PACIFIC STEEL
CERTAIN STRENGTH

PACIFIC DCRB™
Reinforcing Bar
Environmental Product Declaration

IN ACCORDANCE WITH ISO 14025 AND
EN 15804:2012+A2:2019/AC:2021

EPD INTERNATIONAL EPD SYSTEM

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The International EPD® System
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Programme Operator:
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ECO PLATFORM EPD VERIFIED

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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

Product not yet on the market – Results of this EPD shall be used with care as the LCI data is not yet based on 1 year of production which may result in increased uncertainty.

Programme-Related Information and Verification

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Third party verifier, approved by EPD Australasia	Rob Rouwette, start2see Pty Ltd Web: www.start2see.com.au Email: Rob.Rouwette@start2see.com.au
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An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules). The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025. The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. Results that are EN15804+A1 compliant are given in this document to assist comparability across EPDs.

About PACIFIC STEEL®

PACIFIC STEEL® has proudly been New Zealand's sole local manufacturer of wire rod, reinforcing bar, coil and mesh feed products for over 60 years. Our steel products are integral to the foundations and structures across the country, contributing to the strength and resilience of New Zealand's built environment. New Zealand Steel's Electric Arc Furnace (EAF) has received approval and is set for operation in 2026. The EAF will enable New Zealand Steel to shrink its carbon footprint and help New Zealand, as a nation, be as close to self-sufficient as possible, using renewable energy and recycling scrap steel. This project underscores our own commitment to a circular economy model, with all our feed material being supplied by New Zealand Steel.

Product Description

This product specific EPD covers PACIFIC DCRB™ - Reinforcing Bar products - manufactured hot rolled bar in 300E and 500E seismic grades which are typically used in the reinforcement of concrete structures. Our reinforcing products are manufactured to the requirements of AS/NZS 4671:2019 and certified by the Australasian Certification Authority for Reinforcing and Structural Steels (ACRS). The EPD is for using a high scrap blend and is for a product not yet on the market.

Declared Unit

This EPD sets out information on PACIFIC DCRB™ - Reinforcing Bar at the outbound gate of the manufacturing site. All products are manufactured our facility in Otahuhu, Auckland. The declared unit presented is one kilogram of product. This EPD is of the type "Cradle-to-gate with modules C1-C4 and module D". Other life cycle stages are dependent on how the product is used, and should be developed and included as part of holistic assessment of specific construction works.

Product Content

Table 1: Typical steel composition of product:

Element	Typical Content
Iron	>97%
Manganese	<1.5%
Silicon	<0.35%
Chromium	<0.1%
Carbon	<0.23%
Other	<0.1% each

> "Declared Unit — This EPD is valid for a declared unit of 1 kg of PACIFIC DCRB™ - reinforcing bar."

Table 2: Content declaration for 1kg of PACIFIC DCRB™ - Reinforcing Bar

Substances	Weight (kg)	Post-consumer recycled material, weight-% of product*	Biogenic material, weight-% of product	Biogenic material, kg C/ product or declared unit
Carbon Steel	1	82%	0	0

* External scrap inputs include shred and heavy metal scrap (HMS), both of which are largely made up of post-consumer scrap. NZ Steel experts calculate post-consumer recycled material content based on estimates of available shred and HMS.

Table 3: Average packaging for 1 kg of PACIFIC DCRB™ - Reinforcing Bar

Packaging materials	Weight (kg)	Weight-% (versus the product)	Biogenic material, kg C/ product or declared unit
Steel Strapping (kg)	0.0016	0.16	0

The product does not contain materials identified in the European Chemicals Agency's Candidate List of Substances of Very High Concern (SVHC) in the products at a concentration greater than 0.1% (ECHA, 2025).

