

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Steel fiber

from

“DNIPROMETYZ TAS” LLC



Programme:

The International EPD® System, www.environdec.com

Programme operator:

EPD International AB

EPD registration number:

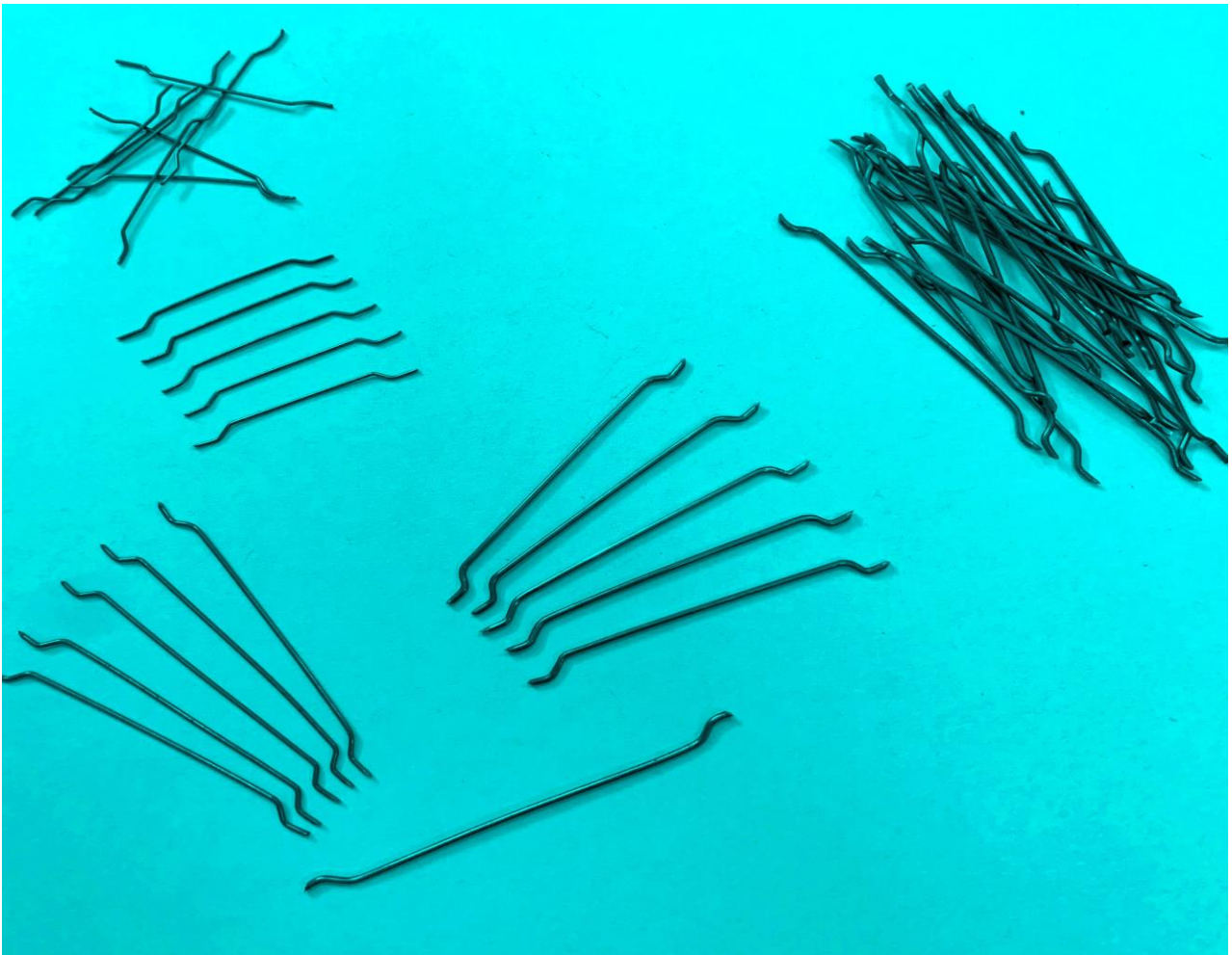
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*EPD of multiple products, based on average product.**An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com*

