



**Type III Environmental Product Declaration
Ribbed bars**




A close-up, black and white photograph of several parallel metal rollers, likely from a mill, showing their textured surface and curved shape. A solid blue horizontal band is overlaid across the middle of the image, containing white text.

CMC Poland Sp. z o.o. is a Polish mill that manufactures and sells its products on domestic and foreign markets. We run our manufacturing and processing operations in a manner that supports and promotes environmental responsibility. We minimize our impact on the environment by limiting the use of natural resources in our products. The quality and good reputation of CMC Poland products are guaranteed by over 120 years of experience and tradition as well as state-of-the-art technological solutions in the area of production, environmental protection and occupational safety. Our main production activity is carried out in Poland, in Zawiercie.

General information



Owner of the declaration	CMC Poland Sp. z o.o. ul. Piłsudskiego 82 42-400 Zawiercie	
EPD program operator	Building Research Institute ul. Filtrowa 1 00-611 Warszawa	
Declared product	Ribbed bars produced at CMC Poland Sp. z o.o. plant in Zawiercie.	
Declared unit	1 ton	
Declaration number	596/2024	
Date of issue	24.01.2024 r.	
Validity date	24.01.2029 r.	
Reason for performing LCA	B2B	
Representativeness	Polish and European	



IITB is a verified member of the European Platform for EPD program operators and LCA practitioner
www.eco-platform.org.

Verification



The verification of the Type III Environmental Declaration is carried out according to the guidelines of EN ISO 14025 and ISO 21930. Once verified, the document is valid for 5 years unless the inputs change significantly

EN 15804+A2 serves as the basis for PCR

Independent verification of declarations and data according to ISO 14025:2010

external

internal

Independent verifier appointed by the Building Research Institute Michał Piasecki, prof. ITB

LCA analysis by CMC Poland sp. z o.o.



The LCA was carried out to develop a Type III environmental declaration. Direct and indirect customers of CMC Poland sp. z o.o. are the recipients of this declaration.

Product description

Ribbed bars

Ribbed bars are designed for reinforcement of reinforced concrete elements and structures designed according to the standards PN-EN-1992-1-1:2008 or PN-B-03264:2002 (for steel grade A-IIIN) or PN-S-10042 (for steel grade A-IIIN), which may work under dynamic and repeatedly changeable loads. Ribbed bars are widely used in construction industry, communication engineering, for road engineering structures and railroad engineering structures. Products are offered as bundles of rods.

Product description

Parameter	Value	Unit
Declared unit	1000	kg
Density	7,833	kg/m ³
Modulus of elasticity	E – 210; G – 80	GPa
Heat transfer coefficient	58	W/m·K
Melting point	1425 - 1540	°C

Delivery

Dimensions of declared products may vary depending on the order. Technical information about specific products can be found at <https://www.cmc.com>.

Basic materials

For the production of ribbed bars, steel produced by CMC Poland at the Zawiercie Plant is used . 92.5% of steel scrap is used in steel production, of which Post-Consumer is 89.5%; Pre-Consumer is 3.0%. In addition to steel scrap, iron alloys (1.3%) and non-ferrous alloys (6.2%) are used in production. 99.7% of the materials used in production were imported from closer than 800 km (500 miles). The produced steel does not contain any substances listed in Annex XVII or XIV of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH).

Production

Steel billets are directed from the CMC Poland Melt Shop or storage areas to the rolling lines, where they are given the desired shape and size. The final step involves the labelling of the products. The production of bars in ductility class A is created by a hot rolling process that uses the raw materials described earlier.

Environment and health during production

Environmental, occupational health and safety and quality management at CMC Poland is compliant with the implemented and certified Integrated Management System based on the international ISO standards:

- 9001 – Quality management systems
- 14001 – Environmental management system.
- 45001 – Health and safety management systems

Packaging

Ribbed bars are transported in bundles tied with plain wire rod. The wire rod used for packaging should be recycled after collection as steel scrap.

Conditions of use

No changes in material composition should occur during use. The need for maintenance will depend on how the product is used.

Environment and health during the use phase

Under normal conditions of use, steel products, due to the low possibility of release of metals from steel, do not cause adverse effects on human health and the environment.

Reference usage time

The reference period for the service life of ribbed bars is limited by their application, i.e. the life of the structure or building in which the products will be installed.

It is estimated that under standard conditions, the reference shelf life of the products is 100 years.





Water pollution

Under normal conditions of use, steel products, due to the low possibility of release of metals from steel, do not cause adverse effects on human health and the environment. Product impacts are not anticipated in the event of flooding.

Mechanical damage

Environmental and human health hazards are not expected to occur in the event of mechanical destruction.

Reuse phase

Ribbed bars shall not be reused after service

Liquidation

Spent ribbed bars are valuable secondary raw materials that should be 100% collected and reprocessed into new products.

Other information

Ribbed bars at the end of the product life cycle should be fully recycled.

System Limits



The life cycle analysis of the studied products includes the „Product Stage“, modules A1-A3 (cradle to gate). The calculation includes consumption of raw materials, water, gas, electricity, emissions to water and air, and information about generated waste.

The calculations include deliveries by road, rail and sea transport. Average transportation distances assumed for the calculations are 200 m (transport between production departments) and 145.7 km for deliveries of scrap and alloy additives, respectively.

The following transport means were assumed:

- HGV, EURO 0-6 mix with a capacity of 22 and 27 tons,
- HGV, EURO 5 with a capacity of 17,3 and 22 tons,
- rail transport with the use of both electric and diesel traction with a capacity of 1452 tons,
- sea transport with a capacity of 3500 DWT.

European standards for average combustion were used for the calculations.

