ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804+A2

Reinforcement Steel

LEINSTER REINFORCEMENTS LTD

Owner of the declaration:
Leinster Reinforcements Ltd

Product:
Reinforcement Steel

Declared unit:
1 tonne

This declaration is based on Product Category Rules:
EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022
EN15804:2012+A2:2019 Core rules for the product category of construction products

Program operator:
EPD Ireland

Declaration number:
EPDIE-25-221

Issue date:
07.01.2026

Valid to:
06.01.2031

General information

Product

Reinforcement Steel

Owner of the declaration:

Leinster Reinforcements Ltd
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Program operator:

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web: https://www.igbc.ie/epd-home/

Manufacturer:

Leinster Reinforcements Ltd

Declaration number:

EPDIE-25-221

Place of production:

Leinster Reinforcements Ltd
Barrowford Industrial Estate, Monasterevin Road
Athy, Co. Kildare, R14 TN62, Ireland

This declaration is based on Product Category Rules:

EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022
EN15804:2012+A2:2019 Core rules for the product category of construction products

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. The EPD Program operator shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Type of EPD

Specific product EPD

Issue date:

07.01.2026

Declared unit:

1 tonne Reinforcement Steel

Valid to:

06.01.2031

Scope of the EPD:

A1-A3, C1, C2, C3, C4, D

Year of study:

2024

Functional unit:

Function Unit not used. This EPD is for a Declared Unit

Comparability:

Environmental Product Declarations from different programmes may not be directly comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See clause 5.3 of EN 15804:2012+A2:2019

LCA consultant or person responsible for LCA: .
Mando Kort

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

Approved:

SIGNATURE OF PROGRAMME OPERATOR

Third party verifier:
Kim Allbury

Pat Barry, CEO - Irish Green Building Council

Product

Product description:

This EPD represents a single specific product of reinforced steel, named Rebar – B500.
Reinforced steel serves many purposes, it is used through the building from foundations to floors. Rebars function within the building is to reinforce the concrete of the building. The steel consists of 97.8% recycled content, meaning that 2.2% is produced from primary steel (22 kg per ton), while the remaining 97.6% corresponds to secondary material (978 kg per ton) already included in the model.

Product specification:

Rebar or reinforcing bar is a carbon steel bar or mesh used to strengthen concrete structures by increasing tensile strength. Rebars are commonly used in construction to provide structural integrity, durability and resistance against cracking and deformation under various loads and environmental conditions. Rebar comes in various bar diameters and are ribbed to provide a good bond with the concrete.

Technical data:

The reinforcing steel conforms to BS 4449:2005 for weldable reinforcing steel (bar, coil and decoiled product).

Market/Geographical Area:

The products are distributed to the United Kingdon and Republic of Ireland.

Reference service life, product

Reinforcing steel products are used in the main building structure so the reference service life will equal the lifetime of the building. The Concrete Society follows the definitions provided in BS EN 1990, which specifies "building structures and other common structures as having a lifetime of 50 years (The Concrete Society, n.d.; BSI, 2005). On this basis, the RSL for this EPD is assumed to be 50 years.

Reference service life, building or construction works

Not relevant

LCA: Calculation rules

Declared unit:

1 tonne Reinforcement Steel

kg per Declared unit 1000

Cut-off criteria:

All relevant inputs and outputs - like emissions, energy and materials - have been taken into account in this LCA, and in accordance with EN15804+A2:2019. The study covers at least 95% of the materials and energy per module and at least 99% of the total use of materials and energy of each unit process. Long term emissions have been excluded from the study

Allocation:

The source of default unit processes or activities is the Ecoinvent database version 3.9.1, system model "Allocation, cut-off by classification". In this EPD, the waste processes are allocated in the relevant module. In the case of the use of secondary materials or energy recovered from secondary fuels, the system boundary between the system under study and the previous system (providing the secondary materials) is set where outputs of the previous system, e.g. materials, products, building elements or energy, reach the end-of-waste state. The reinforcing steel contains 97.8% recycled content. Of this, 97.6% (978 kg per tonne) is secondary material entering the system at end-of-waste status and therefore included directly within the A1 model. The remaining 2.2% (22 kg per tonne) corresponds to primary steel production. The modularity and the polluter payer principles have been followed. There is no allocation to co-products within the model. There also has been no offsetting of emissions.

