Type III Environmental Product Declaration No. 970/2026

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Steel fibers for concrete reinforcement

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Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2:2019 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment and their aspects verified by the independent body according to ISO 14025. Basically, comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2:2019.

Life cycle analysis (LCA): A1-A5, C1-C4 and D modules in accordance with EN 15804+A2:2019 (Cradle-to-Gate with options)
The year of preparing the EPD: 2026
Standards: EN 14889-1:2006
Service Life: 100 years
PCR: ITB-PCR A
Declared unit: 1 kg
Reasons for performing LCA: B2B
Representativeness: European (Syców Poland and Bissen Luxemburg), 2024

MANUFACTURER

ArcelorMittal is one of the world's leading integrated steel and mining companies with over 125,000 employees, a presence in 60 countries and primary steelmaking operations in 15 countries. We are the largest steel producer in Europe, among the largest in the Americas, and have a growing presence in Asia through our joint venture AM/NS India.
ArcelorMittal produces a broad range of high-quality finished and semi-finished steel products. Specifically flat products, including sheet and plate, and long products, including bars, rods and structural shapes. We also produce pipes and tubes for various applications.
ArcelorMittal Syców Sp. z o.o. (Poland) and ArcelorMittal Bissen&Bettembourg S.A. (Luxemburg) are the parts of ArcelorMittal Group and are specialized in the production of reinforcement solutions for concrete. The company offers a wide range of steel fibers for flooring, shotcrete, precast and structural applications, as a result of continuous R&D efforts to offer new and competitive products for each specific application. All fibers are made of cold drawn wire (mainly produced from EAF steel) and are CE marked.

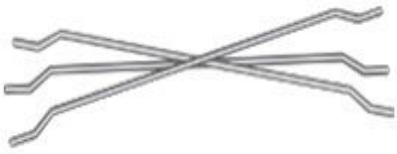
PRODUCTS

The products covered by this EPD include wide range of steel fibers for concrete reinforcement, including specific types; Undulated: TABIX, Hooked End: HE, HT, Hooked End Glued: HE GL, Flat End: FE, Hooked Flat End: HFE, Galvanized: Zn.

ArcelorMittal produces cold-drawn steel fibers for concrete reinforcement, specializing in solutions for industrial floors, shotcrete, and precast elements. The portfolio includes hooked-end (HE) and undulated (TABIX) fibers, providing enhanced ductility and crack control. These fibers often replace traditional rebar, reducing carbon footprints by over 20%.

Undulated fiber trade named TABIX has been designed such from the point of view of amplitude and wave length that the workability is good for aspect ratios up to 45 and remains satisfactory for aspect ratios up to 60. Due to the shape TABIX provides shrinkage control and pull-out resistance from the concrete matrix. These features make TABIX especially suited for jointless industrial floors and for structural applications. TABIX needs a well compacted medium - to high - strength concrete to develop its full performance.

Hooked end fiber (HE) has been in the market for over 30 years. The product can be used in almost any known application for steel fiber reinforced concrete. It does not perform as well as undulated fibers with regard to shrinkage control but shows better performances for high deformations of the concrete element, and it provides a good workability when using fibers with up to an aspect ratio of 60. HE can be used with any concrete mix and high concrete density is less mandatory then for undulated or for flat-end fibers. According to producer, load transfer in the crack is very good with this fiber shape. Thus, after the appearance of the first crack the loss of load-bearing capacity occurs quickly but then stabilizes and, in some cases, even begins to increase again after large cracks have developed. The fiber shapes mentioned above are manufactured in various diameters, lengths, and breaking strengths. Diameter range is 0.55 mm to 1.30 mm. Length range is 25 mm to 60 mm. Classification by breaking strength: standard: 1150 – 1450 N/mm², 1+: 1450 – 1850 N/mm², 2+: 1850 – 2200 N/mm², 3+: > 2200



N/mm². Steel fibers are used to reinforce concrete in various applications, such as industrial floors, foundation slabs and other slabs, precast elements, and structural elements (Figure 1).