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
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): 2019:14 <i>Construction Products v.1.3.4</i>
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Life Cycle Assessment (LCA)
LCA accountability: <i>Sigita Židonienė, PhD, www.vestaconsulting.lt</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input type="checkbox"/> EPD verification by individual verifier Third-party verifier: <i>Anni Oviir, Rangi Maja OÜ</i> Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: "DNIPROMETYZ TAS" LIMITED LIABILITY COMPANY

Contact: Aleksander Alekhin, aa.aljokhin@dniprometyz.com; +380672122640

Description of the organisation: The history of DNIPROMETIZ TAS LLC begins in 1890. Currently, the company is the leading producer of steel wire for various purposes, nails, nets, fastening products and steel fiber in Ukraine. The company's products are used in mechanical engineering, construction, agriculture, repair work, service and various other areas.

We provide an individual approach to everyone client, packaging adaptation to customer requirements, assembly of lots for individual orders, lending, delivery services. We make a report recommendation regarding the use of products with regard to yum technologies of the consumer, we support a wide assortment available in stock. Our mission is to make a significant contribution to development of the metallurgical industry, producing hardware products that fully meet the requirements of European and international standards and ensure the satisfaction of all interested parties:

- customers and consumers of products;
- external suppliers and partners;
- enterprise personnel;
- owner and shareholders;
- the state and society as a whole.

The constant goal of the company is to provide the consumer with a quality product at an affordable price, a combination of impeccable quality products with a favourable price, while providing sales channels with the best support and reliable service in the industry. Always using a single approach to doing business, namely the application of optimal solutions and production schemes at all stages of work, regardless of whether it is about our international image or the image within the country. Creating and increasing value is part of our corporate culture. Compliance with this principle is shared both by employees of our company and by our business partners. This is the main quality among competing companies.

Product-related or management system-related certifications: Steel fiber is CE marked, which means that the product complies with Regulation (EU) No. 305/2011 of the European Parliament and of the Council of March 9, 2011 and is manufactured according to EN 14889-1 standard.

The company is ISO 9001:2015 certified.

Name and location of production site(s): 20, Slobozhanskyi Avenue, Dnipro, 49000, Ukraine

Product information

Product name: Steel fiber

Product identification: Steel wire fibers are deformed parts of wire of a certain length, used to reinforce concrete or mortar and other composite materials. Steel wire fibers with bent ends produced from cold drawn low carbon wire. Steel fiber for structural reinforcement of concrete and mortar: group I (starting material cold-drawn wire); without cover; deformed (with curved ends); typical fiber elastic modulus 200000 N/mm² (MPa) according to EN 14889-1:2006.

The recommended quantity of fibers per 1 m³ of concrete mix depends on dimensions fibers, the steel fibers concrete mix purpose and makes approximately for industrial flat:

Type of product	Product type, performance properties
Steel fiber 1/50 (1150)	For steel fibers conditional dimensions 1/50 (1150) - group I, length: 50 mm; diameter: 1,00 mm; - deformed (with hooked ends); - tensile strength: 1150 N/mm² ; - consistence with 30 kg/m³ Vebe time 8 s Effect on strength of concrete: 30 kg/m³ fibers conditional dimensions 1/50 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 75/52 (1500)	For steel fibers conditional dimensions 75/52 (1500) - group I, length: 52 mm; diameter: 0,75 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ Vebe time 8 s Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 75/52 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 80/50 (1200)	For steel fibers conditional dimensions 80/50 (1200) - group I, length: 50 mm; diameter: 0,80 mm; - deformed (with hooked ends); - tensile strength: 1200 N/mm² ; - consistence with 25 kg/m³ Vebe time 8 s Effect on strength of concrete: 25 kg/m³ fibers conditional dimensions 80/50 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 60/32 (1300)	For steel fibers conditional dimensions 60/32 (1300) - group I, length: 32 mm; diameter: 0,60 mm; - deformed (with hooked ends); - tensile strength: 1300 N/mm² ; - consistence with 20 kg/m³ Vebe time 7 s Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 60/32 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 1/60 (1500)	For steel fibers conditional dimensions 1/60 (1500) - group I, length: 60 mm; diameter: 1,00 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ Vebe time 6 s Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 1/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 1/50 (1500)	For steel fibers conditional dimensions 1/50 (1500) - group I, length: 50 mm; diameter: 1,00 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ Vebe time 6 s Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 1/50 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 80/50 (1500)	For steel fibers conditional dimensions 80/50 (1500) - group I, length: 50 mm; diameter: 0,80 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ Vebe time 7 s Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 80/50 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 60/32 (1550)	For steel fibers conditional dimensions 60/32 (1550) - group I, length: 32 mm; diameter: 0,60 mm; - deformed (with hooked ends); - tensile strength: 1550 N/mm² ; - consistence with 15 kg/m³ Vebe time 6 s Effect on strength of concrete: 15 kg/m³ fibers conditional dimensions 60/32 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 1/60 (1150)	For steel fibers conditional dimensions 1/60 (1150) - group I, length: 60 mm; diameter: 1,00 mm; - deformed (with hooked ends); - tensile strength: 1150 N/mm² ; - consistence with 25 kg/m³ Vebe time 6 s Effect on strength of concrete: 25 kg/m³ fibers conditional dimensions 1/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 75/50 (1200)	For steel fibers conditional dimensions 75/50 (1200) - group I, length: 50 mm; diameter: 0,75 mm; - deformed (with hooked ends); - tensile strength: 1200 N/mm² ; - consistence with 25 kg/m³ , Vebe time 6 s. Effect on strength of concrete: 25 kg/m³ fibers conditional dimensions 75/50 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm

Type of product	Product type, performance properties
	mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 90/60 (1500)	For steel fibers conditional dimensions 90/60 (1500) - group I, length: 60 mm; diameter: 0,90 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ Vebe time 4 s. Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 90/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 80/60 (1500)	For steel fibers conditional dimensions 80/60 (1500) - group I, length: 60 mm; diameter: 0,80 mm; - deformed (with hooked ends); - tensile strength: 1500 N/mm² ; - consistence with 20 kg/m³ , Vebe time 4 s. Effect on strength of concrete: 20 kg/m³ fibers conditional dimensions 80/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 90/60 (1150)	For steel fibers conditional dimensions 90/60 (1150) - group I, length: 60 mm; diameter: 0,90 mm; - deformed (with hooked ends); - tensile strength: 1150 N/mm² ; - consistence with 25 kg/m³ , Vebe time 5 s Effect on strength of concrete: 25 kg/m³ fibers conditional dimensions 90/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm
Steel fiber 80/60 (1200)	For steel fibers conditional dimensions 80/60 (1200) - group I, length: 60 mm; diameter: 0,80 mm; - deformed (with hooked ends); - tensile strength: 1200 N/mm² ; - consistence with 25 kg/m³ , Vebe time 5 s Effect on strength of concrete: 25 kg/m³ fibers conditional dimensions 80/60 to obtain 1,5 N/mm ² at CMOD=0,5 mm and 1,0 N/mm ² at CMOD=3,5 mm

The products are available in different sizes and lengths, as well as with different tensile strengths.



Fiber size	d – fiber diameter, mm	l – fiber length, mm	Rm – average tensile strength of wire, N/mm ²
60/32	0,6 ± 0,03	32,0 ± 1,6	1300
60/32	0,6 ± 0,03	32,0 ± 1,6	1550
75/50	0,75 ± 0,03	50,0 ± 2,0	1200
75/52	0,75 ± 0,03	52,0 ± 2,0	1500
80/50	0,8 ± 0,04	50,0 ± 2,0	1200
80/50	0,8 ± 0,04	50,0 ± 2,0	1500
80/60	0,8 ± 0,04	60,0 ± 3,0	1200
80/60	0,8 ± 0,04	60,0 ± 3,0	1500
90/60	0,9 ± 0,05	60,0 ± 3,0	1150
90/60	0,9 ± 0,05	60,0 ± 3,0	1500
1/50	1,0 ± 0,05	50,0 ± 2,0	1150
1/50	1,0 ± 0,05	50,0 ± 2,0	1500
1/60	1,0 ± 0,05	60,0 ± 3,0	1150
1/60	1,0 ± 0,05	60,0 ± 3,0	1500

Product description: This EPD is for multiple products, based on average product.

Steel wire fibers are deformed parts of wire of a certain length, used to reinforce concrete or mortar or and other composite materials. Steel wire fibers with bent ends produced from cold drawn low carbon wire. The most common elements are carbon, manganese, and silicon.

