



Environmental Product Declaration

MagnaFlow™/MagnaFlow™ PLUS 0.55mm (NZ)

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Regional programme operator:	EPD Australasia, https://epd-australasia.com/
EPD owner:	Pacific Coilcoaters a subsidiary of Fletcher Steel Ltd.
EPD registration number:	EPD-IES-0015770:001
Validity:	From: 2024-08-31 Until: 2029-08-31
Version number:	1.0
Geographical scope of EPD:	New Zealand



In accordance with ISO 14025 and EN 15804+A2:2019/AC:2021

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 <https://epd-australasia.com/>

About Pacific Coilcoaters



Description of the organisation:

Established in 1917 as a manufacturer of aluminium venetian style blinds, Pacific Coilcoaters is now regarded as one of the leading innovators and producers of pre-painted long run metal roofing substrates.

Following its purchase by Hunter Douglas in the 1960s and the commissioning of a then state-of-the art continuous paint line capable of pre-painting steel 400mm wide, the business expanded into supplying long run roofing and cladding for the commercial market, with one of its first projects being the supply of material to the Huntly Power Station.

In 1988 the business was purchased by then Fletcher Challenge who saw the value in owning a long term business asset that would support the New Zealand building industry. This ownership remains today via the Fletcher Building group of companies.

1989 saw the launch of the ColorCote® brand, a brand synonymous with quality and innovation and one that remains today.

Since its inception, Pacific Coilcoaters and the ColorCote® range of products have focused on delivering innovation and market leading technology that deliver value to its customers with initiatives such as:

- The introduction of Zinc / Aluminium / Magnesium based substrates that give longer lasting protection in environments that are close to the coast.
- Being a market leader in the introduction of water-borne paint technology that delivers a more environmentally friendly and sustainable product to the market.

With a long and proud history in establishing itself as being a company that is first to market with a number of paint and substrate technologies and initiatives, Pacific Coilcoaters looks forward to continuing this proud heritage as we look toward helping build a more environmentally better future for us all.