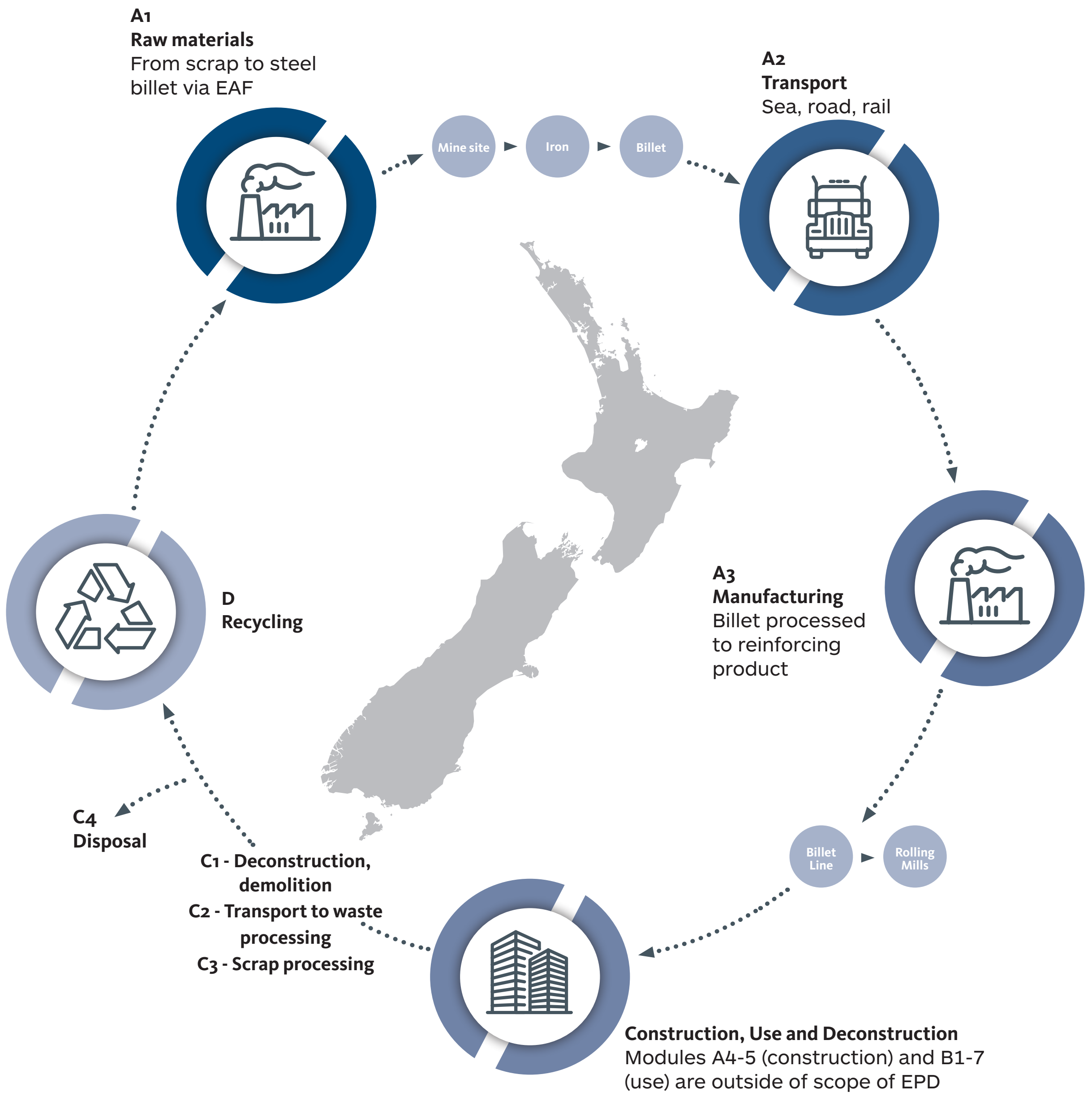
Manufacturing & Processing in New Zealand

New Zealand Steel is in the process of installing an electric arc furnace (EAF) which will replace it's current oxygen based steelmaking process via the Klockner Oxygen Blown Maxhutte (KOBM). This marks a significant decarbonisation step change in the steelmaking process by enabling large scale incorporation of external scrap, replacing a significant amount of primary iron requirements. This EPD reflects the significance of this upcoming change, and the need to produce this specific EPD for product not yet on the market.

The EAF is planned to begin commissioning in late 2025, and be fully operational in early 2026. This change is expected to reduce site emissions by up to 1Mt of CO_2 annually (RNZ, 2024). All steel will be produced via the EAF, which can accept a combination of molten pig iron (produced from iron sand) or secondary steel scrap (post industrial / post-consumer). This will also enable the production of very low emissions steel made with a high scrap blend at the EAF.

PACIFIC STEEL® manufactures its products using steel billets supplied by New Zealand Steel. Those billets are reheated in our furnace, before being compressed and elongated through rolls to reduce thickness and increase strength.