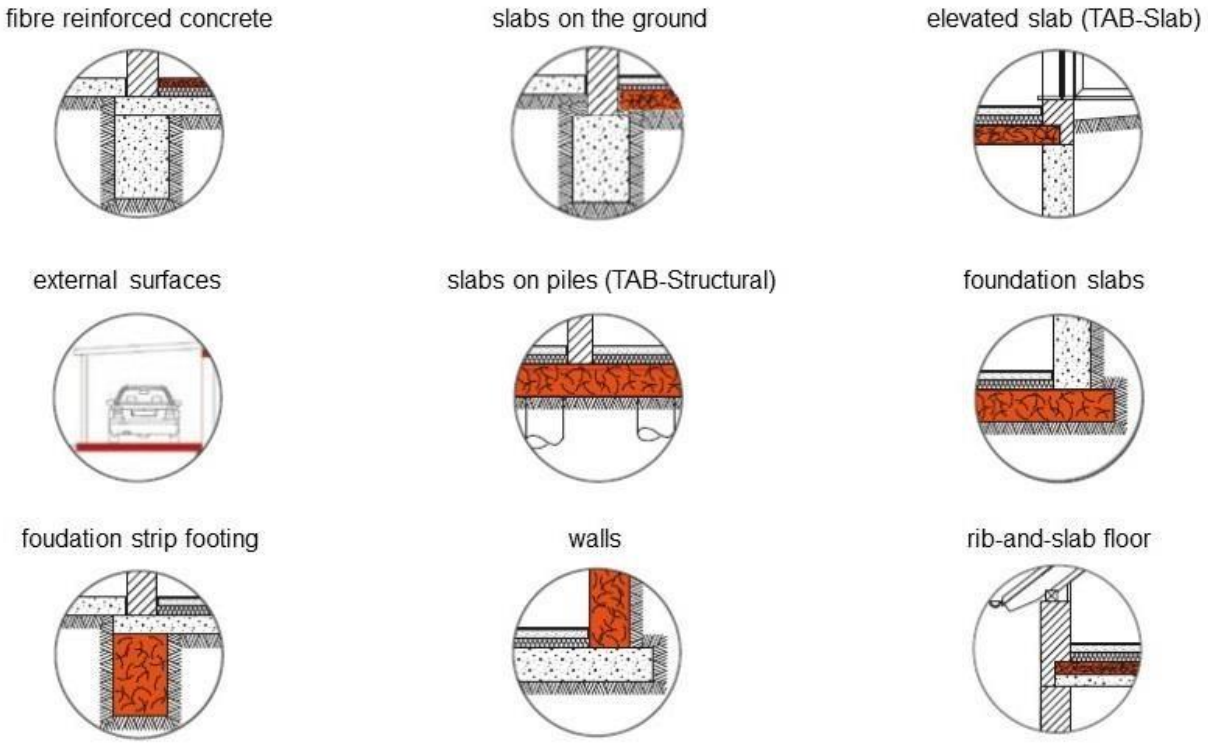


Figure 1. Applications types of steel fibers

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Unit

The declared unit used in this study is defined as 1 kg of steel fibers for concrete reinforcement manufactured in ArcelorMittal Syców Sp. z o.o. located at Wioska 28D, 56-500 Syców, Poland and ArcelorMittal Bissen&Bettembourg S.A. located Route de FinsterthalL-7769 Bissen, Luxemburg.
The same manufacturing process and the similarities of product allow a declared unit based on mass unit of products. This is a product specific EPD, from a specific manufacturer, produced at different sites (Syców and Bissen, presented averaged). A weighted average based on 2024 production was used to obtain the results.

Note: The EPD includes additional result tables (Informative Annex 1) that separately present the potential environmental performance of steel fibres produced using wire manufactured with up to 100% scrap and 100% renewable electricity. These scenarios reflect the very low-emission product ranges of ArcelorMittal—such as XCarb®, DC02®, and any other brands meeting these criteria.