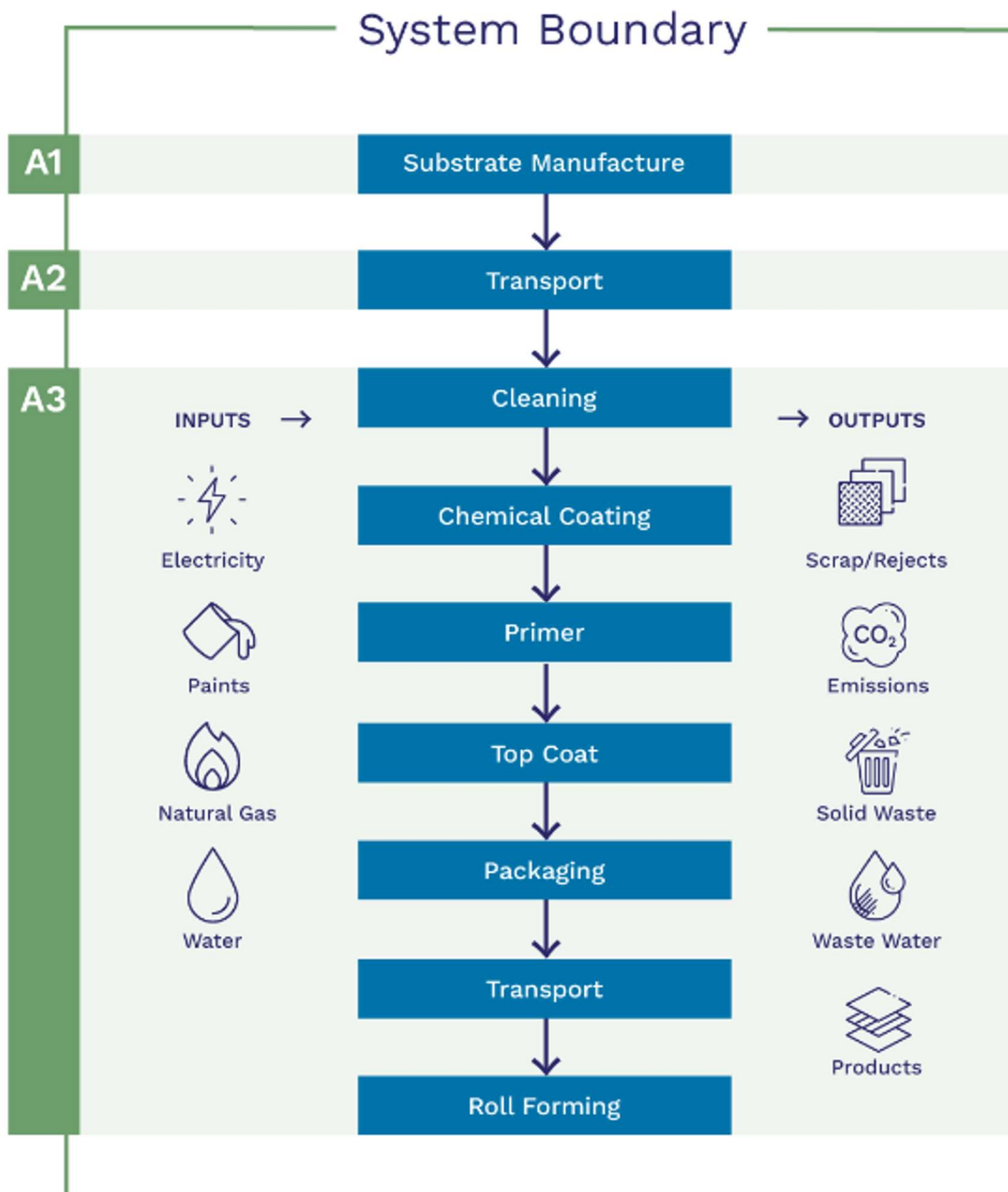
Owner of the EPD:	Pacific Coilcoaters a subsidiary of Fletcher Steel Ltd.
Contact:	enquiries@colorcote.co.nz
Product-related or management system-related certifications:	ISO 9001, ISO 14001, ISO 14064-1:2006 Toitu "Carbon Reduce" programme, Declare. Label
Name and location of production site(s):	Pacific Coilcoaters Penrose, Auckland New Zealand

Product information



Product name:	MagnaFlow™/MagnaFlow™ PLUS 0.55mm (NZ)
Product identification:	MagnaFlow™/MagnaFlow™ PLUS
Product description:	<p>A steel roof is most susceptible to corrosion along cut edges, however the magnesium in the coating of MagnaFlow™ helps it to 'self heal' by helping zinc to flow over the edge and create a seal against further corrosion.</p> <p>With superior corrosion resistance, MagnaFlow™ is the ideal choice for demanding environments such as houses close to the coast. This substrate has a water-borne or polyester top coat baked on a polyester primer, ensuring excellent colour retention and gloss for many years to come.</p>
Declared unit:	1 flat square meter of coated metal sheet used as weatherproof surface
Mass per unit:	4.61 kg
UN CPC code:	UN CPC 88731: Metal treatment and coating services
Other classification codes:	ANZSIC 2293: Metal Coating and Finishing
Geographical scope:	New Zealand

Manufacturing process



System boundaries

As shown in the table below, this EPD is of the type Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). Other life cycle stages (Modules A4-A5, B1-B7) are dependent on particular scenarios and best modelled at the building level.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction stage	Use stage							End of life stage					Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse – Recovery – Recycling – 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 used	90.30%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0.00%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0.00%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

The processes below are included in the product system to be studied. For modules beyond A3, the scenarios included are currently in use and are representative for one of the most probable alternatives.

Product stage (Modules A1-A3)

The production stage includes the environmental impacts associated with raw materials extraction and processing of inputs, transport to, between and within the manufacturing site, and manufacturing of average product at the exit gate of the manufacturing site. The impacts include the production and use of fuels and electricity, production of auxiliary materials and packaging materials, and waste treatment of production wastes.

Since Module C is included in the EPD, the use of Module A1-A3 results without considering the results of Module C is discouraged.