The bar markings and diameters pressed into the bars determine which rolls are required, with the line rolls changing accordingly. The end product is then cooled and shipped out to customers around the country.



Scope of Declaration

The scope of this declaration is for 1 kilogram of PACIFIC DCRB™ - Reinforcing Bar from cradle to the mill gate, including end-of-life processing and recovery: Modules A1-A3, C1-C4 and D (according to EN 15804). Modules A4-A5 and B1-B7 have not been included due to the inability to predict how the material will be used following manufacture.

The system boundary applied in this study extends from mining of raw materials such as ironsand and coal; transport to and within the manufacturing site; iron and steel manufacture; ancillary service operations; rolling of steel billet to produce bar and packaging for dispatch to customers at the exit gate of the manufacturing site.

The system boundary also includes: manufacture of other required input materials; transport between processing operations; the production of external services such as electricity, natural gas and water; and wastes and emissions to air, land and water. Co-products from the steelmaking process have been removed through the use of allocation.

As module C is included in the EPD, it is recommended to consider the results of module C in light of the results for modules A1-A3.

Table 4. Scope of Declaration in EPD

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Recovery Stage
	Raw materials	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction Demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	NZ	-	-	-	-	-	-	-	-	-	NZ	NZ	NZ	NZ	NZ
Specific Data	36%*			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation Products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation Sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = included in the EPD; ND = Module not declared (such a declaration shall not be regarded as an indicator result of zero).

*The percentage is based on the contribution from actual (measured) data associated with iron sand mining, iron production, EAF steel production (including the modelled electricity use), transport of steel billets to PACIFIC STEEL®, steel billet reheating and bar production.

Product stage (Modules A1-A3): Upstream Data

All data for iron making and steel-making come from New Zealand Steel. New Zealand Steel's Life Cycle Inventory (LCI) is based on a mix of data periods. All critical processes are based on data from 1 July 2023 – 30 June 2024. Other processes reflect data for the period from 1 July 2018 to June 30 June 2019. The LCI for the electricity arc furnace (EAF) is based on modelled data since the EAF is not yet in operation. All PACIFIC STEEL® data is for the period 1 July 2023 – 30 June 2024.

Life Cycle Assessment (LCA) Methodology

This EPD has been produced in conformance with the requirements of the International EPD® System General Programme Instructions v4.0 (GPI) and PCR 2019:14 Construction products v1.3.4.

Primary Data

All data for primary iron and steel-making come from New Zealand Steel. New Zealand Steel's Life Cycle Inventory (LCI) for this update is based on data for the period from 1 July 2018 to June 30 June 2019. All PACIFIC STEEL® data is for the period 1 July 2018 to 30 June 2019.

Data for the EAF is theoretical, based on engineering calculations. Data on scrap inputs (post-industrial and post-consumer) are theoretical, based on estimates made by experts. An updated EPD will be produced once primary data for these are available

Software and Databases

The underlying LCA model was developed according to the ISO standards for LCA (ISO, 2006a, 2006b), using the Life Cycle for Experts (LCA FE) (formerly known as GaBi Software) for life cycle engineering, developed by Sphera Solutions, Inc.

Data for all energy inputs, transport processes and raw materials are from the Managed LCA Content (MLC) Database 2024.2 (Sphera, 2024). Most datasets have a reference year between 2020 and 2023, and therefore, all datasets are within the 10-year limit allowable for generic data under EN 15804 and the PCR.

Electricity

Electricity for primary iron making was based on New Zealand Steel's cogeneration plants. Other processes including mining, steel making and the production of billet utilise purchased electricity. PACIFIC STEEL® also uses purchased electricity for manufacturing reinforcing product. New Zealand Steel and PACIFIC STEEL® do not purchase specific electricity mixes that provide Guarantee of Origin. Therefore, the residual electricity mix on the market is used for the processes that NZ Steel and PACIFIC STEEL® have control over.

The composition of the residual electricity grid mix of New Zealand is modelled in LCA FE 2024.2 based on published data for the year 1st April 2021 – 31st March 2022 (BraveTrace, 2023). The New Zealand residual electricity mix is made up of hydro (56.6%), geothermal (19.7%) natural gas (12.5%), wind (6.55%), coal (4.25%), biomass (0.266%) and biogas (0.160%). Onsite consumption (3.00%), and the medium voltage (1kV-60kV) grid's transmission and distribution losses (3.17%) are calculated based on data from the Ministry of Business, Innovation & Employment (MBIE, 2023). The emission factor for the New Zealand residual grid mix for the GWP-GHG indicator is 0.146 kgCO_2e/kWh (based on EF3.1).