Data quality:

In this study the data flows have been modelled as realistic as possible within the practical feasibility of the LCA practitioner. The data quality is based on the principle that the primary data used for processes occurring at the production site, must be of higher quality than background data of other processes.

Time Representativeness - In this LCA the data relating to the manufacturing of Rebar – B500 and the background processes for environmental impacts are recent (<2 years).
Time Representativeness is considered to be Very Good.

Geographical Representativeness - The processes used in the production of Rebar – B500 is geographically representative, meaning that the production location of Rebar – B500 lies within the region for which the relevant Ecoinvent environmental records have been selected.
Geographical Representativeness is considered to be Good.

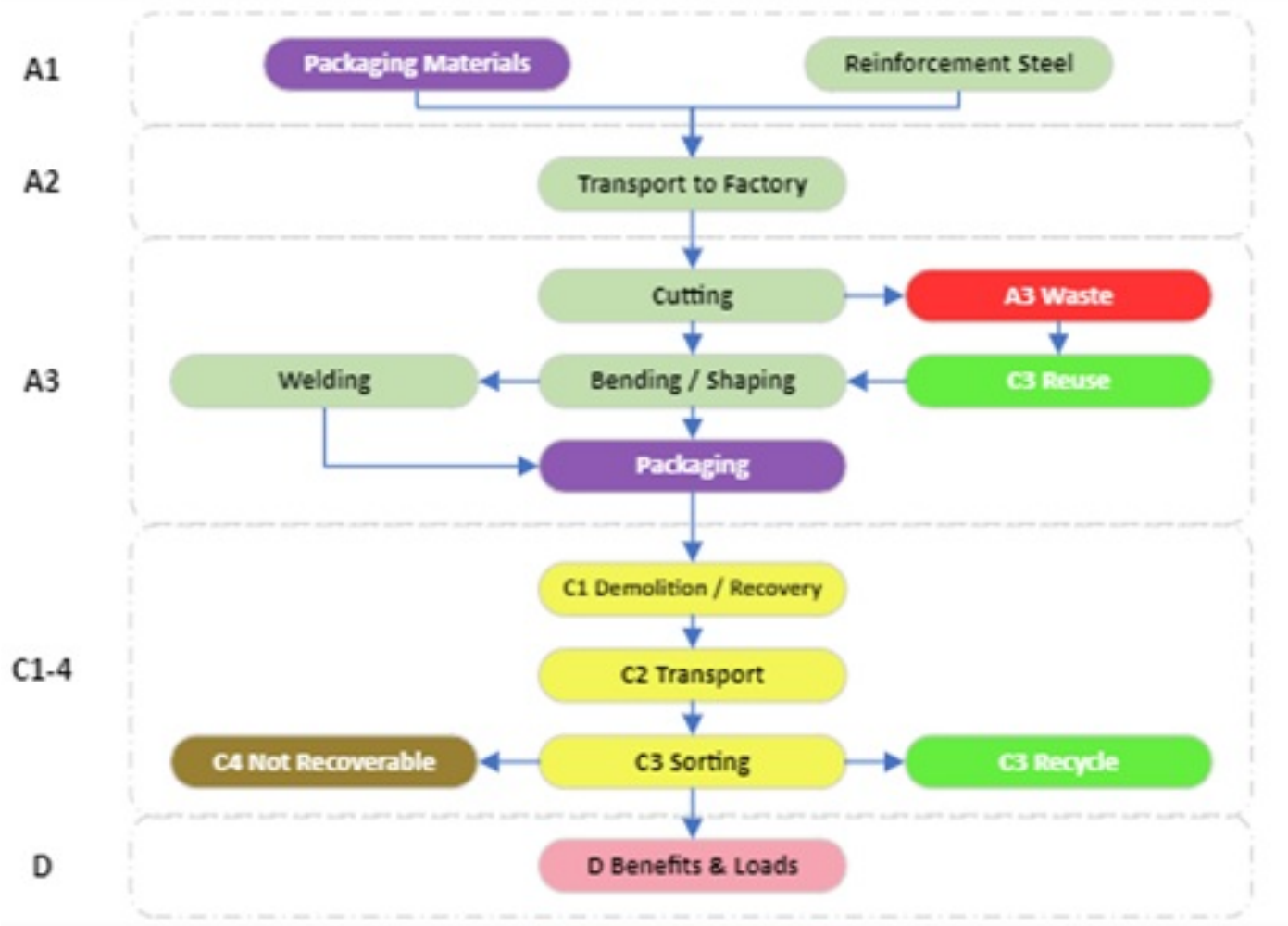
Technical Representativeness - The datasets are up-to-date and representative for the current technology used in the processes of manufacturing the product.
Technical Representativeness is considered to be Very Good