As shown in Manufacturing process, ColorCote® products are manufactured in the following way:

1. The unpainted substrate is manufactured by our suppliers and is delivered in coil form to our manufacturing site in Auckland, New Zealand.
2. The substrate is uncoiled, cleaned and dried.
3. Pre-treatment with a chrome-free corrosion inhibitor is applied.
4. Topside and reverse primer are applied, followed by drying and cooling.
5. The top coat is applied, followed by drying and cooling.
6. The product is re-coiled, packaged and then sent to a roll-former for shaping.
7. The roll-former uncoils the painted substrate, roll forms it to the desired shape for use in roofing or cladding or forms it into the required rainwater good, cuts it to a specific length, and then packages it on a pallet or in a wooden crate, ready for delivery to site.

End of Life (Module C)

When a building reaches its end-of-life, it will be demolished (C1) and the demolition waste is transported to a processing facility (C2). The waste processing (C3) includes the separation of steel and aluminium waste from other building materials and shredding activities. Material that cannot be recycled will be disposed (C4).

End of life scenarios for products

Process	Unit (expressed per functional unit or per declared unit of components products or materials and by type of material)
Collection process	Collected with mixed construction waste by 100 kW construction excavator, fuel consumption at 0.172 kg diesel input per tonne of material
Recovery system specified by type	Recycling: 85% (HERA, 2021)
Disposal specified by type	Landfill: 15%
Assumptions for scenario development, e.g. transportation	Transported 100 km to recycling or landfill by truck

Recovery and Recycling potential (Module D)

Module D accounts for the benefits of recycling. All scrap collected for recycling at end-of-life of the products is available to produce a recycling credit within Module D. A credit for net scrap is given in Module D based on the worldsteel "Value of scrap" dataset (i.e. the difference between primary and secondary steel) from the MLC Databases 2023 (Sphera, 2023). This dataset was chosen as it is a global average and all recycling of steel scrap from New Zealand takes place overseas following the closure of Pacific Steel's Auckland-based electric arc furnace in 2016. The recycling rates are as discussed in the previous section. If a lower recycling rate is more applicable for a given building type, the Module D results can be pro-rated down to the correct recycling rate.

Alloy slag is separated from the product at recycling and landfilled.

Life cycle inventory (LCI) data and assumptions

As this is an EPD update all assumptions and data used for the previous EPD were checked and updated where needed. Primary data for the coil coating were collected at Pacific Coilcoaters Penrose, Auckland, New Zealand manufacturing site. All products are manufactured at this facility. This includes cleaning, pre-treatment, primer and topcoat application as well as drying and cooling. Most data is for the 2022 Financial year (from 1 July 2021 to 30 June 2022). Pacific Coilcoaters undertook significant changes to their paint line in 2023, changing from the use of natural gas to electricity. Three months (1 June 2023 – 31 August 2023) of operational data was used to estimate electricity and natural gas usage. Electricity and natural gas use isn't seasonal, and three months of fully operational data is considered representative of current energy use.

Primary data for the roll-forming were collected for the 2018 EPD and confirmed for this EPD at Dimond's manufacturing site in New Zealand. The data from Dimond were used as a proxy for all roll-forming process in New Zealand and Australia.

The type and amount of packaging material used as well as the transport modes and distances for the transportation of the pre-product to the roll-forming facilities were also based on primary data.

The VOC emissions that arise during the pre-treatment process as well as the application of the primer and topcoat have been measured based on stack samples by an external company (Air Resource Management). The sampling runs were conducted under normal plant operating conditions on the 27th September 2023.

The composition and relative amount of the cleaning caustic, pre-treatment, primer and topcoats used are based on MSDS provided by Pacific Coilcoaters and the previous LCA study.

Upstream data

Substrate

MagnaFlow steel substrate is manufactured offshore. The steel used is based on the supplier specific EPD for Hot Dipped Galvanised Sheets. The published EPD doesn't include the additional environmental indicators or the EN15804+A1 indicators. The supplier provided the additional environmental indicator results. The EN15804+A1 GWP and ADPfossil were assumed the same as the EN15804 +A2 indicators in the supplier EPD. The remaining indicators are based on the thinkstep modelling of the steel production, using Sphera background data. The supplier EPD doesn't state whether there is a significant scrap input, or how this has been allocated.