System boundary

The life cycle analysis of the declared products covers “Product Stage” A1-A3, A4-A5, C1-C4+D modules in accordance with EN 15804+A2:2019 and ITB PCR A (cradle to gate with options). Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculation. It can be assumed that the total sum of omitted processes does not exceed 1% of all impact categories. The environmental impact of the product studied has been assessed by considering all significant processes, materials, and emissions contributing to more

than 1% to the total impact categories included in the EPD. The production of capital equipment, facilities, and infrastructure required for manufacture has not been considered. There are no known flows or process deliberately excluded.

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production is a line process All impacts from input materials (mainy EAF steel) and processing are allocated in module A1 of the LCA. Impacts from the global line production were inventoried and 99.5% was allocated to the production of the steel fibres based on the products mass basis. Water and energy consumption, associated emissions and generated wastes are allocated to module A3. For the current product route of input steel, allocation was applied in the Electric Arc Furnace process using the method developed by the Worldsteel association, which is compliant with ISO 21930:2017 and EN 15804+A2:2019 standards. The methodology is based on physical allocation and considers the manner in which changes in inputs and outputs affect the production of co-products and material flows that carry specific inherent properties. The method is deemed to provide the most representative partitioning of the processes involved. For all background data used in the model, the standard allocation assumptions of the used datasets were maintained.

System limits

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A5, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804+A2:2019 and ITB PCR A. Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculations. It can be assumed that the total sum of omitted processes does not exceed 1% of all impact categories. In accordance with EN 15804+A2:2019, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Modules A1 and A2: *Raw materials supply and transport*

Raw materials such as rolled steel wires come mainly come from high quality EU located wire rod suppliers. The lubricant agent and dies are from Germany whereas other ancillary items come from local suppliers. Data on transportation of the raw material, additives and packaging materials to the manufacturing plants was collected and modelled for by
assessor. Means of transport include trucks with load: <10t, 10 – 16t and >16. For calculation purposes European fuel averages are applied.

Module A3: *Production*

The production process starts with wire rod (5.5–6.5 mm diameter coils) which with the mean of forklift is loaded on pay-off system, next the wire is cleaned to avoid die damage by a mechanical descaling to remove scale. After cleaning and straightening, the wire rod passes through a bath of liquid that prepare the surface of the wire. The wire is pulled through a drawing die using 14 drawing blocks. After the final drawing, the wire can have diameters ranging from 0.55 mm to 1 mm. The next step is forming and cutting to produce fibers. The fibers are packed into carton boxes or big bags. The packaged products are then labelled, wrapped in foil on pallets, and stored in the warehouse.

Fig. 2. A production scheme of the steel fibers produced by ArcelorMittal (Syców and Bissen).

The glued fiber process starts with spools of wire, ranging from 0.55 to 0.75 mm in diameter, placed on a payoff system. The wires are pulled and pass through a first cleaning station to remove the drawing soap, followed by a second station where they are washed with water. After drying, the wires enter the gluing station, where a special adhesive is applied, forming a flat band of glued wires. This band then passes through a furnace to dry and cure the glue. In the final step, we form and cut to produce glued fibers.

A4 and A5: Transport to construction sites and installation

The steel fibers manufactured by ArcelorMittal were distributed mainly among 15 European countries. An average distance between production plant and the construction sites, taken to the LCA calculation, constitutes weighted arithmetic mean of 600 km, estimated based on sales data provided by ArcelorMittal. Means of transport include trucks with load >16t and fuel consumption of 35 L per 100 km. The energy required to add 1 kg of steel fibers to concrete during floor pouring depends mainly on the mixing process and equipment efficiency. In practice, the additional energy consumption is relatively low approx. 0.005 kWh/kg.

Modules *C and D: End-of-life (EOL)*

The concrete with the steel fibers are disassembled (C1 module) by crane, power tools, hammers, breakers, and grappling hooks mounted onto heavy equipment. 100% material recovery during demolishing is assumed. The manufacturer declares the technology and the scenario in which the steel fibers can be separated (in a close future) from waste concrete up to 95% by heavy crusher with a magnetic separator. 5% goes to landfill. 90% of recovered steel can be used for new steel production (EAF process). It is assumed that at the end of life the transport distance from the product deconstruction place to waste processing (C2) is 50 km on > 16 t loaded lorry with 75% capacity utilization and fuel consumption of 35 l per 100 km. Materials recovered from dismantled products are recycled according to the BAT treatment practice. The reuse, recovery and recycling potential for a new product system is considered beyond the system boundaries (module D) based on World Steel recommendations and national practice (see references).

