ColorCote®
The right roof always lasts longer

Environmental Product Declaration

Summary for AlumiGard™, MagnaFlow™ and ZinaCore™ pre-painted roofing and cladding for the New Zealand market.

Key Insights

Sustainability and our Environment

Pacific Coilcoaters, the manufacturers of ColorCote® products, recently installed advanced near-infrared ovens, reducing our CO_2 emissions from our ovens by an average of 59%.

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Mist Green

Technical Information

The results in our EPDs are presented per flat square metre (1m²) ColorCote® product formed in New Zealand.

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Sandstone Grey

ColorCote® products

EPD and MCI summary results for 1m² of ColorCote® AlumiGard™ 0.90mm, MagnaFlow™ and ZinaCore™ 0.40mm and 0.55mm

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Lancewood

Environmental impacts

This EPD summary focuses on the product carbon footprint of the raw material supply and the manufacturing process (A1-A3) and the Materiality Circularity Indicator (MCI).`

The full EPDs show the environmental impacts associated with raw material supply (A1), transport to, between and within the manufacturing site (A2), the manufacturing of ColorCote® including rollforming (A3), end-of-life and recycling processes (C1-4 and D). You can find the full EPDs online on our website and on the EPD Australasia website.

online EPD www.colorcote.co.nz/technical-information

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Titania

Contents

What is an Environmental Product Declaration?

An Environmental Product Declaration (EPD) tells the environmental story of a product over its life cycle in a format that is clear and transparent. It is science-based, independently verified and publicly available. EPDs are often compared to the nutrition labels on food products.

EPDs help manufacturers translate complex sustainability information about their product's environmental footprint into simpler information that governments, companies, industry associations and end consumers can trust to make decisions.

An EPD communicates the environmental impacts at different stages in a product's life cycle. This may include the carbon emitted when it's made, and any emissions that pollute the air, land or waterways during its use.

AUSTRALASIA EPD®

Pacific Coilcoaters, the manufacturers of ColorCote® products

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.

After Hunter Douglas bought the company in the 1960s, they installed a new continuous paint line that could pre-paint 400mm-wide steel. This allowed the business to grow and start supplying long run roofing and cladding for commercial buildings. One of our first big projects was providing materials for the Huntly Power Station.

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

In 1988 Fletcher Challenge bought the business, seeing the value in owning a long-term business asset supporting the New Zealand building industry. This ownership remains today via the Fletcher Building group of companies.

From the beginning Pacific Coilcoaters and ColorCote® products have focused on providing innovative, cutting-edge technology that offers value to our customers through initiatives including:

- The introduction of Aluminium / Magnesium / Zinc (AM) based substrates that give longer-lasting protection in coastal environments.
- Leading the market in introducing water-based paint technology, which provides a more environmentally friendly and sustainable product.

With a long and proud history of being first to market with various paint and substrate technologies, Pacific Coilcoaters is committed to continuing this legacy as we work towards creating a more sustainable future for everyone.

Decarbonising the business

Pacific Coilcoaters faces the challenge of efficiently processing raw steel and aluminum coils in the painting process while minimising environmental impact, particularly the energy used and greenhouse gases emitted.

Since our company's beginning, the paint curing process, which is standard worldwide, has relied on gas-fired ovens. This made our business one of the larger commercial gas users in the Auckland region.

In 2021, with the existing paint line ovens nearing the end of their lifespan, we decided to take on an ambitious project to replace them with a more innovative and environmentally friendly solution.

This new approach aims to meet changing customer expectations regarding environmental responsibility and contribute to Fletcher Building's goal of reducing carbon emissions by 30% by 2030.

Focus on **meeting customer expectations** regarding environmental responsibility and contributing to Fletcher Building's goal of **reducing carbon emissions by 30%** by 2030.

After extensive research into global best practices, the decision was made to replace the outdated technology with three electrically powered Near Infrared (NIR) ovens, at a total project cost of around $10 million.

Although NIR ovens are commonly used for curing paint in the aerospace and automotive industries, their use in coil coating is rare. However, the decision to install NIR ovens was viewed by the broader business as a significant innovation. It is one of our commitments to help decarbonise the sector.

In addition to this innovative move, the NIR ovens offer benefits like better temperature control across multiple oven stages, reduced overall energy wastage, and improved quality control.

Traditional gas fired ovens are effectively giant hot boxes that require a lot of energy and time to reach their operating temperature, whilst NIR ovens operate in a similar way to a domestic bread toaster that is lying on its side.