LCA software and database

Sphera Solutions LCA for Experts (LCAFE) software version 10.7 was used together with Sphera Managed LCA Content database version 2023.1 (Sphera, 2023) for all data in the background system. Most datasets have a reference year between 2018 and 2022 and all fall within the 10-year limit allowable for generic data under EN 15804.

Electricity

The residual electricity mix on the market is used for the A3 processes that Pacific Coilcoaters has control over (cleaning to roll forming). The composition of the residual electricity grid mix is modelled in LCA FE based on published data for the year 1st April 2021 – 31st March 2022 (NZECS, 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 (6.73%) 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 0.147 kg CO₂e/kWh (based on EF3.0).

Transport

Transport of MagnaFlow steel inputs and related packaging is via truck to port (assumption of 50 km), via container ship to Auckland (9,400 km) and via truck from Auckland port to Pacific Coilcoaters' manufacturing site in Penrose, Auckland (15 km). Truck utilisation is 50% (i.e. full outbound with empty return).

Cut off criteria

The only input knowingly excluded from the inventory is the production of the steel tote tanks used to deliver the primer to Pacific Coilcoaters. The tanks hold 1000 litres and are reused more than 100 times. The transport of the tanks to the manufacturing site is included. This exclusion is not expected to have a significant impact.

Allocation

A small amount of steel scrap is generated during product manufacture and economic allocation is used to allocate the environmental impact as the scrap is only worth 10% of the primary product value.

Assumptions

Pacific Coilcoaters operational data for electricity and natural gas usage is from a three month period (1 June 2023 – 31 August 2023). Pacific Coilcoaters undertook significant changes to their paint line in 2023, changing from the use of natural gas to electricity. Electricity and natural gas usage isn't seasonable, and three months of fully operational data is considered representative of current energy use.

The MagnaFlow steel supplier EPD shows 0 use of secondary materials in module A1 which is likely to be incorrect as they use the EAF process.

Exclusion of infrastructure/capital goods

Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the foreground production process are excluded from the system. There are no infrastructure/capital goods intended for single or few uses. In line with the PCR, personnel-related activities, such as transportation to and from work, are not accounted for in the LCI, while all process related transport of material and waste inventories are included.

thinkstep-anz consistently excludes environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the foreground production process, ('capital goods') regardless of potential significance.

An important exception is the inclusion of capital goods for electricity generation, where the capital goods are very important for modelling of changes towards more renewable generation. Capital goods related to electricity generation are included in all Managed LCA Content (MLC) electricity datasets and in all thinkstep-anz LCA studies and EPDs.

Content information








Product components	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg declared unit
Steel	94.4	0.00%	0 resp. 0
Alloys	4.66	0.00%	0 resp. 0
Paint	0.956	0.00%	0 resp. 0
TOTAL	100	0.00%	0 resp. 0

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg declared unit
Timber Pallet	0.0696	2.07%	0.0306
Cardboard	0.00199	0.06%	9.15E-04
Steel coil rings and strapping	0.058	1.73%	0
Plastic strapping	2.94E-04	0.01%	0
Bubble wrap and stretch film	0.00222	0.07%	0
TOTAL	0.132	3.94%	0.0315

None of the materials in this EPD are on the Candidate List of substances of very high concern (SVHC), by the European REACH Regulation at a concentration greater than 0.1% by mass.

Environmental performance indicators

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 3.0 is used.

