Program
EPDPoland
Operator: MULTICERT Sp. z o.o.

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Product name:
Special Nector HDMesh high-strength wire mesh

Producer:

Nector Sp. z o.o.

Address:
ul. Szlak 65/502
31-153 Kraków, Polska

Issued on 11 June 2025
Valid until 11 June 2030

GENERAL INFORMATION

EPD OWNER

Manufacturer / EPD Holder	Nector Sp. z o.o.
Address	ul. Szlak 65/502, 31-153 Kraków, Polska
Contact details	Małgorzata Franaszek biuro@nector.biz
Website	https://nector.biz

PRODUCT IDENTIFICATION

Product name	Special Nector HDMesh high-strength wire mesh
Place(s) of production	Kraków, Polska

EPD INFORMATION

EPD Poland program operator	Multicert Sp. z o.o. Ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl, epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Izabela Sztamberek Sochan, Ph.D.
EPD number	EPD-P 02.06.2025
Registration:	EPD Polska www.epd.org.pl
Publishing date	11 June 2025
EPD valid until	11 June 2030
Reasons for performing LCA	B2B
Accountability	The EPD Holder is responsible for the information provided and evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life cycle assessment data nor supporting evidence.

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

COMPANY INFORMATION

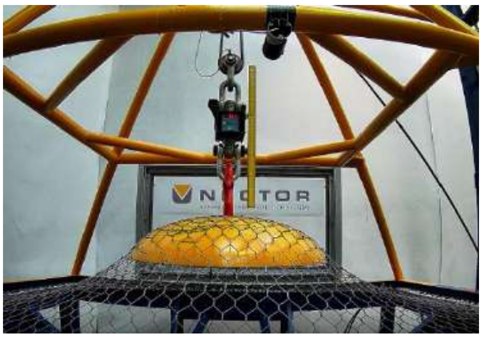
HOLDER OF THE EPD

Nector Sp. z o.o.
ul. Szlak 65/502, 31-153 Kraków, Polska

COMPANY PROFILE

NECTOR Sp. z o.o. of Kraków carries on a tradition of hexagonal-mesh production that dates back to 1890. As a market pioneer, the company introduced the HDMesh line, based on wires with a tensile strength of at least 1 770 N/mm², as well as stainless-steel variants exceeding 1 650 N/mm². In addition to HDMesh, NECTOR offers classic hexagonal meshes made from wire with a tensile strength of 390–550 N/mm², zinc-aluminum (ZnAl) coated with an optional UV-resistant polymer layer, and stainless-steel versions. The company also manufactures gabions and gabion mattresses used in advanced systems for slope and embankment stabilization and protection against rockfall and avalanches. Thanks to the flexibility of its product range and the ability to customize wire properties and coatings, NECTOR meets the requirements of the most demanding geotechnical projects.

NECTOR's in-house testing laboratories and modern machinery ensure strict quality control and continual technological advancement, while a highly qualified team of specialists supports clients at every project stage. Complying with rigorous standards, the company holds European Certificates of Constancy of Performance: 1301-CPR-2214 for HDMesh SPS, 1301-CPR 1384 for HDMesh, and 1301-CPR 1372 for gabions. It also holds the National Certificate of Constancy of Performance No. 030-UWB-068/22 (issued 7 November 2024), and fully meets the requirements of PN-EN 10223-3. Embracing sustainable development, NECTOR optimizes raw-material use and minimizes environmental impact, while EU-supported R&D projects strengthen its position on international markets.



PRODUCT INFORMATION

PRODUCT DESCRIPTION

Nector HDMesh is a family of high-performance hexagonal wire meshes designed for demanding geotechnical and safety applications. These meshes are manufactured exclusively by Nector and represent the world's first and only hexagonal meshes made from high-carbon steel wire. The products are engineered to deliver superior mechanical resistance and corrosion protection, tailored for slope stabilization, rockfall protection, and other safety-critical infrastructures.