After a lengthy planning period, which included the pre-installation of two large power transformers and 3.7 km of 44mm power cables weighing over 7.5 tons, the old gas ovens were decommissioned in early April 2023. The installation of the new NIR ovens was completed about six weeks later.

The NIR oven installation was also complemented by the commissioning of a state-of-the-art Regenerative Thermal Oxidizer (RTO), which incinerates all emitted volatile organic compounds (VOCs) at temperatures exceeding 750 degrees Celsius.

After successfully installing the new NIR ovens, we saw an immediate and significant impact, with an 59% average reduction in CO_2 emissions from our paint line ovens per tonne of product painted.

By combining this new paint curing technology with ColorCote®'s use of water-based paints and MagnaFlow™'s low carbon footprint in the pre-painted steel industry, customers can trust that they are choosing a product that is not only effective but also made with the environment in mind.

Our Near Infrared (NIR) ovens have **reduced our oven CO_2 emissions by an average of 59%.**

ColorCote® product range

Since one size never fits all, ColorCote® offers a three-tier range of pre-painted roofing and cladding products, all using the latest paint technology to suit any environment.

The results in this EPD summary document are presented per flat square metre (1m²) ColorCote® product formed in New Zealand. They cover both the primary product and the PLUS sub brand for the New Zealand market.

For more detailed results for both New Zealand and Australian markets please visit our website www.colorcote.co.nz/technical-information

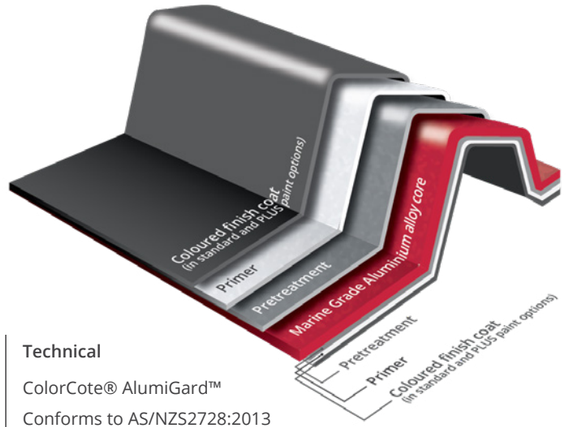
online EPD www.colorcote.co.nz/technical-information

AlumiGard™

For the harshest conditions

We use a marine grade aluminium alloy substrate, painted with a polyester primer, and a water-borne acrylic 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.

AlumiGard™ PLUS features an added layer of protection with a chemically-resistant thermosetting waterborne acrylic topcoat, providing enhanced paint protection against corrosive materials commonly found in geothermal or industrial locations.



Technical

ColorCote® AlumiGard™
Conforms to AS/NZS2728:2013
Suitable for ISO9223:2012
Atmospheric Classifications C1 – CX
NZ MRM Code of Practise Atmospheric Classifications A – F

Base metal thickness (BMT)
0.90mm

Table 1. Composition of AlumiGard™ products (per m² product)

Product components	Weight, %	Post-consumer recycled material, weight-%	Biogenic material, weight-% and kg C/kg
Aluminium	98	2	0 resp. 0
Paint	2	0	0 resp. 0
Total	**100**		**0 resp. 0**

None of the materials in ColorCote® products are on the Candidate 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.

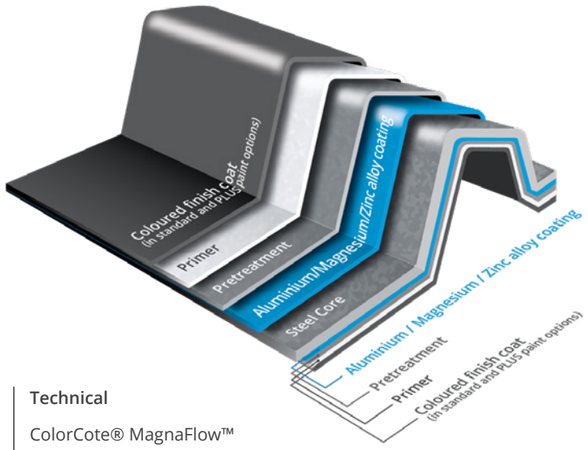
MagnaFlow™

For that extra protection

A steel roof is most susceptible to corrosion along cut edges, but 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.

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 top coat baked on a polyester primer, ensuring excellent colour retention and gloss for many years to come.

MagnaFlow™ PLUS has the added protection of a chemically-resistant thermosetting waterborne acrylic top coat, for greater paint protection against corrosive materials in the atmosphere (such as geothermal and industrial locations).