Indicator	Abbreviation	Description
 Climate change (global warming potential)	GWP-total	A measure of greenhouse gas emissions, such as CO ₂ and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, increasing the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare. The global warming potential total (GWP-t), is split into three sub indicators: fossil (GWP-f), biogenic (GWP-b) and land-use and land-use change (GWP-luluc).
	GWP-fossil	
	GWP-biogenic	
	GWP-luluc	
 Ozone depletion potential	ODP	Depletion of the ozone leads to higher levels of UVB ultraviolet rays reaching the earth's surface with detrimental effects on humans and plants. Ozone depletion potential is a measure of air emissions that contribute to the depletion of the stratospheric ozone layer.
 Acidification potential	AP	Acidification potential is a measure of emissions that cause acidifying effects to the environment. A molecule's acidification potential indicates its capacity to increase the hydrogen ion (H ⁺) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline, and the deterioration of building materials.
 Eutrophication potential	EP-freshwater EP-marine EP-terrestrial	Eutrophication covers all potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N) and phosphorus (P). In aquatic ecosystems where this term is mostly applied, this typically describes a degradation in water quality. Eutrophication can result in an undesirable change in the type of species that flourish and an increase in the production of biomass. As the decomposition of biomass consumes oxygen, eutrophication may decrease the available oxygen level in the water column and threaten fish in their ability to respire.
 Photochemical ozone formation potential	POCP	Photochemical Ozone Formation Potential gives an indication of the emissions from precursors that contribute to ground level smog formation, mainly ozone (O ₃). Ground level ozone may be harmful to human health and ecosystems and may also damage crops. These emissions are produced by the reaction of volatile organic compounds (VOCs) and carbon monoxide in the presence of nitrogen oxides and UV light.
 Abiotic resource depletion	ADP-m&m ADP-fossil	The consumption of non-renewable resources decreases the availability of these resources and their associated functions in the future. Depletion of mineral resources and non-renewable energy resources are reported separately. Depletion of mineral resources is assessed based on total reserves.
 Water use	WDP	Water scarcity is a measure of the stress on a region due to water consumption.

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.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00281	0.0231	0.185	0.0335	-5.72
GWP-fossil	kg CO ₂ eq.	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00281	0.023	0.185	0.0334	-5.76
GWP-biogenic	kg CO ₂ eq.	0.0231	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.60E-07	2.67E-06	2.17E-04	8.96E-08	0.0382
GWP-luluc	kg CO ₂ eq.	0.00263	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.24E-08	2.71E-07	3.67E-06	3.29E-05	-8.36E-04
ODP	kg CFC 11 eq.	3.73E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.14E-17	5.14E-16	1.27E-12	5.34E-14	8.69E-12
AP	mol H ⁺ eq.	0.0649	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.34E-05	2.33E-05	9.31E-04	1.04E-04	0.0122
EP-freshwater	kg P eq.	0.0213	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.86E-10	4.06E-09	9.77E-08	2.93E-08	-1.35E-06
EP-marine	kg N eq.	0.0147	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.55E-06	9.91E-06	2.00E-04	2.61E-05	0.00407
EP-terrestrial	mol N eq.	0.157	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.17E-05	1.09E-04	0.00218	2.86E-04	0.0497
POCP	kg NMVOC eq.	0.0474	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.83E-05	2.30E-05	5.54E-04	8.16E-05	0.00844
ADP-m&m *	kg Sb eq.	1.01E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.87E-12	7.43E-11	5.78E-09	8.85E-10	-1.85E-05
ADP-fossil *	MJ	151	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0377	0.316	2.03	0.483	-56.3
WDP *	m ³	2.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.61E-06	3.86E-05	0.0727	0.00218	-0.423

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Acronyms: GWP-total = Climate change - total; GWP-fossil = Climate change - fossil; GWP-biogenic = Climate change - biogenic; GWP-luluc = Climate change - land use and land use change;

ODP = Ozone depletion; AP = Acidification; EP-freshwater = Eutrophication aquatic freshwater; EP-marine = Eutrophication aquatic marine; EP-terrestrial = Eutrophication terrestrial;

POCP = Photochemical ozone formation; ADP-m&m = Depletion of abiotic resources - minerals and metals; ADP-fossil = Depletion of abiotic resources – fossil fuels; WDP = Water use.