Table 1. End-of-life scenario for the hot rolled bars and wires

Material	Material recovery	Recycling	Landfilling
steel scrap	100%	95%	5%

Electricity at end-of-life (module C) has been modelled using an average electricity mix as the location where the product reaches end-of-life is unknown.

Data collection period

The data for manufacture of the declared products refer to period between 01.01.2024 – 31.12.2024 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by Bissen plant and Syców plant and verified. No data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency is judged as good. All primary data were collected from ArcelorMittal production facilities. The sources of secondary data are the database Ecoinvent 3.11 and are representative for the years 2024. The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty. All primary data are collected for the year 2024. All secondary data come from the Ecoinvent databases and are representative of the years 2018-2025 (< 10 years). As the study intended to compare the product systems for the reference year 2024, temporal representativeness is good. All primary and secondary data are collected specific to the countries/regions under study. Where country / region specific data are unavailable, proxy data are used. Geographical representativeness is considered very good. No mass balance approach was used. Biogenic carbon with packing in product is less than 5%.

Assumptions and estimates

The impacts of the representative products were aggregated using weighted average (from Bissen and Syców Plant).

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN15804+A2. Emission of greenhouse gases was calculated using the IPCC GWP method with a 100-year horizon. Emission of acidifying substances, emission of substances to water contributing to oxygen depletion, emission of gases that contribute to the creation of ground-level ozone, abiotic depletion, and ozone depletion emissions where all calculated with the EF 3.1. method

Additional information

Foreground data electricity consumption was modelled using residual mix electricity datasets from the consumption 2024 year, composed by Luxemburg and Poland residual mixes. Polish electricity mix used is 0.553 kg CO_2/kWh and Luxemburg is 0.457 kg CO_2/kW. As a general rule, no particular environmental or health protection measures other than those specified by law are necessary

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.

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 kg of steel fibres manufactured in Syców and Bissen. The following life cycle modules (Table 2) were included in the analysis. The following tables 3-6 show the environmental impacts of the life cycle of selected modules (A1-A5+C1-C4+D).

Table 2. System boundaries for the environmental characteristic of the product.

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)															
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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**
MD	**MD**	**MD**	**MD**	**MD**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MD**	**MD**	**MD**	**MD**	**MD**

Table 3. Life cycle assessment (LCA) results for specific product – environmental impacts (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	6.37E-01	8.45E-02	1.77E-01	8.99E-01	1.00E-01	1.57E-03	2.62E-03	8.34E-03	6.92E-02	5.28E-04	-2.82E-01
Greenhouse potential - fossil	eq. kg CO_2	6.47E-01	8.42E-02	1.67E-01	8.99E-01	9.97E-02	1.48E-03	2.46E-03	8.31E-03	5.86E-02	5.27E-04	-2.78E-01
Greenhouse potential - biogenic	eq. kg CO_2	-1.05E-02	2.88E-04	9.71E-03	-5.31E-04	3.41E-04	9.56E-05	1.59E-04	2.84E-05	1.05E-02	1.34E-06	-3.93E-03
Global warming potential - land use and land use change	eq. kg CO_2	4.58E-04	3.31E-05	1.52E-04	6.43E-04	3.91E-05	1.56E-06	2.60E-06	3.26E-06	9.26E-06	4.97E-07	-2.42E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	6.83E-09	1.95E-08	3.66E-09	3.00E-08	2.31E-08	2.90E-11	4.83E-11	1.92E-09	7.16E-01	2.13E-10	-6.51E-09
Soil and water acidification potential	eq. mol H+	2.05E-03	3.42E-04	1.73E-03	4.11E-03	4.05E-04	1.37E-05	2.28E-05	3.37E-05	4.89E-04	4.95E-06	-4.11E-04
Eutrophication potential - freshwater	eq. kg P	6.82E-05	5.66E-06	3.45E-04	4.18E-04	6.70E-06	2.92E-06	4.86E-06	5.59E-07	3.97E-07	4.91E-08	-7.20E-05
Eutrophication potential - seawater	eq. kg N	4.36E-04	1.03E-04	2.73E-04	8.12E-04	1.22E-04	2.21E-06	3.68E-06	1.02E-05	1.66E-03	1.72E-06	-1.19E-04
Eutrophication potential - terrestrial	eq. mol N	5.08E-03	1.13E-03	2.22E-03	8.43E-03	1.33E-03	1.80E-05	3.01E-05	1.11E-04	3.14E-03	1.89E-05	-1.65E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.37E-03	3.45E-04	6.31E-04	2.35E-03	4.08E-04	5.15E-06	8.59E-06	3.40E-05	6.85E-04	5.48E-06	-2.49E-04
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	4.54E-06	2.99E-07	8.11E-07	5.64E-06	3.54E-07	6.61E-09	1.10E-08	2.95E-08	1.33E-08	1.21E-09	-1.02E-06
Abiotic depletion potential - fossil fuels	MJ	9.79E+00	1.25E+00	2.70E+00	1.37E+01	1.48E+00	2.38E-02	3.96E-02	1.23E-01	5.56E-02	1.44E-02	-5.97E+00
Water deprivation potential	eq. m^3	1.25E-01	5.78E-03	6.23E-02	1.93E-01	6.84E-03	5.12E-04	8.53E-04	5.70E-04	1.30E-03	4.58E-05	-4.43E-02