Location-based grid mix is used for other electricity consumption including Modules C and D. The emission factor for the New Zealand location-based grid mix for the GWP-GHG indicator is 0.143 kg CO_2e/kWh (based on EF3.1).

Allocation

Allocation follows EN 15804 section 6.4.3.2. Data for the production of reinforcing bar were provided per process and thus allocation was not required. Steel scrap outputs during production are treated as waste for recovery, and internally recycled at NZ Steel's EAF. The model assumes that 100% of the steel is produced from scrap. The scrap input is modelled as 65% post-consumer scrap and 35% internal scrap (burden-free) based on estimates by NZ Steel scrap experts. Internal steel scrap from production is treated as an internal flow that does not require allocation. Here, the input steel bears the burden of inefficiencies (scrap generation). There is no post-industrial scrap input.

The post-consumer scrap is burden-free, but includes impacts of shredding and transport to the EAF. GWP-GHG of post-consumer scrap is 0.0158 kg CO2 eq. per kg of steel scrap. Cut-off approach is applied for slag produced at the EAF.

Cut-off Criteria

The cut-off criteria applied allowed items constituting less than 1% by mass, energy and environmental relevance to be excluded from the study. However, data which fell within the cut-off criteria were included in the data set where available.

Personnel is excluded as per section 4.3.2 in the PCR (EPD International, 2024). thinkstep-anz consistently excludes environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process, ('capital goods') regardless of potential significance.

Capital goods and infrastructure associated with electricity have been included in the background datasets as provided by the Managed LCA Content (MLC) database (Sphera, 2024). Infrastructure/capital goods associated with all other upstream, core and downstream processes have been excluded.

High-quality infrastructure-related data isn't always available and there is no clear cut-off for what to include. For this reason, capital goods data are applied to LCA studies inconsistently. This is expected to lead to reduced consistency and comparability of EPDs. Capital goods were previously excluded from EPDs, thus including capital goods in current EPDs would further reduce their comparability.

Transport

Specific transport data was used for transport of production inputs (A2). Any wastes from the production process (A3) are assumed to be transported over a 100 km distance to a treatment or disposal site.

Transport modes:

- Truck (diesel), Euro 0 - 6 mix, 20 - 26t gross weight / 17.3t payload capacity.
- Container ship (heavy fuel oil), 5,000 to 200,000 dwt payload capacity, ocean going.

Other Assumptions and Qualifications

Transport and packaging of minor materials is insignificant to the overall impacts.

- Since the EAF is not yet operational, data for the EAF are based on modelled data provided by NZ Steel and the EAF designers. Similarly, the % scrap input is based on modelling and estimation of scrap forecasts.
- Upstream data taken from the MLC database reflects average or generic production and therefore does not correspond to actual New Zealand Steel or PACIFIC STEEL® suppliers.
- The split of scrap recycled domestically and internationally reflect NZ Steel's expected total demand of New Zealand's total scrap production. However, since steel scrap is a global commodity and now domestically sought for the EAF, the split and results may not be fully representative for NZ Steel and PACIFIC STEEL®.
- Where specific life cycle inventory data were unavailable, proxy data were used, giving preference to regional data.

End-of-Life (Modules C1-C4)

End-of-life Module C1 (deconstruction) was modelled based on the use of a 100 kW construction excavator. Module C2 (transport) assumed 50 km transport by truck to a waste processing facility or landfill. The recycling scenario in this EPD was based on a steel recycling report for New Zealand Heavy Engineering Research Association (HERA), where it was estimated that 85% of steel scrap from the building and infrastructure sector is recovered (thinkstep-anz, 2021). The remaining 15% is assumed to be sent to a landfill.

End-of-life allocation follows the requirements of EN15804:2012+A2:2019 section 6.4.3.3. At end-of-life, the recovered steel scrap (85%) following module C3 will first be used to satisfy the input of secondary steel needed for steel production. The net scrap is given a credit/burden in Module D.

At the end of life of a product, scrap is collected for recycling and is thus available to produce a recycling credit within Module D.

