lõuna tee 10, 74201, Loo alevik, Jõelähtme vald, Harjumaa, Estonia

Contact details

info@eestitraat.ee

Website

www.eestitraat.ee

Place of production

Lõuna tee 10, 74201, Loo alevik, Jõelähtme vald, Harjumaa, Estonia

Products

welded mesh, welded/bended mesh, lattice girder, cut and bent reinforcements, bi-steel, spacer and rebundled streight reinforcement steel.

Declared unit

1 kilogram

Mass of declared unit

1 kg

Data period

2023

PRODUCT INFORMATION

Product name	Cold and hot-formed reinforcement steel products (welded mesh, welded/bended mesh, lattice girder, cut and bend reinforcements, bi-steel, spacer, re-bundled straight reinforcement steel).
Place of production	Estonia

PRODUCT DESCRIPTION AND APPLICATION

Welded standard and special sized meshes, bent meshes. Cut and bent reinforcements, bespoke reinforcement according to customer drawings and specifications.

The products are used as reinforcements elements in the construction of load-bearing concrete/masonry structures.

The EPD model is calculated as the averages of several product variations. The EPD does not cover any Zinc coated products.

TECHNICAL SPECIFICATIONS AND PRODUCT STANDARDS

Eesti Traat OÜ manufacturers products from B500A (cold-formed) and B500B (hot-formed) steel bars. That are cut, bent, and welded to manufacture the following products.

- Welded mesh,
- Welded and bent mesh
- Lattice girder
- Cut reinforcement
- Bent reinforcements (stirrups)
- Bi-steel
- Spacer

Depending on the product, either cold-rolled or hot-rolled raw material is used for manufacturing.

Eesti Traat's is certified ISO 9001:2015 compliant and produced products that applicable are certified according to:

- TR 392:2018
- SFS 1267:2008
- EN 10080:2005+SS212540:214
- NS 3576-1:2005+NS 3576-4:2005
- SFS 1300:2020

PRODUCT RAW MATERIAL COMPOSITION PER DECLARED UNIT

Raw material category	Amount, mass- % and material origin*
Metals	100% Europe
Minerals	-
Fossil materials	-
Bio-based materials	-
Total	100%

* Order of magnitude, not exact composition. All values are rounded.

The products does not contain biogenic carbon. The packing contains wood.

Biogenic carbon content in product	0 kg
Biogenic carbon content in packaging	0.0001kg

Note. 1 kg biogenic carbon is equivalent to 44/12 kg of biogenic CO2.

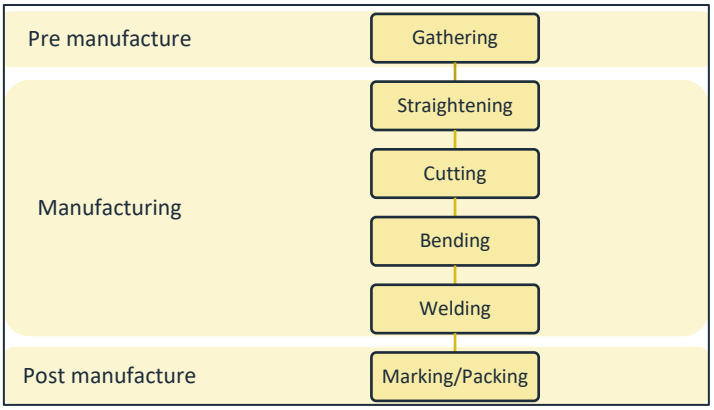
SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1 % (1000 ppm).

MANUFACTURING PROCESS

Eesti Traat certified production process meets the strictest requirements of the metal industry, and quality management ensures the highest possible quality for the customer. When materials arrive at the Eesti Traat factory, materials are inspected and stored indoors. We test our products daily at our in-house laboratory. Our warehouse staff are qualified, and we can provide high quality packaging and fast transport to the end user destination. We have a fully automated production line for standard and special meshes, fully automated cut and bend benches for the production of components, automated reinforcement cutting and bending line for a diameter of up to 25 mm, automated reinforcement lattice girder line for a diameter of up to 12. mm, radial bending of reinforcement for wind turbine foundations and other large-scale infrastructure projects, automated reinforcement bi-steel line, automated spacer line.

Figure 1. Manufacturing process



PRODUCT LIFE-CYCLE AND LIFE-CYCLE ASSESSMENT

Period for data	2023
Declared unit	1 kilogram
Mass per declared unit	1 kg
Mass of packaging	0.0009kg

The product is the averages of several product variations.