Table 4. Life cycle assessment (LCA) results for specific product – additional impacts indicators (DU: 1 kg)

Indicator	Unit	A1-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA

Table 5. Life cycle assessment (LCA) results for specific product - the resource use (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.22E+00	1.79E-02	3.72E-01	1.61E+00	2.12E-02	3.60E-03	6.00E-03	1.77E-03	1.02E-03	1.25E-04	-7.75E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.63E-01	0.00E+00	0.00E+00	1.63E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.39E+00	1.79E-02	3.72E-01	1.78E+00	2.12E-02	3.60E-03	6.00E-03	1.77E-03	1.02E-03	1.25E-04	-7.75E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	9.44E+00	1.25E+00	2.70E+00	1.34E+01	1.48E+00	2.38E-02	3.96E-02	1.23E-01	-2.70E+00	1.44E-02	-6.01E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	4.59E-02	0.00E+00	0.00E+00	4.59E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	9.79E+00	1.25E+00	2.71E+00	1.37E+01	1.48E+00	2.38E-02	3.96E-02	1.23E-01	5.57E-02	1.44E-02	-6.01E+00
Consumption of secondary materials	kg	9.97E-01	4.19E-04	3.54E-04	9.98E-01	4.96E-04	3.07E-06	5.11E-06	4.14E-05	2.51E-05	3.03E-06	-8.61E-01
Consumption of renew. secondary fuels	MJ	2.57E-03	4.62E-06	2.04E-06	2.58E-03	5.47E-06	1.86E-08	3.10E-08	4.56E-07	3.41E-07	7.93E-08	-4.39E-05
Consumption of non-renewable secondary fuels	MJ	3.98E-01	0.00E+00	2.01E-03	2.01E-03	0.00E+00	1.55E-05	2.58E-05	0.00E+00	0.00E+00	0.00E+00	-3.58E-01
Net consumption of freshwater	m^3	1.50E-01	1.57E-04	1.71E-03	1.52E-01	1.86E-04	9.14E-06	1.52E-05	1.55E-05	4.92E-05	1.58E-05	-1.33E-01