Scope and type of EPD (X = Module declared; ND = Module not declared)

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction 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
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

System boundary:

This assessment covers the production phase ('cradle-to-gate') A1-A3, the end-of-life stages (C1–C4), and module D, in line with the minimum mandatory requirements of EN 15804. This is termed 'Cradle-to-gate with modules C1-C4 and module D'. A schematic of these stages is presented in the flow diagram below.



Additional technical information:

The energy used for production is a combination of on-site solar panels as well as electricity from the grid (described by the AIB electricity mix for 2022. The CO2 intensity of the electricity from Leinster's own solar panels is 0.085 kg CO2 eq per kwh and from the grid is 0.035 kg CO2 eq per kwh

LCA: Scenarios and additional technical information

The following information describes the scenarios in the different modules of the EPD.

Demolition (Module C1)
Concrete removal is modelled with an electric demolition machine rated at 2.9 kW. The measured machine time corresponds to an energy demand of 0.00116 kWh per kg of concrete removed, equivalent to 1.16 kWh per tonne.

Transport of waste materials (Module C2)
Regarding the transportation to the waste processor, a distance of 100 km is chosen for all waste processing methods.

Waste processing (C3)
All waste treatment activities are included in module C3, whereby 100% recycling is considered.
For reuse it is assumed no waste treatment has to be performed.

Disposal (C4)
It is assumed that no disposal of materials occurs, and 100% of materials are recovered and recycled.

Recycling (Module D)
Module D contains the loads and benefits of recycling, reuse and energy recovery from incineration. In this module the net output flow has been calculated according to:

Mnet=Mrecovered-Minput from secondary

The steel contains 97.8% recycled content, therefor the net output flow is calculated as:

1 - 0.978 = 0.022.

This equals to 22 kg per ton.

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact								
Indicator		Unit	A1-A3	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	3.70E+02	4.26E-01	1.49E+01	6.21E+01	0.00E+00	-4.58E+01
	GWP-fossil	kg CO_2 -eq	3.66E+02	4.10E-01	1.49E+01	6.21E+01	0.00E+00	-4.57E+01
	GWP-biogenic	kg CO_2 -eq	3.34E+00	1.43E-02	1.25E-02	1.43E-02	0.00E+00	-8.94E-02
	GWP-luluc	kg CO_2 -eq	7.78E-01	1.02E-03	7.26E-03	6.99E-03	0.00E+00	-2.04E-02
	ODP	kg CFC11 -eq	1.18E-05	7.83E-09	3.26E-07	9.88E-07	0.00E+00	-8.75E-07
	AP	mol H+ -eq	1.51E+00	2.35E-03	6.94E-02	5.76E-01	0.00E+00	-1.94E-01
	EP-FreshWater	kg P -eq	5.62E-03	4.06E-05	1.22E-04	2.24E-04	0.00E+00	-2.11E-03
	EP-Marine	kg N -eq	3.94E-01	2.96E-04	2.73E-02	2.67E-01	0.00E+00	-3.96E-02
	EP-Terrestial	mol N -eq	1.92E+00	3.44E-03	2.95E-01	2.90E+00	0.00E+00	-4.59E-01
	POCP	kg NMVOC -eq	1.61E+00	1.11E-03	1.03E-01	8.59E-01	0.00E+00	-2.18E-01
	ADP-minerals&metals[1]	kg Sb-eq	2.31E-04	4.98E-06	4.63E-05	2.17E-05	0.00E+00	-3.93E-04
	ADP-fossil[1]	MJ	5.23E+03	9.34E+00	2.14E+02	8.14E+02	0.00E+00	-4.77E+02
	WDP[1]	m^3	1.87E+02	1.05E-01	9.38E-01	1.76E+00	0.00E+00	-8.44E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment: EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Remarks on environmental impacts

