ColorCote®

Environmental Product Declaration

AlumiGard™/AlumiGard PLUS™ 0.9mm (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-0015771:001
Validity:	**From:** 2024-08-31 **Until:** 2029-08-31
Version number:	1.0
Geographical scope of EPD:	New Zealand

EPD® THE INTERNATIONAL EPD® SYSTEM

AUSTRALASIA EPD®

ECO PLATFORM EPD VERIFIED

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.

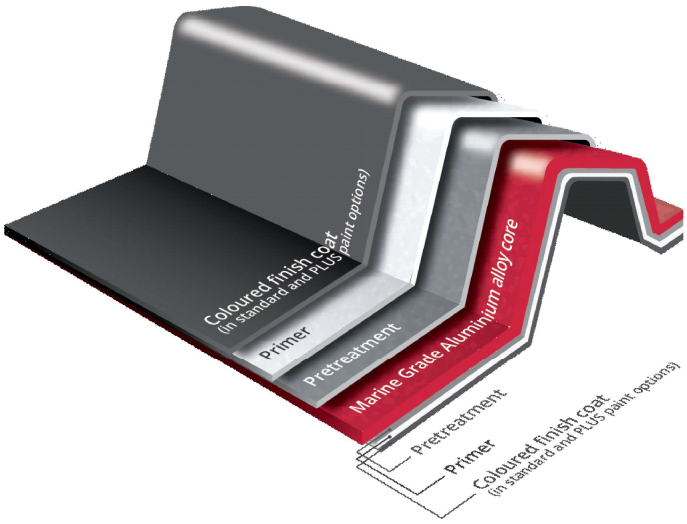
Since its inception, Pacific Coilcoaters and the ColorCote® range of products have focused on delivering innovation and market leading technology that deliver value to its customers with initiatives such as:

→ The introduction of Aluminium / Magnesium / Zinc (AM) based substrates **tha**t 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.

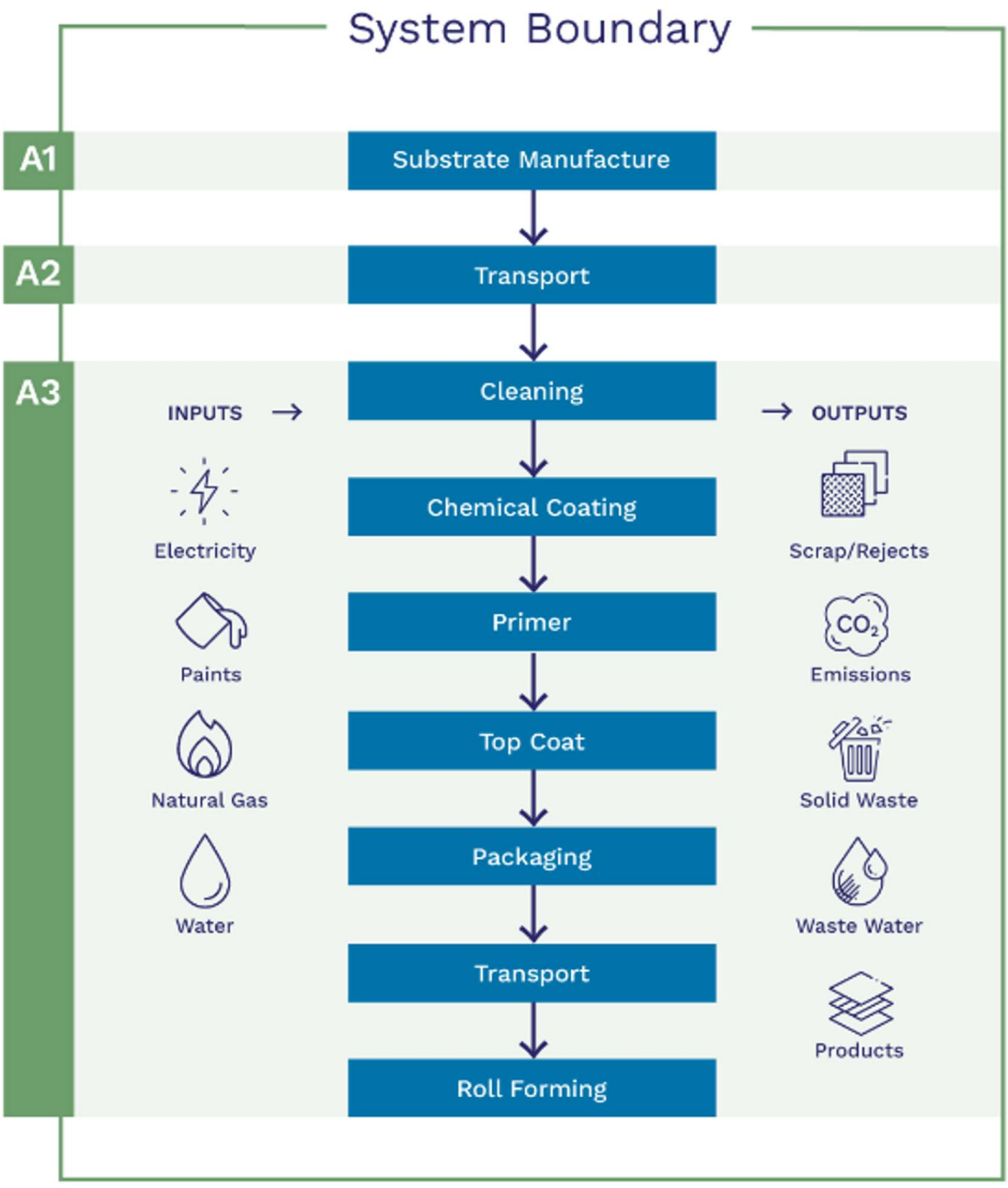
Owner of the EPD:	Pacific Coilcoaters a subsidiary of Fletcher Steel Ltd.
Contact:	enquiries@colorcote.co.nz
Product-related or management system-related certifications:	ISO 9001, ISO 14001, ISO 14064-1:2006 Toitu “Carbon Reduce” programme
Name and location of production site(s):	**Pacific Coilcoaters**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