Table 6 Life cycle assessment (LCA) results for specific product – waste categories (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	1.00E-03	1.40E-03	2.04E-03	4.45E-03	1.66E-03	2.20E-05	3.66E-05	1.38E-04	3.99E-09	1.53E-05	-1.00E-05
Non-hazardous waste	kg	1.06E-01	2.49E-02	3.41E-01	4.72E-01	2.95E-02	3.78E-03	6.31E-03	2.46E-03	1.04E-02	2.16E-04	-7.52E-02
Radioactive waste	kg	6.82E-04	9.33E-08	5.46E-06	6.87E-04	1.11E-07	5.53E-08	9.21E-08	9.21E-09	2.97E-07	9.59E-08	-6.15E-04
Components for re-use	kg	0.00E+00	0.00E+00	1.04E-03	1.04E-03	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	2.91E-05	3.87E-06	5.07E-02	5.07E-02	4.58E-06	4.48E-07	7.47E-07	3.82E-07	3.71E-07	2.89E-08	0.00E+00
Materials for energy recovery	kg	6.34E-08	3.13E-08	3.16E-08	1.26E-07	3.71E-08	2.78E-10	4.63E-10	3.09E-09	4.63E-09	3.42E-10	0.00E+00
Exported Energy	MJ	1.62E-03	0.00E+00	1.89E-02	2.06E-02	0.00E+00	1.91E-04	3.18E-04	0.00E+00	5.67E-02	0.00E+00	0.00E+00

Informative Annex 1 – Steel fibres manufactured exclusively from wire produced using up to 100% scrap input and electricity from 100% renewable sources.

This annex presents the potential environmental impacts associated with steel production under these conditions, representative of ArcelorMittal's low emissions product portfolio (e.g. XCarb®, DC02®), as well as any additional grades or brands fulfilling these criteria.

The information in the Annex 1 provides illustrative information on the estimated impacts of production of products for which the manufacturer may provide the sources of origin certificates.

Table A1. Life cycle assessment (LCA) results for specific product – environmental impacts (DU: 1 kg)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	4.10E-01	1.00E-01	1.57E-03	2.62E-03	8.34E-03	9.55E-02	5.28E-04	-2.37E-01
Greenhouse potential - fossil	eq. kg CO_2	4.46E-01	9.97E-02	1.48E-03	2.46E-03	8.31E-03	5.86E-02	5.27E-04	-2.39E-01
Greenhouse potential - biogenic	eq. kg CO_2	-3.68E-02	3.41E-04	9.56E-05	1.59E-04	2.84E-05	3.68E-02	1.34E-06	-1.41E-03
Global warming potential - land use and land use change	eq. kg CO_2	8.10E-04	3.91E-05	1.56E-06	2.60E-06	3.26E-06	9.26E-06	4.97E-07	-3.18E-05
Stratospheric ozone depletion potential	eq. kg CFC 11	2.53E-09	2.31E-08	2.90E-11	4.83E-11	1.92E-09	7.16E-01	2.13E-10	-3.21E-13
Soil and water acidification potential	eq. mol H+	1.87E-03	4.05E-04	1.37E-05	2.28E-05	3.37E-05	4.89E-04	4.95E-06	-5.84E-04
Eutrophication potential - freshwater	eq. kg P	9.03E-06	6.70E-06	2.92E-06	4.86E-06	5.59E-07	3.97E-07	4.91E-08	-5.57E-08
Eutrophication potential - seawater	eq. kg N	5.24E-04	1.22E-04	2.21E-06	3.68E-06	1.02E-05	1.66E-03	1.72E-06	-9.39E-05
Eutrophication potential - terrestrial	eq. mol N	5.71E-03	1.33E-03	1.80E-05	3.01E-05	1.11E-04	3.14E-03	1.89E-05	-8.41E-04
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.58E-03	4.08E-04	5.15E-06	8.59E-06	3.40E-05	6.85E-04	5.48E-06	-3.81E-04
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	6.78E-06	3.54E-07	6.61E-09	1.10E-08	2.95E-08	1.33E-08	1.21E-09	-1.35E-06
Abiotic depletion potential - fossil fuels	MJ	5.65E+00	1.48E+00	2.38E-02	3.96E-02	1.23E-01	5.56E-02	1.44E-02	-2.38E+00
Water deprivation potential	eq. m^3	6.82E-02	6.84E-03	5.12E-04	8.53E-04	5.70E-04	1.30E-03	4.58E-05	-1.61E-02

Table A2. Life cycle assessment (LCA) results for specific product – additional impacts indicators (DU: 1 kg)