Typical chemical composition of steel fibers quality wire is:

Typical analysis of steel		
C	Mn	Si
0,06 – 0,23	0,25 – 1,00	0,01 – 0,15

Product standards and CE Certifications: EN 14889-1.

The products are produced in accordance with various national and/or international technical regulations. The products are certified in accordance with the following product standards: Fabrication standards: EN 14889-1. The quality management system to produce steel fiber complies with the requirements of ISO 9001.

Industrial Process: Steel Fibers are incorporated in the concrete to reinforce the material and to replace partially or fully the traditional steel rebar reinforcement. The typical sector where is using steel fibers are floors, buildings, tunnels, precast and infrastructure.

Steel Fibers are delivered in different packaging: boxes of 25 kg/20 kg stored on pallets. Additional information on products can be found at: <https://dniprometyz.com/>

UN CPC code: 4126

Geographical scope: The geographical scope of this EPD is Europe, as product is produced in Ukraine and other modules (as transportation or end-of-life) are modelled for the market in Europe.

LCA information

Declared unit: 1 metric tonne.

Reference service life: Not applicable.

Time representativeness: The collection of the foreground data refers to the year 2023.

Database(s) and LCA software used: The Ecoinvent database provides the life cycle inventory data for the raw and processed materials obtained from the background system. The used database is Ecoinvent 3.8. The LCA software used is One Click LCA. The EN 15804 reference package used is based on EF 3.0.

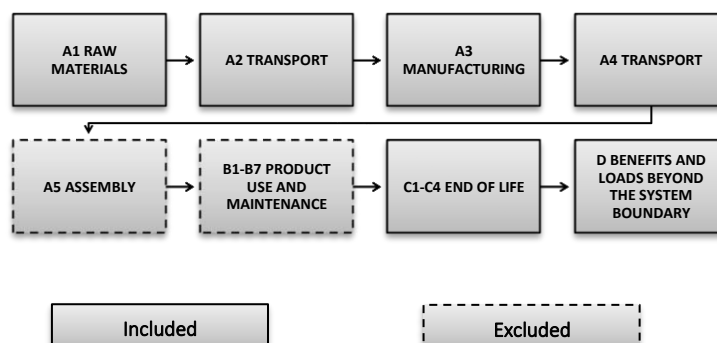
Data quality: The foreground data collected internally is based on yearly production amounts and extrapolations of measurements on specific machines and plants. Overall, the data quality can be described as good. The primary data collection has been done thoroughly.

Cut-off criteria: Life cycle inventory data for a minimum of 99% of total material and energy input flows have been included in the life cycle analysis. Although only materials having in summa less than 1% of weight of product were not used in calculations.

Description of system boundaries:

Cradle to gate with options (A1-A4), modules C1–C4 and module D;

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	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	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Geography	UA	UA	UA	NO	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	--	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	1000	21%	0% and 0 kg C / kg
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Wood palette	20,80	2%	0,06
Cardboard	22,00	2%	0,06
Plastic foil	0,31	< 1%	-
Grip paper	0,33	< 1%	0,00

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

The product does not contain any of the substances of very high concern (SVHC) regulated by the Regulation (EC) No 1907/2006 (REACH) or the Regulation (EC) No 1272/2008 of European parliament.

Product life cycle

Product stage (A1-A3)

A1: This module considers the extraction and processing of raw materials.

A2: The raw materials are transported to the manufacturing plant. In this case the model includes road transportation of each raw material.

A3: This module includes the manufacture of products and packaging. It has considered all the energy consumption and waste generated in the production plant.

Manufacturing process

The product is 100% low carbon steel. The production process consists of the stage of producing billet wire by cold drawing from hot-rolled wire rod and the subsequent process of cutting fiber from the billet

wire. In the process of producing wire from wire rod and fiber from wire, metal waste is generated, which is collected in containers, pressed and transferred under a contract for processing followed by melting at a metallurgical plant.

Construction process stage (A4-A5)

A4: This module includes transport from the production gate to the construction site where the product shall be installed. The transportation doesn't cause losses as products are packaged properly. An average transportation from production site to Norway market was considered.

A5: module is not declared.

Use stage (B1-B7)

This EPD does not cover Use stage.