The production scheme of the declared products is shown in Figure 1, flow diagram.

It is assumed that the sum of the omitted processes does not exceed 5% of the total impact categories, according to EN 15804 guidelines. The machinery and equipment required for production as well as the transportation of employees were excluded from the calculations.

Type EPD - from cradle to gate. A1-A3 modules.



DESCRIPTION OF SYSTEM BOUNDARIES (X = INCLUDED IN LCA; ND = NOT DECLARED)

Product stage			Construction phase		Stage of use							End-of-life stage				Benefits and burdens beyond system boundaries
Extraction and production of raw materials / supply of raw materials	Transporting	Manufacturing of a product	Transportation to the construction site	Construction process/application/assembly	Operation	Maintenance	Repair	Change	Renovation	Energy consumption during the use phase	Water consumption in use phase	Demolition/Tearing down	Transporting	Waste treatment	Storage	Potential for reuse, recovery and recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Modules A1-A3 for declared products include:

- Providing resources, additives and energy,
- Transport of raw materials and additives to the production site,
- Production processes,
- Recycling of production and post-production scrap.

Fig. 1 Flow diagram





A mass allocation was used to calculate the LCA. Data for LCA calculations were collected from the production departments of CMC Poland sp. z o.o., in a form of electronic or paper reports. The calculations were made for a functional unit of 1 ton of product. Inputs and outputs to the ribbed bars production process were defined based on the production reports and information from the departments. The entire inventory was collected in a file called „input data” and it was used as input for the LCA calculations in the LCA for Experts software (Sphera). Electricity grid mix for Poland modeled by Sphera. The share of electricity from RES accounts for 30% of total electricity demand. Energy from RES has been modeled according to energy guarantee certificates.

Data collection period

Data for LCA calculations were inventoried at CMC Poland sp. z o.o. production plants in Zawiercie and come from the period 01.01.2022 – 31.12.2021 (1 year).

Comparability

Comparison or evaluation of EPD data is possible only if all data sets for comparison have been created in accordance with PN-EN 15804+A2 standard.



This EPD was prepared using LCA for Experts version 10.7.1.28. software.

Product stage			Construction phase		Stage of use							End-of-life stage				Benefits and burdens beyond system boundaries
Extraction and production of raw materials / supply of raw materials	Transporting	Manufacturing of a product	Transportation to the construction site	Construction process/application/assembly	Operation	Maintenance	Repair	Change	Renovation	Energy consumption during the use phase	Water consumption in use phase	Demolition/Tearing down	Transporting	Waste treatment	Storage	Potential for reuse, recovery and re-cycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Parameter	Unit	A1 – A3
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LCA LIFE CYCLE ESTIMATION RESULTS – ENVIRONMENT IMPACT STUDY: 1 ton of product

Global Warming Potential (GWP)	kg CO ₂ equivalent	3,58E+02
Greenhouse gas potential - fossil (GWP - fossil)	kg CO ₂ equivalent	3,58E+02
Greenhouse gas potential - biogenic (GWP - biogenic)	kg CO ₂ equivalent	3,37E-01
Global warming potential - land use and land use change (GWP-luluc)	kg CO ₂ equivalent	2,35E-01
Stratospheric ozone depletion potential (ODP)	kg CFC 11 equivalent	5,67E-10
Soil and water acidification potential (AP)	mol H ⁺ equivalent	1,10E+00
Eutrophication potential - freshwater (EP - freshwater)	kg P equivalent	4,26E-04
Eutrophication potential - seawater (EP - seawater)	kg N equivalent	2,72E-01
Eutrophication potential - terrestrial (EP - terrestrial)	Mol N equivalent	2,95E+00
Potential for photochemical ozone synthesis (POCP)	kg NMVOC equivalent	7,38E-01
Potential for depletion of abiotic resources - non-fossil resources (ADP - elements)	kg Sb equivalent	2,51E-05
Abiotic depletion potential - fossil fuels (ADP - fossil)	MJ	5,05E+03
Water deprivation potential (WDP)	m ³ equivalent	6,26E+00

LCA LIFE CYCLE ESTIMATION RESULTS - RESOURCE CONSUMPTION: 1 ton of product

Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	-
Consumption of renewable primary energy resources used as raw materials	MJ	2,15E+03
Total consumption of renewable primary energy resources (primary energy AND primary energy resources used as raw materials)	MJ	2,15E+03
Consumption of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	-
Consumption of non-renewable primary energy resources used as raw materials	MJ	5,05E+03
Total consumption of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	5,05E+03
Recycled materials consumption	kg	1,10
Consumption of renewable secondary fuels	MJ	-
Consumption of non-renewable secondary fuels	MJ	-
Net consumption of freshwater resources	m ³	1,77+00

LCA LIFE CYCLE ESTIMATION RESULTS - OUTPUT MATERIAL STREAMS AND WASTE CATEGORIES: 1 ton of product

Hazardous waste, neutralized	kg	-11,5E-07
Non-hazardous waste, neutralised	kg	2,25E+00
Radioactive waste	kg	4,22E-02
Components for reuse	kg	-
Materials to recycle	kg	2,06E+02
Materials for energy recovery	kg	6,96E+01
Energy exported	MJ	-



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Thermal Physics, Acoustics and Environment Department

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CERTIFICATE No 596/2024 of TYPE III ENVIRONMENTAL DECLARATION

Products:

Ribbed bars

Manufacturer:

CMC Poland Sp. z o.o.

ul. Piłsudskiego 82, 42-400 Zawiercie, 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 24th January 2024 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



Deputy Director
for Research and Innovation

Krzysztof Kuczyński, PhD

Warsaw, January 2024



it's what's **inside** that counts

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