Technical

ColorCote® MagnaFlow™
Conforms to AS/NZS2728:2013
Suitable for ISO9223:2012
Atmospheric Classifications C1 – C5
NZ MRM Code of Practise Atmospheric Classifications A – E

Base metal thickness (BMT)
0.40mm & 0.55mm

Table 2. Composition of MagnaFlow™ products (per m² product)

Product components	Weight, %	Post-consumer recycled material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	92-94	0	0 resp. 0
Alloys	5-6	0	0 resp. 0
Paint	1	0	0 resp. 0
Total	**100**		**0 resp. 0**

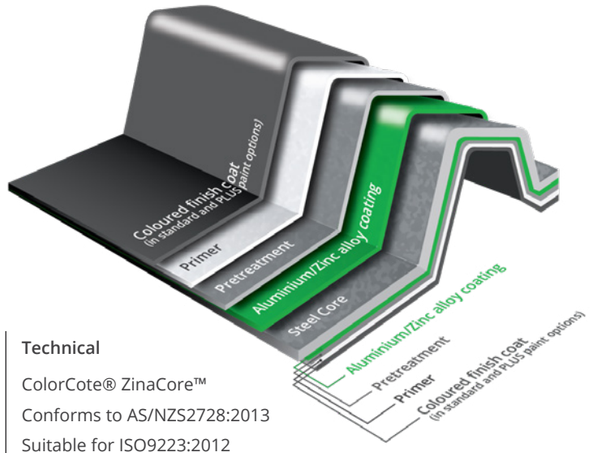
None of the materials in ColorCote® products are on the Candidate are on the Candidate List of substances of very high concern (SVHC), by the European REACH Regulation at a concentration greater than 0.1% by mass.

ZinaCore™

Durability and value

Suitable for moderate climatic environments, ZinaCore™ features a hot-dipped aluminium/zinc alloy coated steel substrate. It has a water-borne top coat baked on a polyester primer, giving an extremely durable paint system that resists UV damage and provides excellent gloss and colour retention.

ZinaCore™ PLUS has the added protection of a chemically-resistant thermosetting waterborne acrylic top coat, for greater paint protection against corrosive materials in the atmosphere (such as geothermal and industrial locations).



Technical

ColorCote® ZinaCore™
Conforms to AS/NZS2728:2013
Suitable for ISO9223:2012
Atmospheric Classifications C1 – C4
NZ MRM Code of Practise Atmospheric Classifications A – D

Base metal thickness (BMT)
0.40mm & 0.55mm

Table 3. Composition of ZinaCore™ products (per m^2 product)

Product components	Weight, %	Post-consumer recycled material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	92-94	0	0 resp. 0
Alloys	5-6	0	0 resp. 0
Paint	1	0	0 resp. 0
Total	**100**		**0 resp. 0**

None of the materials in ColorCote® products are on the Candidate 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.

Packaging of ColorCote® products

The EPD results also include packaging materials.

Table 4 shows the weight of packaging materials needed per one flat square metre ($1m^2$) ColorCote® product.

Table 4. Composition of packaging (per m^2 ColorCote® product)

Packaging materials	Weight, kg
Timber Pallet	0.0696
Cardboard	0.00199
Steel coil rings and strapping	0.0580
Plastic strapping	0.000294
Bubble wrap and stretch film	0.00222