Additional mandatory and voluntary impact category indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG¹	kg CO ₂ eq.	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00281	0.0231	0.185	0.0335	-5.76
PM	Disease incidences	1.07E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.52E-10	1.23E-10	9.04E-09	1.12E-09	3.37E-07
IRP²	kBq U235 eq.	0.181	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.19E-07	9.93E-07	4.47E-05	8.31E-04	0.145
ETP-fw *	CTUe	57	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00872	0.073	0.356	0.137	-1.49
HTP-c *	CTUh	1.45E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.47E-13	1.23E-12	1.85E-11	1.70E-11	2.67E-09
HTP-nc *	CTUh	1.83E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.67E-12	4.56E-11	5.08E-10	1.69E-09	-7.98E-08
SQP *	Pt	41.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.24E-05	2.71E-04	0.224	0.0451	-0.793

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

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

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Acronyms: GWP-GHG = Climate change; PM = Particulate matter emissions; IRP = Ionising radiation - human health; ETP-fw = Eco-toxicity (freshwater); HTP-c = Human toxicity, cancer;

HTP-nc = Human toxicity, non-cancer; SQP = Land use related impacts / soil quality.

Biogenic carbon content indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BCC-prod	kg C	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
BCC-pack	kg C	0.0315	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0

Acronyms: BCC-prod = Biogenic carbon content - product; BCC-pack = Biogenic carbon content - packaging.

Resource use indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	19.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.92E-05	4.95E-04	0.546	0.0434	2.56
PERM	MJ	2.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	21.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.92E-05	4.95E-04	0.546	0.0434	2.56
PENRE	MJ	158	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0377	0.316	2.63	0.484	-56.3
PENRM	MJ	0.726	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	-0.6	0	0
PENRT	MJ	159	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0377	0.316	2.03	0.484	-56.3
SM	Kg	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m ³	0.143	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.65E-08	7.24E-07	0.00102	6.65E-05	-0.65

Acronyms: 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.

Waste indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0.0196	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.34E-14	1.96E-13	-6.54E-12	3.99E-11	-4.78E-07
NWHD	kg	0.0583	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.26E-07	3.57E-06	6.31E-04	0.693	0.966
RWD	kg	8.01E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16E-09	9.74E-09	3.21E-07	5.62E-06	1.05E-05

Acronyms: HWD = Hazardous waste disposed; NWHD = Non-hazardous waste disposed, RWD = radioactive waste disposed.

Output flow indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
MFR	kg	0.236	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	3.92	0	0
MER	kg	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
EEE	MJ	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
EET	MJ	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0

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

Other environmental performance indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP (EN15804+A1)	kg CO ₂ -eq.	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00277	0.0228	0.183	0.0317	-5.42
ODP (EN15804+A1)	kg CFC 11-eq.	1.32E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.23E-17	6.05E-16	1.49E-12	6.28E-14	1.02E-11
AP (EN15804+A1)	kg SO ₂ -eq.	0.0746	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.25E-06	1.67E-05	7.61E-04	8.29E-05	0.00906
EP (EN15804+A1)	kg PO ₄ ³⁻ -eq.	0.00681	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.19E-06	3.37E-06	6.87E-05	9.19E-06	0.00135
POCP (EN15804+A1)	kg C ₂ H ₄ -eq.	0.00807	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.02E-07	-3.29E-06	4.07E-05	7.58E-06	-0.00188
ADPE (EN15804+A1)	kg Sb-eq.	1.21E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.88E-12	7.43E-11	5.75E-09	9.22E-10	-1.85E-05
ADPF (EN15804+A1)	MJ	165	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0376	0.315	2.02	0.46	-55.9

Acronyms: GWP (EN15804+A1) = Global warming potential; ODP (EN15804+A1) = Depletion potential of the stratospheric ozone layer; AP (EN15804+A1) = Acidification potential of soil and water; EP (EN15804+A1) = Eutrophication potential; POCP (EN15804+A1) = Formation potential of tropospheric ozone; ADPE (EN15804+A1) = Abiotic depletion potential for non-fossil resources; ADPF (EN15804+A1) = Abiotic depletion potential for fossil resources

Additional environmental information

Material Circularity Indicator

The MCI, developed by the Ellen MacArthur Foundation, has been used to measure the degree to which a product system keeps materials in circulation at their highest form of value. The MCI provides the means to draw together all of the different ways in which circularity can be delivered (e.g. reuse, recycling, bio-materials) and reflects these as a simple score between 0 and 1. The value 0.1 reflects a typical linear system and 1 reflects a perfectly circular system. A value below 0.1 reflects a product with a utility worse than that of an industry average product (i.e. has a shorter lifetime or a lower use intensity). The methodology is implemented in LCA for Experts and results in a dimensionless number between 0 and 1.