Indicator	Unit	A1-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA

Table A3. Life cycle assessment (LCA) results for specific product - the resource use (DU: 1 kg)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.22E+00	2.12E-02	3.60E-03	6.00E-03	1.77E-03	1.02E-03	1.25E-04	-7.75E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.63E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.39E+00	2.12E-02	3.60E-03	6.00E-03	1.77E-03	1.02E-03	1.25E-04	-7.75E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	9.44E+00	1.48E+00	2.38E-02	3.96E-02	1.23E-01	5.57E-02	1.44E-02	-6.01E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	4.59E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	8.58E+00	1.48E+00	2.38E-02	3.96E-02	1.23E-01	5.57E-02	1.44E-02	-6.01E+00
Consumption of secondary materials	kg	9.97E-01	4.96E-04	3.07E-06	5.11E-06	4.14E-05	2.51E-05	3.03E-06	-8.61E-01
Consumption of renew. secondary fuels	MJ	2.57E-03	5.47E-06	1.86E-08	3.10E-08	4.56E-07	3.41E-07	7.93E-08	-4.39E-05
Consumption of non-renewable secondary fuels	MJ	3.98E-21	0.00E+00	1.55E-05	2.58E-05	0.00E+00	0.00E+00	0.00E+00	-3.58E-21
Net consumption of freshwater	m^3	1.50E-01	1.86E-04	9.14E-06	1.52E-05	1.55E-05	4.92E-05	1.58E-05	-1.33E-01

Table A4 Life cycle assessment (LCA) results for specific product – waste categories (DU: 1 kg)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	1.00E-03	1.66E-03	2.20E-05	3.66E-05	1.38E-04	3.99E-09	1.53E-05	-1.00E-05
Non-hazardous waste	kg	1.06E-01	2.95E-02	3.78E-03	6.31E-03	2.46E-03	1.04E-02	2.16E-04	-7.52E-02
Radioactive waste	kg	6.82E-04	1.11E-07	5.53E-08	9.21E-08	9.21E-09	2.97E-07	9.59E-08	-6.15E-04
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	0.00E+00
Materials for recycling	kg	2.91E-05	4.58E-06	4.48E-07	7.47E-07	3.82E-07	3.71E-07	2.89E-08	0.00E+00
Materials for energy recovery	kg	6.34E-08	3.71E-08	2.78E-10	4.63E-10	3.09E-09	4.63E-09	3.42E-10	0.00E+00
Exported Energy	MJ	1.62E-03	0.00E+00	1.91E-04	3.18E-04	0.00E+00	5.67E-02	0.00E+00	0.00E+00

Verification

The process of verification of this EPD is in accordance with ISO 14025. After verification this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years. if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804+A2 and ITB PCR A (1.6)
Independent verification corresponding to ISO 14025 (sub clause 8.1.3.) [x] external [ ] internal
External verification of EPD: Halina Prejzner. PhD. Eng. LCI audit and verification: Michał Chwedaczuk. M.Sc. Eng. LCA, LCI audit and input data verification: Michał Piasecki. PhD., D.Sc., eng.

Note 1: The declaration owner has the sole ownership, liability, and responsibility for the information provided and contained in EPD. Declarations of construction products may not be comparable if they do not comply with EN 15804+A2. For further information about comparability. see EN 15804+A2 and ISO 14025.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent. third-party verification organization (see ISO 17025/17065/17029). ITB-EPD program is recognized and registered member of The European Platform - Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- EN 14889-1:2006 Fibers for concrete. Steel fibres. Definitions, specifications and conformity
- ISO 14025:2006. Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- ISO 20915:2018 Life cycle inventory calculation methodology for steel products
- World Steel Association 2017 Life Cycle inventory methodology report for steel products
- Ecoinvent.org

LCA, LCI, data verification
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CERTIFICATE № 970/2026
of TYPE III ENVIRONMENTAL DECLARATION

Products:
Steel fibres for concrete reinforcement

Manufacturer:
ArcelorMittal Syców Sp. z o.o.
Wioska 28D, 56-500 Syców, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued on 15th May 2026 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics and Environment Department
Agnieszka Winkler-Skalna, PhD

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director for Research and Innovation
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Warsaw, May 2026