The study does not exclude any modules or processes which are stated mandatory in EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw materials and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass. Neglected from the calculations are the impacts from packing the packing material (wood 0.0002kg per 1kg of product and metal 0.0007kg per 1kg of product) and PE film in the product (0.00009 kg in 1kg of product).

Co-product allocation has not been used.

The data sources for the study are Ecoinvent 3.8 (2021), One Click LCA databases and supplier EPDs. The tools used for the study were One Click LCA and Open LCA. The EN 15804 reference package used is based on EF 3.0.

SYSTEM BOUNDARY

The scope of the EPD is cradle to gate with options (A1-A4), modules C1–C4 and module D.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts modeled for the product stage cover the manufacturing of raw materials used in the production as well as incoming packaging materials and other ancillary materials. The out going packing, are not used in the model calculated, as the packing material by weight is nelgigeble in the product (0.0009kg per 1 kg of product).

Vehicle capacity utilization volume factor is assumed to be 1, which means full load. In reality, it may vary but as role of transportation emission in total results is small and so the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation company to serve the needs of other clients.

Fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. All fuel and energy use was allocated based on production volume. The electricity used in the plant is grid energy and this has been modelled based on Estonian residual mix for 2020-2022. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Electricity data source and quality	Modelled electricity based on Estonian residual mix for 2020-2022
Specific emissions (GWP-fossil, CO2e/kWh)	0.64 kg CO2e/kWh
Heating data source and quality	Market for heat, central or small-scale, natural gas (Reference product: heat, central or small-scale, natural gas).Source Ecoinvent 3.8, Global. Unit MJ.
Specific emissions (GWP-fossil, CO2e/MJ)	0.071 kg CO2e/MJ

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined according to RTS PCR - from the place of manufacture to Helsinki, Finland. According to the manufacturer, transportation doesn't cause losses as products are packaged properly. The final product is transported 115 km (40 km by lorry and 75 km ferry). Vehicle capacity utilization volume factor is assumed to be 1.

Vehicle type used for transport and distance	115 km (30 km by lorry and 75 km ferry)
Specific transport emissions (GWP-fossil, CO2e/kWh)	0.10 kg CO2 per tkm
Capacity utilization (including empty returns)	100%
Volume capacity utilization factor	1

A5 has not been declared.

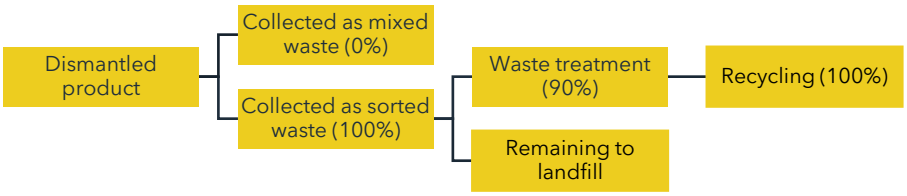
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Figure 2. EOL scenarios



It is assumed that 100% of products are collected at demolition site. It is assumed that the dismantled product is transported 100 km by lorry (either to recycling facilities or landfill).

Based on EuRIC data, 90% of steel is assumed to be sent to recycling and later used as input in steelmaking.

Any material that left the product system in C3 has been considered in module D. Only net benefits are considered. The recycling efficiency is assumed as 100%. It is assumed the scrap steel is melted to produce new steel products.

	EOL mass of product	1 kg
Collection	**Collected separately**	100%
	Collected with mixed waste	0
Recovery	**Re-use**	0
	Recycling	0.9
	Incineration with energy recovery	
Disposal	**Incineration without energy recovery**	0
	Landfill	0.1
	Total	1 kg
Scenario assumptions e.g. transportation		End-of-life product is transported 100 with an average lorry

Note. All values in the table are rounded.

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COLD AND HOT FORMED STEEL PRODUCTS