The HDMesh range includes two main variants:

- HDMesh High-Carbon Steel with ZnAl Coating – Manufactured from high-carbon steel wire with tensile strength Rm ≥ 1770 N/mm² and protected with a eutectic zinc-aluminium (ZnAl) anti-corrosion coating of Class A (minimum 215–255 g/m² depending on wire diameter).
- HDMesh Stainless Steel – Made from stainless steel wire for applications requiring enhanced durability and corrosion resistance.

Meshes are produced in various configurations to suit project-specific performance requirements. The standard hexagonal mesh geometry is 65 × 120 mm. Key mechanical parameters for HDMesh products (e.g. HDMesh 3.65 with 3.0 mm wire) include:

- Tensile strength of the mesh: ≥ 200 kN/m
- Puncture resistance: ≥ 240 kN
- Shear strength at nail interface: ≥ 120 kN
- Elongation: < 6%

The full HDMesh product range includes meshes made from 2.0 mm to 3.0 mm wire diameters, each delivering high tensile strength and tailored resistance properties for different terrain and load conditions.

PRODUCT APPLICATION

Nector HDMesh systems are used in a variety of civil and mining engineering applications, including:

- Slope Stabilization Systems: Retaining loose soil and rocky materials on steep slopes and embankments.
- Rock Protection Systems: Preventing rockfall from weathered or unstable rock faces, overhangs, and spurs.
- Safety Barriers and Protective Linings:
- Rockfall mitigation in mining environments
- Separation and protection in viaduct spaces
- Floor and roof protection in tunnel construction

These applications benefit from the high tensile properties and long-term durability of Nector HDMesh, enabling safe and sustainable infrastructure protection.

PRODUCT STANDARDS

The product complies with:

EN 10223-3 - Steel wire and wire products for fencing and netting — Part 3: Hexagonal steel wire mesh products for civil engineering purposes.

EAD 230025-00-0106 -Flexible facing systems for slope stabilization and rock protection.

EAD 230008-00-0106- Double twisted steel wire mesh reinforced or not with ropes.

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://nector.biz

PRODUCT RAW MATERIAL COMPOSITION

The High-strength Nector HDMesh nets are available in two material variants:

Variant 1: High-Carbon Steel with ZnAl Coating

High-carbon steel wire: ~98% by mass

Zinc-Aluminum (ZnAl) coating: ~2% by mass (Typically ~95% zinc, ~5% aluminum)

Variant 2: Stainless Steel

Stainless steel wire: ~100% by mass (Type 316, 316L)

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

RAW MATERIALS ACQUISITION AND TRANSPORT (A1, A2)

In Module A1, the raw-material phase comprises the primary steelmaking steps (melting in electric-arc or basic-oxygen furnaces), continuous casting into billets, hot rolling to wire rod, multi-stage drawing to final diameters (2.0–3.0 mm), and the application of protective coatings (ZnAl or stainless-steel passivation). These processes are carried out by certified wire producers in the EU. All upstream environmental impacts—including energy use, emissions and material inputs—are based on EPD data provided by the wire suppliers.

Module A2 covers the road transport of ready-to-use wire spools from supplier works to our Gierczyce plant, typically by diesel truck. Upon arrival to the plant each wire spool is unloaded, visually inspected for coating integrity and dimensional conformity, labeled for full traceability, and stored under controlled conditions until needed.

MANUFACTURING (A3)

Once a spool is mounted on the feed station, the mesh formation sequence unfolds: the wire is drawn through servo-driven rollers to maintain constant tension; the twist heads are calibrated for the specified twist angle, rotational speed and arm spacing; and two parallel wires are simultaneously twisted in synchronized rotating heads using the double-twist method to create the characteristic hexagonal apertures with robust, uniform knots. Immediately afterward, the newly woven strip passes through straightening rollers that eliminate residual torsion and restore a perfectly flat profile, before being cut to customer-specified lengths and having its edges trimmed or dressed to ensure clean, ready-to-install segments.

Following formation, each mesh batch undergoes quality control—precision gauges measure wire diameter and aperture dimensions, test specimens are subjected to tensile and puncture testing in the on-site laboratory, and surface inspections confirm coating uniformity and defect-free finish.

Finally , the approved mesh is rolled into rolls and secured with wire ties to prevent unrolling.