Indicator	Unit	MagnaFlow™/MagnaFlow™ PLUS 0.55mm (NZ)
MCI	Dimensionless	0.469

Differences versus previous versions

Key changes

The first EPD for Pacific Coilcoaters AlumiGard, ZinaCore and MagnaFlow products was published in 2019 providing EN15804+ A1 results (EPD Registration numbers for New Zealand: S-P-01539 and Australia S-P-01540).

Modules C1 and C2 have been added to the model in 2024. The results will be affected by changes in the substrate data used, changes in energy usage at Pacific Coilcoaters and changes in the underlying MLC database.

The 2019 EPD MagnaFlow steel substrate was based on the GaBi database Japanese steel dataset (adapted to use the Korean electricity mix) which has been updated to use the producer specific EPD results. The MagnaFlow steel substrate EN15804+A1 GWP and ADPF were assumed the same as the EN15804 +A2 indicators in the supplier specific EPD. The remaining EN15804+A1 indicators are based on the thinkstep-anz modelling of the steel production using Sphera background data.

References

CEN. (2019). EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization.

General Programme Instructions for the International EPD® System. Version 4.0, dated 2021-03-29.
www.environdec.com.

HERA. (2021). *Steel Recycling Report*. Retrieved from <https://www.hera.org.nz/sustainability/steel-recycling/>

ISO. (2006). ISO 14040: Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO. (2006a). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization. Ministry for Business, Innovation and Employment. (2023). Annual Electricity Data Updates. Wellington.

NZECS. (2023). *Attributeds of Residual Supply (NZ)*. Retrieved from Brave Trace:
<https://bravetrace.co.nz/resource/nzecs-residual-supply-mix-for-electricity-certification/>

PCR 2019:14. Construction Products, Version 1.3.2, 2023-12-08. EPD International.

Pickin, J., Randell, P., Trinh, J., & Grant, B. (2018). *National Waste Report 2018*. Australia: Department of the Environment and Energy.

Sphera. (2023). Life Cycle Inventory Database 2023 Documentation. Retrieved from Sphera:
<https://sphera.com/product-sustainability-gabi-data-search/>

General information

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 with older EPDs.

General information

Accountabilities for PCR, LCA and independent, third-party verification

Declaration owner:	Pacific Coilcoaters https://www.colorcote.co.nz 968 Great South Road, PO Box 12 046, Penrose, Auckland 1642	
Geographical scope:	New Zealand	
Reference year for data:	2021-07-01 to 2022-06-30	
EPD programme:	The International EPD® System http://www.environdec.com info@environdec.com EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden	
EPD regional programme operator:	EPD Australasia Limited http://www.epd-australasia.com info@epd-australasia.com EPD Australasia Limited, 315a Hardy Street, Nelson 7010, New Zealand	
Product Category Rules (PCR):	CEN standard EN 15804 serves as the Core Product Category Rules (PCR) PCR 2019.14 Construction Products, version 1.3.2	
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.	
Review Chair:	Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact	
Life cycle assessment (LCA)		
LCA accountability:	thinkstep Ltd Barbara Nebel, thinkstep-anz ltd Kimberly Robertson, thinkstep-anz ltd http://www.thinkstep-anz.com anz@thinkstep-anz.com 11 Rawhiti Road, Pukerua Bay, Wellington 5026, New Zealand	
Third-party verification		
Independent verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier		
Third-party verifier:	Rob Rouwette (start2see Pty Ltd) https://www.start2see.com.au Rob.Rouwette@start2see.com.au	
Verifier approved by:	EPD Australasia	
Procedure for follow-up of data during EPD validity involves third party verifier:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



Environmental Product Declaration

MagnaFlow™/MagnaFlow™ PLUS 0.55mm (NZ)

Pacific Coilcoaters
968 Great South Road
PO Box 12046
Penrose, Auckland 1642
<https://www.colorcote.co.nz>