ENVIRONMENTAL IMPACTS – CORE INDICATORS. EN 15804+A2. PEF

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential – total	kg CO_2e	1.04E+00	1.20E-02	2.97E-04	9.08E-03	1.97E-02	6.60E-03	-1.56E-01
Global warming potential – fossil	kg CO_2e	1.04E+00	1.20E-02	2.94E-04	9.08E-03	1.97E-02	6.60E-03	-1.55E-01
Global warming potential – biogenic	kg CO_2e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+0	0.00E+00
Global warming potential – LULUC	kg CO_2e	1.00E-03	6.80E-06	6.66E-07	3.26E-06	2.58E-05	2.69E-06	-2.48E-05
Ozone depletion pot.	kg $CFC._{11}$e	7.97E-08	2.50E-09	1.50E-11	2.17E-09	2.44E-09	1.51E-09	-6.04E-09
Acidification potential	mol H^+e	4.77E-03	2.86E-04	1.58E-06	3.79E-05	2.50E-04	6.67E-05	-6.36E-04
Eutrophication potential - freshwater	kg Pe	4.04E-05	5.80E-08	3.03E-08	6.21E-08	1.06E-06	2.89E-08	-6.40E-06
Eutrophication potential - marine	kg Ne	9.95E-04	7.20E-05	2.20E-07	1.15E-05	5.29E-05	2.89E-05	-1.30E-04
Eutrophication potential - terrestrial	mol Ne	1.05E-02	8.00E-04	2.50E-06	1.26E-04	6.11E-04	3.17E-04	-1.52E-03
Photochemical ozone formation ("smog")	kg NMVOCe	4.20E-03	2.10E-04	7.14E-07	4.07E-05	1.68E-04	8.75E-05	-7.77E-04
Abiotic depletion potential - minerals & metals	kg Sbe	5.86E-06	1.91E-08	7.98E-10	2.13E-08	2.65E-06	5.28E-09	-2.97E-06
Abiotic depletion potential - fossil resources	MJ	1.41E+01	1.60E-01	6.16E-03	1.39E-01	2.67E-01	9.64E-02	-1.35E+00
Water use	m^3e depr.	5.69E-01	5.39E-04	1.62E-04	6.41E-04	5.18E-03	3.05E-04	-2.82E-02

EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except particulate matter and Ionizing radiation. human health.
The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable primary energy resources as energy	MJ	1.32E+00	1.30E-03	1.06E-03	1.80E-03	4.74E-02	6.73E-04	-1.14E-01
Renewable primary energy resources as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.32E+00	1.30E-03	1.06E-03	1.80E-03	4.74E-02	6.73E-04	-1.14E-01
Non-renewable primary energy resources as energy	MJ	1.26E+01	1.60E-01	6.14E-03	1.39E-01	2.67E-01	9.64E-02	-1.35E+00
Non-renewable primary energy resources as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	1.26E+01	1.60E-01	6.14E-03	1.39E-01	2.67E-01	9.64E-02	-1.35E+00
Secondary materials	kg	1.02E+00	5.84E-05	3.36E-06	3.91E-05	2.97E-04	3.73E-05	9.67E-02
Renewable secondary fuels	MJ	9.88E-05	2.77E-07	3.71E-09	3.45E-07	1.55E-05	2.00E-07	-1.44E-05
Non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m3	1.47E-02	1.35E-05	5.11E-06	1.84E-05	1.57E-04	2.10E-05	-3.26E-04

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	3.84E-01	2.05E-04	2.37E-05	1.49E-04	1.82E-03	1.29E-04	-5.20E-02
Non-hazardous waste	kg	1.76E+00	2.29E-03	1.38E-03	2.59E-03	5.79E-02	2.11E-03	-2.54E-01
Radioactive waste	kg	6.65E-05	1.11E-06	4.41E-08	9.58E-07	1.57E-06	6.71E-07	4.49E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	4.39E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.42E-02	0.00E+00	0.00E+00	0.00E+00	9.00E-01	0.00E+00	0.00E+00
Materials for energy rec	kg	6.57E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

KEY INFORMATION PER KG

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential – total	kg CO_2e	1.04E+00	1.20E-02	2.97E-04	9.08E-03	1.97E-02	6.60E-03	-1.56E-01
Global warming potential – fossil	kg CO_2e	1.04E+00	1.20E-02	2.94E-04	9.08E-03	1.97E-02	6.60E-03	-1.55E-01
Global warming potential – biogenic	kg CO_2e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+0	0.00E+00
Abiotic depletion potential - minerals & metals	kg Sbe	5.86E-06	1.91E-08	7.98E-10	2.13E-08	2.65E-06	5.28E-09	-2.97E-06
Abiotic depletion potential - fossil resources	MJ	1.41E+01	1.60E-01	6.16E-03	1.39E-01	2.67E-01	9.64E-02	-1.35E+00
Water use	m^3e depr.	5.69E-01	5.39E-04	1.62E-04	6.41E-04	5.18E-03	3.05E-04	-2.82E-02
Secondary materials	kg	1.03E+00	0.00E+00	3.36E-06	8.27E-05	2.97E-04	3.73E-05	9.67E-02
Biogenic carbon in product (A3)	kg CO_2e	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon in packaging (A3)	kg CO_2e	1.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00