END OF LIFE (C1,C2, C3, C4, D)

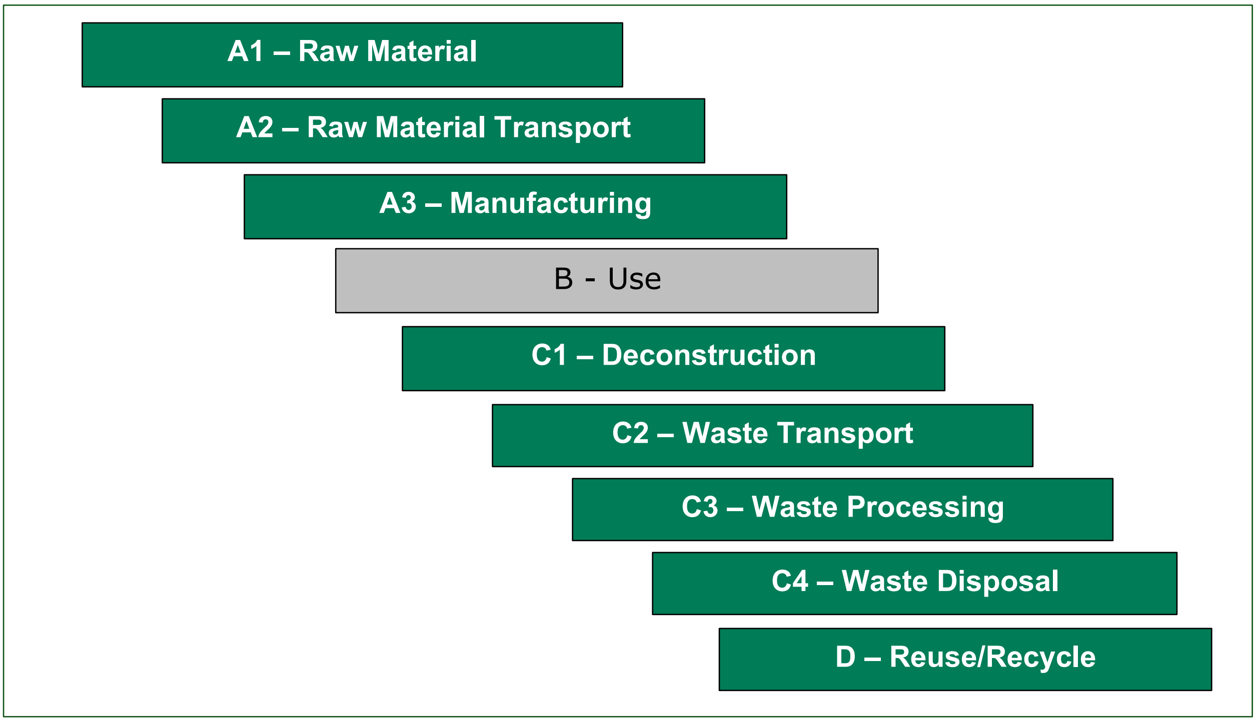
At the end of their service life, Nector HDMesh products are assumed to be manually dismantled on-site. As this process does not require the use of heavy machinery, auxiliary materials, or significant energy inputs, Module C1 has been modelled with zero values across all environmental impact categories.

Following dismantling, the steel components are transported approximately 100 km by lorry (>16 t, EURO 6 standard) to a steel recycling facility. There, the meshes are processed as steel scrap and used in the production of new steel.

- Module C2 accounts for the environmental impacts of the transportation of the recovered material to the recycling facility.
- Module C3 reflects the processing of steel scrap, with a recycling rate of 95% applied to the product mass.
- Module C4 assumes that the remaining 5% of material is landfilled, with impacts calculated accordingly.

Module D includes the potential environmental benefits (credits) associated with the avoided burdens due to recycling. These credits are based on the substitution of primary steel production with secondary steel obtained from recycled Nector HDMesh products. The calculation follows the methodological framework established by the World Steel Association and considers avoided impacts related to raw material extraction and energy consumption.