Table 5. End-of-Life Scenarios for Products

Process	Unit (expressed per declared unit of components products or materials and by type of material)
Collection process specified by type	1 kg of reinforcing products collected with mixed construction waste
Recovery system specified by type	0.85 kg for recycling (thinkstep-anz, 2021)
Disposal specified by type	0.15 kg modelled as ferrous metals in landfill (module C4)
Assumptions for scenario development, e.g. transportation	C1 - Demolishing with an Excavator (100kW)- Fuel consumption is calculated at 0.172g diesel input per kg of material. C2 - 50 km of transport by truck C3 - 0.2 MJ of electrical energy from the New Zealand grid needed to process 1 kg of scrap. The crushing of reinforced concrete which encapsulates the steel and materials handling are excluded.

Recovery and Recycling potential (Module D)

Module D accounts for the net environmental benefits or burdens - beyond the system boundary - resulting from the recycling of scrap. It only applies to the net flow of recyclable materials, meaning that any potential benefits are calculated after deducting the scrap used as input in the product's life cycle from the amount of scrap made available for recycling at the end-of-life.

Module D impacts are modelled using a combination of industry average inventories (44%) (worldsteel value of scrap dataset (Sphera, 2024)) and NZ Steel value of scrap (56%). The steel value of scrap datasets represents the difference between impact when manufacturing 100% primary and 100% secondary steel, and is used to represent the credit/burden at module D.

Module D for this EPD results in a burden as there is less net scrap available than post-consumer scrap input required.

Environmental Performance

The results tables describe the different environmental indicators for each product per declared unit, for each declared module. The EN 15804 reference package based on EF 3.1 is used.

Table 6 contains the core environmental impact indicators in accordance with EN 15804:2012+A2:2019/AC:2021 describing the potential environmental impacts of the product.
Table 7 provides additional environmental impact indicators in accordance with EN 15804:2012+A2:2019/AC:2021
Table 8 shows the life cycle inventory indicators for resource use.
Table 9 displays the life cycle inventory indicators for waste and other outputs.
Table 10 displays biogenic carbon content indicators.
Table 11 contains results for environmental impact indicators in accordance with EN 15804:2012+A1:2013 to aid backward comparability.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

The use of primary energy is separated into energy used as raw material and energy used as energy carrier as per option C in Annex 3 in the PCR (EPD International, 2024). Energy indicators (MJ) are always given as net calorific value.

Table 6. EN15804+A2 Core Environmental Impact Indicators

Indicator	Abbrev.	Unit
Climate change – total	GWP-total	kg CO_2-eq.
Climate change - fossil	GWP-fossil	kg CO_2-eq.
Climate change - biogenic	GWP-biogenic	kg CO_2-eq.
Climate change - land use and land use change	GWP-luluc	kg CO_2-eq.
Ozone Depletion	ODP	kg CFC11-eq.
Acidification	AP	Mole of H+ eq.
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.
Eutrophication aquatic marine	EP-marine	kg N eq.
Eutrophication terrestrial	EP-terrestrial	Mole of N eq.
Photochemical ozone formation	POCP	kg NMVOC eq.
Depletion of abiotic resources - minerals and metals[1]	ADP-m&m	kg Sb-eq.
Depletion of abiotic resources - fossil fuels[1]	ADP-fossil	MJ
Water use[1]	WDP	m^3 world equiv.

Table 7. EN15804+A2 Additional Environmental Impact Indicators

Indicator	Abbrev.	Unit
Climate Change[2]	GWP-GHG	kg CO_2-eq.
Climate Change[3]	GWP-GHG (IPCC AR5)	kg CO_2-eq.
Particulate Matter emissions	PM	Disease incidences
Ionising Radiation – human health[4]	IRP	kBq U235 eq.
Eco-toxicity (freshwater)[1]	ETP-fw	CTUe
Human Toxicity, cancer[1]	HTP-c	CTUh
Human Toxicity, non-cancer[1]	HTP-nc	CTUh
Land use related impacts / soil quality[1]	SQP	Dimensionless (Pt)

Environmental Performance

Table 8. Life Cycle Inventory Indicators on Use of Resources

Indicator	Abbrev.	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ
Use of renewable primary energy resources used as raw materials	PERM	MJ
Total use of renewable primary energy resources	PERT	MJ
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ
Total use of non-renewable primary energy resources	PENRT	MJ
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ
Use of non-renewable secondary fuels	NRSF	MJ
Net use of fresh water	FW	m^3