ColorCote® life cycle

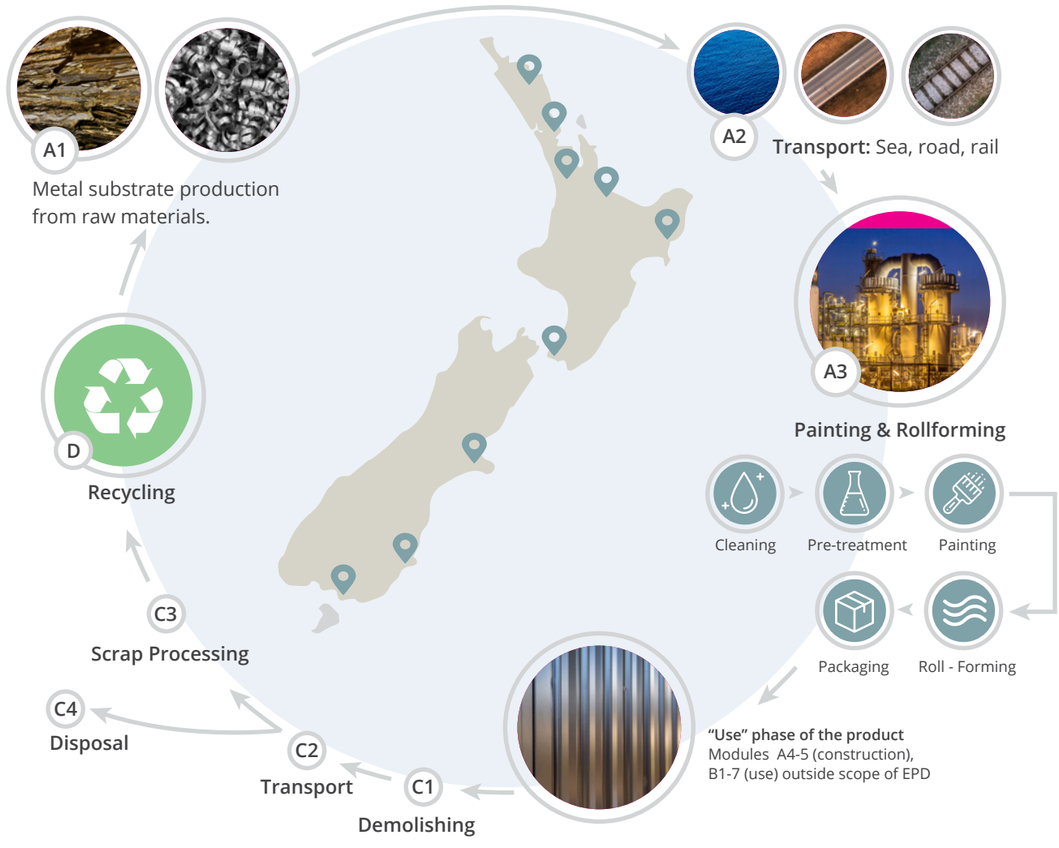
The EPDs look at the environmental impacts associated with metal substrate production from raw materials, transport to, between and within the manufacturing site, and the manufacturing of ColorCote® including rollforming (modules A1 to A3).

The end-of-life environmental impacts (modules C1-C4) and the recovery and recycling potential (Module D) are also presented in the full EPDs.

This EPD summary focusses on the product carbon footprint at the factory gate (A1-A3). The products Material Circularity Indicator is also included (see page 15). You can find the full EPDs online on our website and on the EPD Australasia website.

online EPD www.colorcote.co.nz/technical-information

Figure 1. ColorCote® life cycle



Modules included in the EPDs

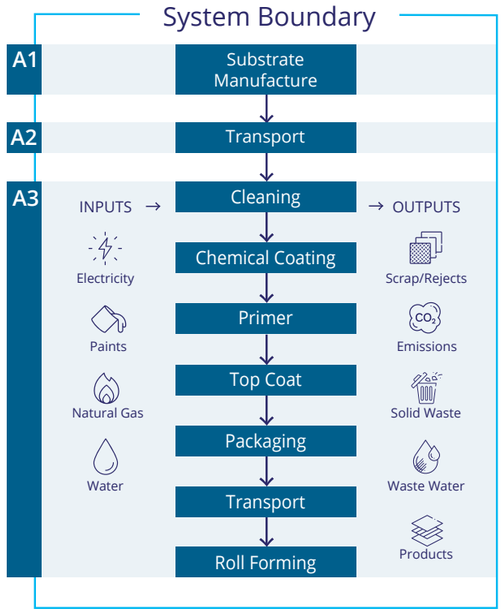
Production A1 A2 A3 | End-of-life C1 C2 C3 C4 | Recovery and recycling potential D

Production stage (modules A1-A3)

ColorCote® products are manufactured in the following way:

1. The unpainted substrate is manufactured by our suppliers and are 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 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.

Figure 2. Pre-painted steel substrate manufacturing process



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).

The EPDs assumed a 85% recycling rate and 15% landfill in New Zealand.

Recovery and recycling potential (module D)

Module D accounts for the benefits of postconsumer recycling. The New Zealand 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.

How to use this EPD summary

This EPD summary focusses on the product carbon footprint at the factory gate (modules A1-A3). You can find the summary results in table 8 on page 16. They are presented per flat square metre (1m^2) coated sheet metal formed in New Zealand.

The independently verified EPDs also provide:

- Environmental performance information from cradle to gate (modules A1-A3), with an extension of the A1-A3 scope to include rollforming up to the rollformer gate, plus modules C1-C4 and module D
- Carbon footprint data for use in Scope 3 carbon footprint calculations of your supply chain
- A wide range of environmental metrics, such as water, energy and waste.