Product information



Product name:	**AlumiGard™/AlumiGard PLUS™ 0.9mm (NZ)**
Product identification:	AlumiGard™/AlumiGard™ PLUS
Product description:	We use a marine grade aluminium alloy substrate, painted with a polyester primer, and add a water-borne acrylic or polyester baked on top coat. AlumiGard™ is designed for use in very severe marine environments, right up to the waterline, or for acidic exposure in geothermal areas.
Declared unit:	**1 flat square meter of coated metal sheet used as weatherproof surface**
Mass per unit:	**2.46 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/AU	-	-	-	-	-	-	-	-	-	NZ	NZ	NZ	NZ	NZ
Specific data used		2.00%		-	-	-	-	-	-	-	-	-	-	-	-	-	-
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 product is available to produce a recycling credit within Module D. For aluminium products, a predefined “Value of Scrap” dataset does not exist to use for modelling Recovery (module D). To calculate the credit, the remaining aluminium (base metal) is recycled to create a secondary aluminium ingot, which is then awarded a credit compared to a virgin aluminium ingot (based on data from the International Aluminium Institute). The dataset used for the secondary aluminium ingot assumes 95% material efficiency. This dataset was chosen as it is a global average and all recycling of aluminium scrap from New Zealand takes place overseas.

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 seasonable, and three months of fully operational data is considered representative of current energy use.

Primary data for roll forming was collected for the 2018 EPD and confirmed for this EPD at a roll forming manufacturing site in New Zealand. The data from this site was used as a proxy for all roll-forming processes.

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

Substrates

The AlumiGard substrate is produced offshore and modelled using the Sphera MLC dataset for the country of origin which uses European average aluminium production data adjusted for local electricity production from natural gas. AlumiGard has a small (2%) post-consumer input which has been conservatively modelled as virgin material.

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 CO_2e/kWh (based on EF3.0).

Transport

Transport of Aluminium and related packaging: via truck to Bahrain port (assumption of 50 km), via container ship from Bahrain to Auckland (15,400 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 aluminium scrap is generated during product manufacture and economic allocation is used to allocate the environmental impact as the scrap is only worth 16% 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.

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. Our reasoning for this exclusion is provided in Annex B.

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
Aluminium	98.2	2.00%	0 resp. 0
Alloys	0	0.00%	0 resp. 0
Paint	1.8	0.00%	0 resp. 0
TOTAL	**100**	**2.00%**	**0 resp. 0**