Table 9. Life Cycle Inventory Indicators on Waste Categories and Output Flows

Indicator	Abbrev.	Unit
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for reuse	CRU	kg
Materials for energy recovery	MER	kg
Materials for recycling	MFR	kg
Exported electrical energy	EEE	MJ
Exported thermal energy	EET	MJ

Table 10. Biogenic Carbon Content Indicators

Indicator	Abbrev.	Unit
Biogenic carbon content - product	BCC-prod	kg C
Biogenic carbon content - packaging	BCC-pack	kg C

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Table 11. EN15804+A1 Environmental Impact Indicators

Indicator	Abbrev.	Unit
Global warming potential	GWP (EN15804+A1)	kg CO_2-eq.
Ozone depletion potential	ODP (EN15804+A1)	kg CFC11-eq.
Acidification potential	AP (EN15804+A1)	kg SO_2-eq.
Eutrophication potential	EP (EN15804+A1)	kg PO_4^{3-}-eq.
Photochemical ozone creation potential	POCP (EN15804+A1)	kg Ethene-eq.
Abiotic depletion potential for non-fossil resources	ADPE (EN15804+A1)	kg Sb-eq.
Abiotic depletion potential for non-fossil resources	ADPF (EN15804+A1)	MJ

Disclaimers

[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 experience with the indicator.

[2]This indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero. It has been included in the EPD following the PCR.

[3]GWP-GHG (IPCC AR5) is an additional GWP100 indicator that is aligned with the Intergovernmental Panel on Climate Change (IPCC) 2013 Fifth Assessment Report (AR5) (IPCC 2013), national greenhouse gas reporting frameworks in Australia and New Zealand and previous versions of the Construction Products PCR (PCR2019:14v1.11). It excludes biogenic carbon and indirect radiative forcing.

[4]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 some construction materials, is also not measured by this indicator.

Results of Assessment

Table 12. EPD Results for 1kg of PACIFIC DCRB™ - Reinforcing Bar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	4.85E-01	6.76E-04	5.36E-03	8.11E-03	3.13E-03	6.40E-01
GWP-fossil	kg CO_2 eq.	4.84E-01	6.76E-04	5.35E-03	8.07E-03	3.11E-03	6.41E-01
GWP-biogenic	kg CO_2 eq.	9.07E-04	1.01E-07	7.20E-07	4.24E-05	1.04E-05	-1.46E-03
GWP-luluc	kg CO_2 eq.	1.22E-04	1.75E-08	1.41E-07	1.25E-06	1.36E-05	6.69E-05
ODP	kg CFC-11 eq.	3.42E-10	6.69E-17	5.38E-16	1.67E-14	9.71E-15	-9.47E-12
AP	Mole of H^+ eq.	2.09E-03	3.50E-06	1.18E-05	3.49E-05	1.95E-05	5.69E-03
EP-freshwater	kg P eq.	2.94E-07	1.03E-10	8.25E-10	2.67E-08	6.32E-09	5.77E-08
EP-marine	kg N eq.	4.69E-04	1.70E-06	5.36E-06	8.51E-06	4.72E-06	6.13E-04
EP-terrestrial	Mole of N eq.	5.79E-03	1.86E-05	5.95E-05	1.31E-04	5.18E-05	6.54E-03
POCP	kg NMVOC eq.	1.31E-03	4.80E-06	1.33E-05	2.15E-05	1.48E-05	1.96E-03
ADP-minerals&metals[1]	kg Sb eq.	1.73E-07	8.79E-12	7.07E-11	9.04E-10	2.09E-10	1.32E-06*
ADP-fossil[1]	MJ	6.55E+00	8.82E-03	7.10E-02	8.84E-02	5.18E-02	7.40E+00
WDP[1]	m^3 world equiv.	3.85E-01	2.51E-06	2.02E-05	1.02E-02	3.82E-04	-2.62E-03

*Module D benefits exceed A1-A3 impacts due to worldsteel value of scrap.