Accreditation

The EPDs can contribute to the achievement of credit points under Green Star rating tools, the IS Rating Scheme (IS) and other leading green building rating schemes.

online EPD

ColorCote® EPDs online

You can find the complete EPD results online by visiting our website:

www.colorcote.co.nz/technical-information

Or visiting the EPD Australasia website epd-australasia.com

AUSTRALASIA EPD®

EPDs are not always comparible

When comparing EPDs it is important to consider:

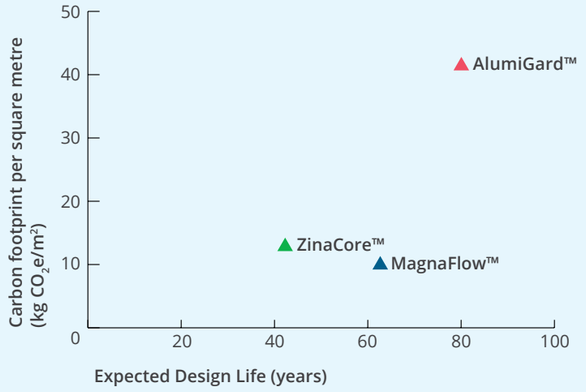
- EPDs within the same product category but from different programmes or utilising different Product Category Rules (PCRs) may not be comparable.
- EPDs of construction products may not be comparable if they do not comply with EN 15804 or if they are produced using different Product Category Rules
- EPDs of construction products from a group of manufacturers (industry-wide EPD) may not be comparable to an EPD of a similar construction product that has been generated by a single manufacturer (product-specific or manufacturer specific EPD).
- Understanding the detail is important in comparisons. Expert analysis is often required to understand the detail and 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.

If you need help interpreting the data in this EPD summary or in the full EPDs, please get in touch.

Interpretation of Data

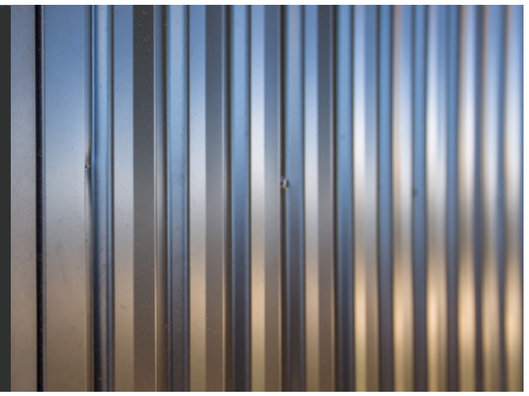
The results in the EPDs are presented per flat square metre of ColorCote® product. However, it is important to keep in mind that each product has a different expected design life under the same environmental conditions, as shown in Figure 2. Please note that real product life is influenced by a range of other factors, such as proximity to the sea and maintenance schedule.

Figure 3. Carbon footprint vs. expected design lifetime in an inland ISO3 category (0.40mm BMT steel; 0.90mm BMT aluminium)



Carbon footprint
(Global Warming Potential | GWPt)

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.



Product carbon footprint (A1-A3)

The product carbon footprint results (A1-A3), **for one flat square metre (1m²) ColorCote® product formed in New Zealand,** are presented in table 8 below.

Please note that the carbon footprint for m² rollformed product will be influenced by its profile.

Table 5. Carbon footprint of AlumiGard™, MagnaFlow™, and ZinaCore™ products (per m² flat product)

Product	Base metal thickness (BMT)	Product carbon footprint (kg CO_2e/m²)
AlumiGard™ **For the harshest conditions**	0.90 mm	42.5
MagnaFlow™ **For that extra protection**	0.40 mm	11
	0.55 mm	14.4
ZinaCore™ **Durability and value**	0.40 mm	13.6
	0.55 mm	17.9

You can find the full EPDs online on our website and on the EPD Australasia website.

online EPD www.colorcote.co.nz/technical-information

Material Circularity Indicator (MCI)

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.

Circularity metrics are a better measure than relying on recycling rates alone because they include all of the other ways of achieving circularity (avoiding consumption, enhancing durability, reuse, remanufacturing, bio-based materials, composting). Circularity metrics enable you to compare and combine these different approaches in a fair and comparable way.

The MCI is one of the circularity metrics that complies with the requirements of the new ISO 59020 standard on 'Circularity Metrics'.

Table 6. Material Circularity Indicator of AlumiGard™, MagnaFlow™, and ZinaCore™ products (per m^2 flat product)

Product	Base metal thickness (BMT)	MCI (kg CO_2e/m^2)
AlumiGard™ For the harshest conditions	0.90 mm	0.42
MagnaFlow™ For that extra protection	0.40 mm	0.47
	0.55 mm	0.47
ZinaCore™ Durability and value	0.40 mm	0.47
	0.55 mm	0.47

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