Diagram 1 - Life cycle stages:



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2024 year

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 Kg
Mass per declared unit	1 Kg

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	-

SYSTEM BOUNDARY

The scope of the EPD is "cradle to gate with options". The modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), C1 (Deconstruciton), C2 (Waste Transport), C3 (Waste Processing), C4 (Waste Disposal) and D (Avoided burdens) are included in the study.

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
x	x	x	MND	MND	MNR	MNR	MNR	MNR	MNR	MNR	MNR	x	x	x	x	x
Raw materials`	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse / Recycling

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

CUT-OFF CRITERIA

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

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, and distribution.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy, and water use related to company management and sales activities are excluded.

ESTIMATES AND ASSUMPTIONS

This LCA study has been conducted in accordance with the applicable methodological principles, including performance metrics, system boundaries, data quality requirements, allocation procedures, and rules for data inclusion and exclusion. The key assumptions and estimates applied in the modelling are outlined below:

Module A1: A 100% mass balance approach was applied to all raw material inputs based on data provided by Nector. Corresponding processes from the ecoinvent database were used to represent the upstream environmental impacts.

Module A2: Average transport distances were calculated based on the locations of raw material suppliers and allocated proportionally to the declared unit:

- 350 km for the carbon steel wire variant.
- 2300 km for the stainless steel wire variant.

Module A3: Energy inputs (electricity, LPG, and gasoline) were included based on site-specific consumption data. Water is not used in the production process and is therefore excluded from the system boundary. On-site waste management has been accounted for, but steel scrap generated during production represents only 0.217% of total output and is therefore considered negligible for the purpose of this study.

Module C2: Transportation distances for end-of-life management were assumed as follows:

- 100 km average distance to the recycling facility.
- 30 km average distance to the landfill site.

Module C3 includes waste processing of steel, assuming a 95% recycling rate.

Module C4 accounts for the remaining 5% of material, which is landfilled. It is assumed that this fraction corresponds primarily to the zinc-aluminium coating from the carbon steel wire variant. As such, the ZnAl coating is excluded from recycling calculations in Module C3.

Module D includes environmental credits from the avoided burden associated with steel recycling, applying a 92% net recycling efficiency for both product variants (carbon steel and stainless steel). These credits are based on avoided impacts from primary steel production, following the methodology of the World Steel Association.

ALLOCATION

The allocation is carried out in accordance with the provisions of EN 15804. The information provided for the year 2024 includes all wire mesh produced at Nector's facilities during that year. Due to the similarity in production resources and processing stages, an average based on product weight was applied. Input and output data from production are inventoried and allocated on a mass basis to the declared functional unit of 1 kilogram.

Data Quality

For foreground data, the LCA study relies on high-quality primary data gathered by Nector for the year 2024, including average transport distances for material supplies and final product shipments. All relevant background data sets have been sourced from the OpenLCA software's database: ecoinvent 3.10, which includes consistent and well-documented data sets accessible in the ecoinvent online database or through the ecoinvent database documentation.

Geographic Representativeness

The specified land or region where the product system is manufactured and managed is Poland, Europe.