Additional environmental impact indicators								
Indicator		Unit	A1-A3	C1	C2	C3	C4	D
	PM	Disease incidence	3.23E-06	7.50E-09	1.46E-06	1.61E-05	0.00E+00	-3.47E-06
	IRP[2]	kgBq U235 -eq	3.55E+01	8.43E-02	1.11E-01	1.66E-01	0.00E+00	-5.93E-01
	ETP-fw[1]	CTUe	1.22E+03	1.57E+00	1.06E+02	3.89E+02	0.00E+00	-1.65E+02
	HTP-c[1]	CTUh	1.99E-06	1.93E-10	8.00E-09	1.90E-08	0.00E+00	-2.90E-07
	HTP-nc[1]	CTUh	6.71E-06	7.68E-09	1.66E-07	1.32E-07	0.00E+00	-5.09E-07
	SQP[1]	dimensionless	2.19E+03	1.82E+00	1.61E+02	5.48E+01	0.00E+00	-1.53E+02

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. 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.

Resource use								
Indicator		Unit	A1-A3	C1	C2	C3	C4	D
	PERE	MJ	8.01E+02	2.09E+00	3.39E+00	4.63E+00	0.00E+00	-4.87E+01
	PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PERT	MJ	8.01E+02	2.09E+00	3.39E+00	4.63E+00	0.00E+00	-4.87E+01
	PENRE	MJ	6.75E+02	9.79E+00	2.28E+02	8.65E+02	0.00E+00	-5.04E+02
	PENRM	MJ	6.09E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PENRT	MJ	6.77E+03	9.79E+00	2.28E+02	8.65E+02	0.00E+00	-5.04E+02
	SM	kg	1.15E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	FW	m^3	4.25E+00	7.52E-03	3.01E-02	5.72E-02	0.00E+00	-2.54E-01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Waste								
Indicator		Unit	A1-A3	C1	C2	C3	C4	D
	HWD	kg	2.26E-02	1.64E-05	1.35E-03	5.47E-03	0.00E+00	-4.06E-03
	NHWD	kg	5.99E+01	3.75E-02	1.36E+01	1.16E+00	0.00E+00	-1.98E+01
	RWD	kg	2.13E-02	6.74E-05	7.21E-05	8.91E-05	0.00E+00	-4.20E-04

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Output flow								
Indicator		Unit	A1-A3	C1	C2	C3	C4	D
	CRU	kg	1.34E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	4.06E+01	0.00E+00	0.00E+00	1.00E+03	0.00E+00	0.00E+00
	MER	kg	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	0.00E+00

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

Additional requirements

Dangerous substances

None of the substances contained in the product are listed in the “Candidate List of Substances of Very High Concern for authorisation”, or they do not exceed the limit for registration with the European Chemicals Agency.

Mandatory additional information on release of dangerous substances to indoor air, soil and water.

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

Bibliography

[1] 'ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.

[2] 'ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.

[3] 'ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006.

[4] 'NEN-EN 15804+A2: Duurzaamheid van bouwwerken - Milieuverklaringen van producten - Basisregels voor de productgroep bouwproducten', NEN-EN 15804:2012+A2:2019.

[5] General Programme Instructions of the EPD Ireland Programme (V 2.1 5/03/2022).

[6] EPD Ireland Programme referenced Product Category Rules (PCR) (V 2.1 5/03/2022).

[7] Ecochain Helix 4.3.1, 2025, web: http://helix.ecochain.com.

[8] European Residual Mixes, Results of the calculation of residual Mixes for the calendar year 2022, Version 1.0, 2023-06-01, AIB Association of issuing bodies.

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