Table 13. Resource Use

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	6.09E+00	3.82E-05	3.07E-04	3.65E-01	7.69E-03	-9.34E-02
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	6.09E+00	3.82E-05	3.07E-04	3.65E-01	7.69E-03	-9.34E-02
PENRE	MJ	6.55E+00	8.82E-03	7.10E-02	8.84E-02	5.18E-02	7.40E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.55E+00	8.82E-03	7.10E-02	8.84E-02	5.18E-02	7.40E+00
SM	KG	8.97E-01	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	2.59E-02	5.11E-08	4.11E-07	7.47E-04	1.16E-05	2.13E-02

Table 14. Waste Categories and Output Flows

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	8.56E-09	1.42E-13	1.14E-12	8.71E-11	1.23E-11	1.91E-08
NHWD	kg	2.87E-02	2.17E-07	1.74E-06	5.88E-05	1.50E-01	3.24E-04
RWD	kg	4.44E-05	1.72E-09	1.38E-08	4.03E-08	7.03E-07	-1.09E-06
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00*	0.00E+00	0.00E+00	8.50E-01	0.00E+00	0.00E+00
MER	kg	0.00E+00	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

*Since Pacific Steel scrap is considered as internal scrap, MFR is recorded as zero.

Table 15. Biogenic Carbon Content

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	0	0	0	0	0	0
BCC-pack	kg	0	0	0	0	0	0

Results of Assessment

Table 16. Additional Environmental Impact Indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2-eq.	4.84E-01	6.76E-04	5.36E-03	8.12E-03	3.13E-03	6.41E-01
GWP-GHG (IPCC AR5)[3]	kg CO_2-eq.	4.84E-01	6.76E-04	5.36E-03	8.12E-03	3.12E-03	6.42E-01
PM	Disease incidences	1.87E-08	4.43E-11	1.28E-10	2.46E-10	2.25E-10	2.55E-08
IRP[4]	kBq U235 eq.	4.21E-03	1.85E-07	1.48E-06	5.64E-06	9.64E-05	-5.25E-03
ETP-FW[1]	CTUe	1.19E+01	3.94E-03	3.17E-02	6.24E-01	3.15E-02	2.73E-01
HTP-C[1]	CTUh	2.31E-10	6.47E-14	5.21E-13	3.59E-12	6.86E-13	-7.60E-11
HTP-NC[1]	CTUh	1.95E-09	1.43E-12	1.14E-11	4.21E-12	2.44E-11	5.24E-10
SQP[1]	Dimensionless (Pt)	4.44E+00	1.80E-05	1.45E-04	4.95E-02	9.50E-03	6.17E-01

Table 17. Environmental indicators in accordance with EN 15804:2012+A1:2013

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP (EN15804+A1)	kg CO_2 eq.	4.81E-01	6.70E-04	5.30E-03	8.05E-03	3.07E-03	6.35E-01
ODP (EN15804+A1)	kg CFC-11 eq.	4.02E-10	7.87E-17	6.33E-16	1.97E-14	1.14E-14	-1.12E-11
AP (EN15804+A1)	kg SO^2 eq.	1.63E-03	2.43E-06	8.27E-06	2.44E-05	1.56E-05	4.94E-03
EP (EN15804+A1)	kg PO_4^{3-} eq.	1.81E-04	5.71E-07	1.83E-06	4.33E-06	1.66E-06	2.06E-04
POCP (EN15804+A1)	kg Ethene eq.	1.04E-04	2.52E-07	-8.81E-07	1.34E-06	1.39E-06	3.13E-04
ADPE (EN15804+A1)	kg Sb eq.	1.73E-07	8.80E-12	7.08E-11	9.02E-10	2.14E-10	1.32E-06
ADPF (EN15804+A1)	MJ	6.40E+00	8.76E-03	7.05E-02	8.82E-02	4.91E-02	7.52E+00

Note: the indicators and characterisation methods are from EN 15804:2012+A1:2013, but other LCA rules (system boundaries, allocation, etc.) are according to EN 15804:2012+A2:2019; i.e., the results of the "A1 indicators" shall not be claimed to be compliant with EN 15804:2012+A1:2013.

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Take Care When Comparing

This EPD complies with PCR 2019:14 Construction products v1.3.4.

Please note that:

- EPDs of construction products may not be comparable if they do not comply with EN 15804.
- EPDs within the same product category from different programmes may not be comparable.
- LCA provides high-level scientific guidance and differences in data should be substantial to be material.
- Understanding the detail is important in comparisons. Expert analysis is required to ensure data is truly comparable, to avoid unintended distortions.
- The best way to compare products and materiality of differences is to place them into the context of a structure across the whole life cycle.

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