ENVIRONMENTAL IMPACT DATA: *HDMesh made of High-Carbon Steel with ZnAl Coating*

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	1,59E-02	1,10E-04	7,27E-05	MND	MNR	0,00E+00	3,08E-05	5,50E-04	2,10E-06	-3,93E-03
Climate change – total	kg CO2e	2,15E+00	6,66E-02	5,53E-02	MND	MNR	0,00E+00	1,84E-02	6,23E-02	3,10E-04	-1,15E+00
Climate change – fossil	kg CO2e	2,14E+00	6,65E-02	5,50E-02	MND	MNR	0,00E+00	1,83E-02	6,23E-02	3,10E-04	-1,15E+00
Climate change – biogenic	kg CO2e	4,01E-03	4,61E-05	2,90E-04	MND	MNR	0,00E+00	1,27E-05	9,88E-06	4,31E-08	-1,42E-03
Climate change – LULUC	kg CO2e	2,51E-03	2,21E-05	1,70E-05	MND	MNR	0,00E+00	6,09E-06	8,72E-06	1,61E-07	-4,20E-04
Abiotic depletion of fossil resources	MJ	2,92E+01	9,35E-01	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-1,19E+01
Eutrophication, aquatic freshwater	kg PO4e	1,03E-03	4,50E-06	5,06E-05	MND	MNR	0,00E+00	1,24E-06	2,94E-06	2,60E-08	-5,20E-04
Eutrophication, aquatic marine	kg Ne	2,17E-03	2,34E-05	2,93E-05	MND	MNR	0,00E+00	6,45E-06	2,50E-04	8,06E-07	-7,80E-04
Eutrophication, terrestrial	mol Ne	4,90E-02	2,50E-04	2,10E-04	MND	MNR	0,00E+00	6,79E-05	2,75E-03	8,79E-06	-8,11E-03
Abiotic depletion, minerals & metals	kg Sbe	4,51E-05	2,22E-07	5,92E-08	MND	MNR	0,00E+00	6,11E-08	3,70E-08	4,99E-10	-9,43E-06
Ozone depletion	kg CFC11e	1,33E-07	1,32E-09	4,12E-10	MND	MNR	0,00E+00	3,64E-10	9,31E-10	9,04E-12	-6,04E-09
Photochemical ozone formation	kg NMVOCe	8,83E-03	2,00E-04	9,66E-05	MND	MNR	0,00E+00	5,64E-05	8,20E-04	3,20E-06	-3,06E-03
Water use	m3e depr.	8,85E-01	4,57E-03	9,71E-03	MND	MNR	0,00E+00	1,26E-03	2,50E-03	2,14E-05	-2,97E-01

MND abbreviation stands for Module Not Declared, *MNR stands for Module Not Relevant*

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	3,85E-02	2,55E-01	1,59E-01	MND	MNR	0,00E+00	7,02E-02	1,19E-01	1,05E-03	-6,96E+01
Human toxicity, cancer effects	CTUh	1,58E-09	4,72E-10	1,11E-10	MND	MNR	0,00E+00	1,30E-10	2,39E-10	1,41E-12	-2,60E-07
Human toxicity, non-cancer effects	CTUh	8,25E-11	6,06E-10	7,30E-10	MND	MNR	0,00E+00	1,67E-10	1,32E-10	1,38E-12	-1,54E-08
Ionizing radiation, human health	kBq U235-Eq	0,00E+00	1,21E-03	1,65E-03	MND	MNR	0,00E+00	3,30E-04	7,10E-04	4,89E-06	-3,80E-02
Particulate matter	disease incidence	1,20E-08	4,84E-09	6,83E-10	MND	MNR	0,00E+00	1,34E-09	1,54E-08	5,01E-11	-8,43E-08

EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Total use of non renewable primary energy resources (PENRT)	MJ	3,07E+01	9,35E-01	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-1,19E+01
Total use of renewable primary energy resources (PERT)	MJ	2,97E+00	1,61E-02	5,52E-02	MND	MNR	0,00E+00	4,43E-03	9,53E-03	7,12E-05	-1,20E+00
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	2,92E+01	9,35E-01	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-1,19E+01
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	0,00E+00	1,61E-02	5,52E-02	MND	MNR	0,00E+00	4,43E-03	9,53E-03	7,12E-05	-1,20E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	6,75E-03	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of secondary materials (SM)	kg	3,82E-01	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	m3	8,70E-03	2,33E-05	7,14E-05	MND	MNR	0,00E+00	6,44E-06	8,48E-06	1,09E-07	-1,04E-03

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	6,81E-03	9,30E-04	1,96E-03	MND	MNR	0,00E+00	2,60E-04	7,90E-04	5,72E-06	-4,20E-01
High Level Radioactive waste	kg	6,94E-05	3,01E-07	4,05E-07	MND	MNR	0,00E+00	8,31E-08	1,73E-07	1,19E-09	-9,61E-06
Non-hazardous waste	kg	1,31E+00	1,03E-02	5,43E-03	MND	MNR	0,00E+00	2,83E-03	5,33E-03	8,28E-05	-8,38E-01