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg declared unit
Timber Pallet	0.0696	2.83%	0.0306
Cardboard	0.00199	0.08%	9.15E-04
Steel coil rings and strapping	0.058	2.36%	0
Plastic strapping	2.94E-04	0.01%	0
Bubble wrap and stretch film	0.00222	0.09%	0
TOTAL	**0.132**	**5.37%**	**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 GWP-fossil GWP-biogenic GWP-luluc	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).
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.	42.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0015	0.0123	0.0989	0.0178	-31.6
GWP-fossil	kg CO_2 eq.	42.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0015	0.0123	0.0988	0.0178	-31.6
GWP-biogenic	kg CO_2 eq.	-0.0733	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.92E-07	1.43E-06	1.16E-04	4.78E-08	-0.0186
GWP-luluc	kg CO_2 eq.	0.00396	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73E-08	1.44E-07	1.96E-06	1.75E-05	-0.00436
ODP	kg CFC 11 eq.	2.30E-12	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.28E-17	2.74E-16	6.76E-13	2.84E-14	3.79E-14
AP	mol H^+ eq.	0.176	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.13E-06	1.24E-05	4.96E-04	5.53E-05	-0.193
EP-freshwater	kg P eq.	1.54E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.59E-10	2.17E-09	5.21E-08	1.56E-08	-5.75E-06
EP-marine	kg N eq.	0.0433	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.49E-06	5.29E-06	1.06E-04	1.39E-05	-0.0274
EP-terrestrial	mol N eq.	0.475	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.82E-05	5.82E-05	0.00116	1.53E-04	-0.299
POCP	kg NMVOC eq.	0.124	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.75E-06	1.23E-05	2.95E-04	4.35E-05	-0.084
ADP-m&m *	kg Sb eq.	1.88E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.73E-12	3.96E-11	3.08E-09	4.72E-10	-2.44E-06
ADP-fossil *	MJ	626	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0201	0.168	1.08	0.258	-297
WDP *	m^3	2.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.46E-06	2.06E-05	0.0387	0.00116	-5.79

* 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-GHG[1]	kg CO_2 eq.	42.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0015	0.0123	0.0989	0.0178	-31.6
PM	Disease incidences	1.60E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.11E-11	6.57E-11	4.82E-09	5.97E-10	-4.66E-06
IRP[2]	kBq U235 eq.	0.223	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.33E-08	5.30E-07	2.38E-05	4.43E-04	-0.344
ETP-fw *	CTUe	92.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00465	0.0389	0.19	0.0732	-105
HTP-c *	CTUh	3.30E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.81E-14	6.55E-13	9.84E-12	9.07E-12	-1.47E-08
HTP-nc *	CTUh	2.40E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.16E-12	2.43E-11	2.71E-10	9.04E-10	-3.15E-07
SQP *	Pt	73.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73E-05	1.45E-04	0.119	0.0241	-4.06

[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 CO_2 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	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.15E-05	2.64E-04	0.291	0.0231	-35.4
PERM	MJ	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.15E-05	2.64E-04	0.291	0.0231	-35.4
PENRE	MJ	625	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0201	0.168	1.68	0.258	-297
PENRM	MJ	0.706	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	-0.6	0	0
PENRT	MJ	626	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0201	0.168	1.08	0.258	-297
SM	Kg	0.0498	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	2.14E-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	2.52E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m^3	0.0736	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.61E-08	3.86E-07	5.44E-04	3.54E-05	-0.171

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	1.94E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25E-14	1.04E-13	-3.49E-12	2.13E-11	-2.13E-07
NWHD	kg	7.39	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.27E-07	1.90E-06	3.36E-04	0.369	-7.36
RWD	kg	0.00165	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.21E-10	5.19E-09	1.71E-07	3.00E-06	-0.00178

Acronyms: HWD = Hazardous waste disposed; NHWD = 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	0.427	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	2.09	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.	42.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00148	0.0122	0.0973	0.0169	-30.9
ODP (EN15804+A1)	kg CFC 11-eq.	3.05E-12	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.86E-17	3.23E-16	7.96E-13	3.35E-14	4.39E-14
AP (EN15804+A1)	kg SO_2-eq.	0.142	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.93E-06	8.91E-06	4.06E-04	4.42E-05	-0.164
EP (EN15804+A1)	kg PO_4^3-eq.	0.0147	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.17E-06	1.80E-06	3.66E-05	4.90E-06	-0.0097
POCP (EN15804+A1)	kg C_2H_4-eq.	0.00938	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.81E-07	-1.75E-06	2.17E-05	4.04E-06	-0.0117
ADPE (EN15804+A1)	kg Sb-eq.	1.89E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.73E-12	3.96E-11	3.07E-09	4.92E-10	-2.45E-06
ADPF (EN15804+A1)	MJ	621	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0201	0.168	1.08	0.245	-287

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	AlumiGard™/AlumiGard PLUS™ 0.9mm (NZ)
MCI	Dimensionless	0.417

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.

References

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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 ww.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: ☒ 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:	☐ Yes ☒ No

Environmental Product Declaration

AlumiGard™/AlumiGard PLUS™ 0.9mm (NZ)

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https://www.colorcote.co.nz

THE INTERNATIONAL EPD® SYSTEM

AUSTRALASIA