Product end of life (C1-C4)

C1: This module includes product deconstruction, dismantling, and demolition. Consumption of fuel in the demolition process is calculated according to transported mass. Energy consumption for demolition is assumed to be 0,150 kWh for 1 m³ (Bozdağ, Ö & Seçer, M (2007) and the Level(s) project). The source of energy is diesel fuel used by construction machinery.

C2: Transport of the discarded product to the processing site. It is estimated that there is no mass loss during the use of the product, therefore, the end-of-life product is assumed that it has the same weight as the declared product. All the end-of-life product is assumed to be sent to the closest facilities, such as recycling. Transportation distance to the closest disposal area is estimated as 100 km and the transportation method is lorry which is the most common.

C3: Waste processing for reuse, recovery and/or recycling

It is assumed that 98% of product is collected and sent to recycling site.

C4: Discharge (disposal)

It is assumed that 2% of products are sent directly to landfill with construction waste.

Benefits and loads beyond the system boundary (D):

Benefits of recyclable waste generated in the phase C3 are considered in the phase D. The recycled steel has been modelled to avoid use of primary materials. The scrap content in the studied product has been acknowledged and only the mass of primary steel in the product provides the benefit to avoid double counting.

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. Note: it is discouraged to use the results of modules A1-A3 without considering the results of module C when module C is declared.

Mandatory impact category indicators according to EN 15804

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	2,50E+03	3,04E+02	3,31E+00	9,38E+00	2,14E+01	1,05E-01	-1,34E+03
GWP – fossil	kg CO ₂ e	2,50E+03	3,04E+02	3,31E+00	9,38E+00	2,14E+01	1,05E-01	-1,34E+03
GWP – biogenic	kg CO ₂ e	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO ₂ e	1,71E+00	1,18E-01	3,30E-04	3,46E-03	2,81E-02	9,94E-05	-5,54E-01
Ozone depletion pot.	kg CFC-11e	1,44E-04	6,94E-05	7,07E-07	2,16E-06	2,65E-06	4,26E-08	-5,17E-05
Acidification potential	mol H ⁺ e	1,09E+01	1,82E+00	3,44E-02	3,97E-02	2,73E-01	9,90E-04	-5,64E+00
EP-freshwater ²⁾	kg Pe	1,03E-01	2,40E-03	1,10E-05	7,68E-05	1,15E-03	1,10E-06	-4,98E-02
EP-marine	kg Ne	2,17E+00	5,12E-01	1,52E-02	1,18E-02	5,76E-02	3,43E-04	-1,16E+00
EP-terrestrial	mol Ne	2,42E+01	5,66E+00	1,67E-01	1,30E-01	6,66E-01	3,77E-03	-1,31E+01
POCP (“smog”)	kg NMVOCe	1,04E+01	1,71E+00	4,59E-02	4,17E-02	1,83E-01	1,10E-03	-6,63E+00
ADP-minerals & metals	kg Sbe	2,76E-02	6,93E-04	1,68E-06	2,20E-05	2,89E-03	2,42E-07	-2,44E-02
ADP-fossil resources	MJ	2,60E+04	4,52E+03	4,45E+01	1,41E+02	2,91E+02	2,89E+00	-1,12E+04
Water use ³⁾	m ³ e depr.	1,48E+03	1,98E+01	1,20E-01	6,31E-01	5,64E+00	9,16E-03	-2,58E+02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) 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 experience with the indicator.

* 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.

Additional mandatory and voluntary impact category indicators

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ e	2,50E+03	3,04E+02	3,31E+00	9,38E+00	2,14E+01	1,05E-01	-1,34E+03

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.3.2 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO₂ is set to zero.

Resource use indicators

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renew. PER as energy ⁶⁾	MJ	3,02E+03	4,98E+01	2,54E-01	1,59E+00	5,16E+01	2,51E-02	-9,11E+02
Renew. PER 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 renew. PER	MJ	3,02E+03	4,98E+01	2,54E-01	1,59E+00	5,16E+01	2,51E-02	-9,11E+02
Non-re. PER as energy	MJ	3,19E+04	4,52E+03	4,45E+01	1,41E+02	2,91E+02	2,89E+00	-1,12E+04
Non-re. PER 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-re. PER	MJ	3,19E+04	4,52E+03	4,45E+01	1,41E+02	2,91E+02	2,89E+00	-1,12E+04
Secondary materials	kg	4,44E+02	1,29E+00	1,74E-02	3,91E-02	3,24E-01	6,07E-04	7,91E+02
Renew. secondary fuels	MJ	9,74E+00	1,23E-02	5,70E-05	3,95E-04	1,68E-02	1,59E-05	-1,38E-01
Non-ren. 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	m ³	2,91E+01	5,70E-01	2,70E-03	1,83E-02	1,71E-01	3,16E-03	-3,07E+00