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	7,00E-03	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	8,00E-02	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	9,50E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	9,96E-08	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	1,28E-03	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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ENVIRONMENTAL IMPACT DATA: *HDMesh made of Stainless Steel*

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	2,18E-02	7,30E-04	7,27E-05	MND	MNR	0,00E+00	3,08E-05	5,50E-04	2,10E-06	-2,97E-03
Climate change – total	kg CO2e	2,80E+00	4,37E-01	5,53E-02	MND	MNR	0,00E+00	1,84E-02	6,23E-02	3,10E-04	-8,71E-01
Climate change – fossil	kg CO2e	2,78E+00	4,37E-01	5,50E-02	MND	MNR	0,00E+00	1,83E-02	6,23E-02	3,10E-04	-8,69E-01
Climate change – biogenic	kg CO2e	1,90E-02	3,00E-04	2,90E-04	MND	MNR	0,00E+00	1,27E-05	9,88E-06	4,31E-08	-1,07E-03
Climate change – LULUC	kg CO2e	3,48E-03	1,50E-04	1,70E-05	MND	MNR	0,00E+00	6,09E-06	8,72E-06	1,61E-07	-3,10E-04
Abiotic depletion of fossil resources	MJ	4,23E+01	6,15E+00	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-8,95E+00
Eutrophication, aquatic freshwater	kg PO4e	8,58E-05	2,96E-05	5,06E-05	MND	MNR	0,00E+00	1,24E-06	2,94E-06	2,60E-08	-3,90E-04
Eutrophication, aquatic marine	kg Ne	2,05E-03	1,50E-04	2,93E-05	MND	MNR	0,00E+00	6,45E-06	2,50E-04	8,06E-07	-5,90E-04
Eutrophication, terrestrial	mol Ne	2,41E-02	1,62E-03	2,10E-04	MND	MNR	0,00E+00	6,79E-05	2,75E-03	8,79E-06	-6,12E-03
Abiotic depletion, minerals & metals	kg Sbe	5,29E-05	1,46E-06	5,92E-08	MND	MNR	0,00E+00	6,11E-08	3,70E-08	4,99E-10	-7,12E-06
Ozone depletion	kg CFC11e	2,11E-07	8,69E-09	4,12E-10	MND	MNR	0,00E+00	3,64E-10	9,31E-10	9,04E-12	-4,56E-09
Photochemical ozone formation	kg NMVOCe	8,92E-03	1,34E-03	9,66E-05	MND	MNR	0,00E+00	5,64E-05	8,20E-04	3,20E-06	-2,31E-03
Water use	m3e depr.	5,80E-01	3,01E-02	9,71E-03	MND	MNR	0,00E+00	1,26E-03	2,50E-03	2,14E-05	-2,24E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	6,68E-03	1,67E+00	1,59E-01	MND	MNR	0,00E+00	7,02E-02	1,19E-01	1,05E-03	-5,25E+01
Human toxicity, cancer effects	CTUh	1,52E-09	3,10E-09	1,11E-10	MND	MNR	0,00E+00	1,30E-10	2,39E-10	1,41E-12	-1,96E-07
Human toxicity, non-cancer effects	CTUh	7,97E-11	3,98E-09	7,30E-10	MND	MNR	0,00E+00	1,67E-10	1,32E-10	1,38E-12	-1,16E-08
Ionizing radiation, human health	kBq U235-Eq	0,00E+00	7,97E-03	1,65E-03	MND	MNR	0,00E+00	3,30E-04	7,10E-04	4,89E-06	-2,87E-02
Particulate matter	disease incidence	1,64E-08	3,18E-08	6,83E-10	MND	MNR	0,00E+00	1,34E-09	1,54E-08	5,01E-11	-6,37E-08

EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Total use of non renewable primary energy resources (PENRT)	MJ	4,50E+01	6,15E+00	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-8,95E+00
Total use of renewable primary energy resources (PERT)	MJ	4,89E+00	1,06E-01	5,52E-02	MND	MNR	0,00E+00	4,43E-03	9,53E-03	7,12E-05	-9,02E-01
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	4,23E+01	6,15E+00	6,63E-01	MND	MNR	0,00E+00	2,58E-01	8,14E-01	7,67E-03	-8,95E+00
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	0,00E+00	1,06E-01	5,52E-02	MND	MNR	0,00E+00	4,43E-03	9,53E-03	7,12E-05	-9,02E-01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of secondary materials (SM)	kg	5,21E-01	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	m3	1,16E-02	1,50E-04	7,14E-05	MND	MNR	0,00E+00	6,44E-06	8,48E-06	1,09E-07	-7,80E-04

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	6,08E-05	6,10E-03	1,96E-03	MND	MNR	0,00E+00	2,60E-04	7,90E-04	5,72E-06	-3,17E-01
High Level Radioactive waste	kg	1,90E-04	1,98E-06	4,05E-07	MND	MNR	0,00E+00	8,31E-08	1,73E-07	1,19E-09	-7,25E-06
Non-hazardous waste	kg	1,01E+00	6,76E-02	5,43E-03	MND	MNR	0,00E+00	2,83E-03	5,33E-03	8,28E-05	-6,32E-01

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A4-A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	1,87E-03	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	3,50E-04	0,00E+00	0,00E+00	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	MND	MNR	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	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Emission Factors for Electricity in Poland reported in December 2024 by KOBiZE - the National Centre for Emissions Management in Poland.
Electricity CO2e / kWh	0,701 kg CO2e / kWh

BIBLIOGRAPHY

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

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

ISO 20915:2018 Life cycle inventory calculation methodology for steel products.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 15978:2011 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.

Ecoinvent Centre (2023). ecoinvent database v3.10. Swiss Centre for Life Cycle Inventories, Zurich, Switzerland.

World Steel Association (2017). Life Cycle Inventory Methodology Report for Steel Products, Brussels, Belgium.

World Steel Association (2022). Life Cycle Inventory Study Report – 2021 Data Release, Brussels, Belgium.

KOBiZE (2021). Wskaźniki emisyjności CO2, SO2, NOx, CO i pyłu całkowitego dla energii elektrycznej. National Centre for Emissions Management (KOBiZE), Warsaw, Poland.

EPDs from suppliers of the wire used to produce Nector HDMesh.

Multicert Sp. z o.o. (2024). General Programme Instructions of the EPD Poland Programme, Warsaw, Poland.

EPD VERIFICATION:

The verification procedure for this Environmental Product Declaration (EPD) has been carried out in accordance with the requirements of ISO 14025 standards. Once the verification process is complete, the EPD remains valid for a period of 5 years. There is no need to recalculate the parameters contained in the EPD after this period, provided that the data underlying the declaration have not changed substantially.

EPD CONTRIBUTORS

Manufacturer representative	Małgorzata Franaszek
EPD verifier	Izabela Sztamberek-Sochan, PhD.

Note: The sole ownership, liability, and liability of this declaration are with the owner. Construction product declarations may not be comparable if they do not comply with EN 15804. For detailed information on comparability, please refer to EN 15804 and ISO 14025.

EPD Poland Certificate

Program EPDPoland Operator: MULTICERT Sp. z o.o.

Reg. No. EPD-P 02.06.2025

CERTIFICATE

EPD TYPE III DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

This document confirms that the Environmental Product Declaration developed by

Nector Sp. z o.o. for Special HDMesh high-strength wire mesh

manufactured in accordance with standards and EADs

EN 10223-3, EAD 230025-00-0106,

EAD 230008-00-0106,

meets the requirements of standards

EN 15804 + A2 and ISO 14025,

and that the data contained therein has been prepared correctly.

EPD Environmental Product Declaration EPD VERIFIED EPD POLAND

Verification carried out by:

Izabela Sztamberek Sochan, Ph.D.

MULTICERT JEDNOSTKA CERTYFIKACYJNA

Program Manager

Grzegorz Suwara

This document is valid until June 11, 2030, or until EPD is deregistered and its publication on the website www.epd.org.pl is discontinued.

EPD Polska Registration Office,
Warsaw, June 11, 2025

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