Waste indicators

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	9,15E+02	5,98E+00	5,96E-02	1,87E-01	1,98E+00	0,00E+00	-4,26E+02
Non-hazardous waste	kg	4,23E+03	9,59E+01	4,19E-01	3,07E+00	6,31E+01	2,00E+01	-1,92E+03
Radioactive waste	kg	1,40E-01	3,04E-02	3,13E-04	9,43E-04	1,70E-03	0,00E+00	7,05E-03

Output flow indicators

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,40E+01	0,00E+00	0,00E+00	0,00E+00	9,80E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	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

Additional environmental information

Module A3: Manufacturing energy scenario documentation

Scenario parameter	Data source	Value
Electricity, Ukraine (specific electricity mixes based on IEA)	LCA study for country specific electricity mixes based on IEA, OneClickLCA 2024. Upstream database: One Click LCA.	0.45 kg CO ₂ e/kWh
Heat production, natural gas, at industrial furnace >100kW	Heat production, natural gas, at industrial furnace >100kW (Reference product: heat, district, or industrial, natural gas). Ecoinvent 3.8. 2021	0.0712 kg CO ₂ e/kWh

Module A4: Transportation scenario

Parameter	Value/Description
Vehicle type used for transport	EURO 5 truck with a trailer with an average load of >32t; Freight sea, ferry.
Distance	100 % of production: Truck – 2917 km; Ferry – 163 km
Capacity utilization	100 % of the capacity in volume (truck) 100 % of the capacity in volume (ferry)

Module C3-C4: EOL scenario

EOL scenario	Parameter	Value
Collection	Collected separately	980 kg
	Collected with mixed waste	20 kg
Recovery	Re-Use	0 kg
	Recycling	980 kg
	Energy recovery	0 kg
Disposal	Final deposition	20 kg
	Transportation scenario	Dismantled product is transported 100 km

References

Standards and PCR

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804+A2 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Product Category Rules (PCR): PCR 2019:14 – Construction Products (EN 15804+A2) – version 1.3.4

General Programme Instructions of the international EPD[®] system. Version 4.0.

Bozdağ, Ö and Seçer, M., Energy consumption of RC buildings during their life cycle. Izmir, Dokuz University (2007) and the Level(s) project.

Data references:

One Click LCA tool

Ecoinvent 3.8 database

ANNEX 1

ANNEX 1: Self declaration from EPD owner

Specific requirements

1 Applied electricity data set used in the manufacturing phase

The electricity mix for the electricity used in manufacturing (A3) is the electricity grid mix

Module A3: Manufacturing energy scenario documentation

Scenario parameter	Data source	Value
Electricity, Ukraine (specific electricity mixes based on IEA)	LCA study for country specific electricity mixes based on IEA, OneClickLCA 2024. Upstream database: One Click LCA.	0.45 kg CO _{2e} /kWh
Heat production, natural gas, at industrial furnace >100kW	Heat production, natural gas, at industrial furnace >100kW (Reference product: heat, district, or industrial, natural gas). Ecoinvent 3.8. 2021	0.0712 kg CO _{2e} /kWh

2 Transport from the place of manufacture to a central warehouse

Transport distance, and CO₂-eqv./DU from transport of the product from factory gate to central warehouse in Oslo shall be given. The following table shall be included in the EPD:

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy use	Unit	Value	Kg CO ₂ -eqv./DU
Boat							
Truck	100	Truck 21 tonn, EURO5	2917	diesel fuel	l/tkm	0,0135	56,4 gCO ₂ /tkm (Average payload value 13, 842 t)
Railway							
Rail							
Air							
Total							

3 Impact on the indoor environment

- Indoor air emission testing has been performed; specify test method and reference; M1, _____
- No test has being performed
- Not relevant; specify _____