ENVIRONMENTAL PRODUCT DECLARATION

ALUMINUM PANELS & COILS

HOLCIM

GENERAL INFORMATION

This cradle-to-gate with options (A1-A5 and C1-D), Environmental Product Declaration covers metal roof panels, wall panels, coils and soffits produced at the Anoka Plant. The Life Cycle Assessment (LCA) was prepared in conformity with ISO 21930, ISO 14025, ISO 14040, and ISO 14044 and Part A: Life Cycle Assessment Calculation Rules and Report Requirement (UL 10010 Version 4.0, 2022) and Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding Roof and Wall Panels (UL 10010-5 Version 2.0, 2018). This EPD is intended for business-to-business (B-to-B) audiences.

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ISO 21930:2017 – serves as the core PCR and UL Part A: Life Cycle Assessment Calculation Rules and Report Requirement (UL 10010 Version 4.0, 2022) and sub-category Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding Roof and Wall Panels (UL 10010-5 Version 2.0, 2018).

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- Sub-category Part B PCR review was conducted by: **Thomas P. Gloria**, PhD. (t.gloria@industrial-ecology.com)
- Independent verification of the declaration, according to ISO 21930:2017 and ISO 14025:2006.: ☐ internal ☑ external
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- For additional explanatory material Manufacturer Representative: **Sherrie MacWilliams** (sherrie.macwilliams@holcim.com)
  This LCA EPD was prepared by: **Melissa Diaz**, LCA and EPD Project Manager • Climate Earth (www.climateearth.com)
- EPDs are comparable only if they comply with ISO 21930 (2017), use the same sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works.

PRODUCER

Holcim Solutions and Products US LLC delivers high-performance solutions that make the entire building envelope more sustainable for customers around the world. We are committed to raising the standards of building solutions by delivering superior quality and innovation while addressing industry needs.

Our offerings cover a comprehensive range of residential and commercial roofing, wall and lining systems, insulation, and waterproofing solutions for a variety of industries from construction to marine and aerospace. Our powerful portfolio of brands includes Elevate, Duro-Last, Malarkey Roofing Products, GenFlex, Gaco, and Enverge. Holcim Solutions and Products US LLC is a division of the Holcim Group. Visit HolcimBE.com to learn more.

Holcim's Anoka, MN facility is ISO 9000 certified and manufactures Elevate metal roofing materials for use in commercial roofing systems. The facility is 300,000 square feet and opened in 1995.

PRODUCT: UNA-CLAD™ Aluminum Architectural Sheet & Coil

With superior durability, flexibility and UV resistance, UNA-CLAD™ Aluminum Architectural Sheet & Coil is a versatile roofing solution that withstands the test of time, backed by a 40+ year legacy. Elevate metal roofing systems offer a range of benefits, including design enhancement, energy efficiency and ease of use. Both reliable and aesthetically versatile, our long-lasting metal roofing solutions are suited to a variety of applications and come in a wide range of colors and finishes. Elevate UNA-CLAD™ offers rolled panels, flat sheets, wall panels, soffits and coils. Additionally, UNA-CLAD™ Aluminum Architectural Sheet & Coil can contribute to LEED® certification. Aluminum sheets and coils manufactured at the Anoka facility do not contain hazardous materials.

Roll Form Panels and Soffits

Roll form panels and soffits are factory-formed and either feature a patented interlocking mechanism or are mechanically seamed onsite for ease of installation and to support the unique needs of almost any commercial facility. The seams also allow for varying levels of thermal expansion, water resistance, uplift, and more.

Flat Panels

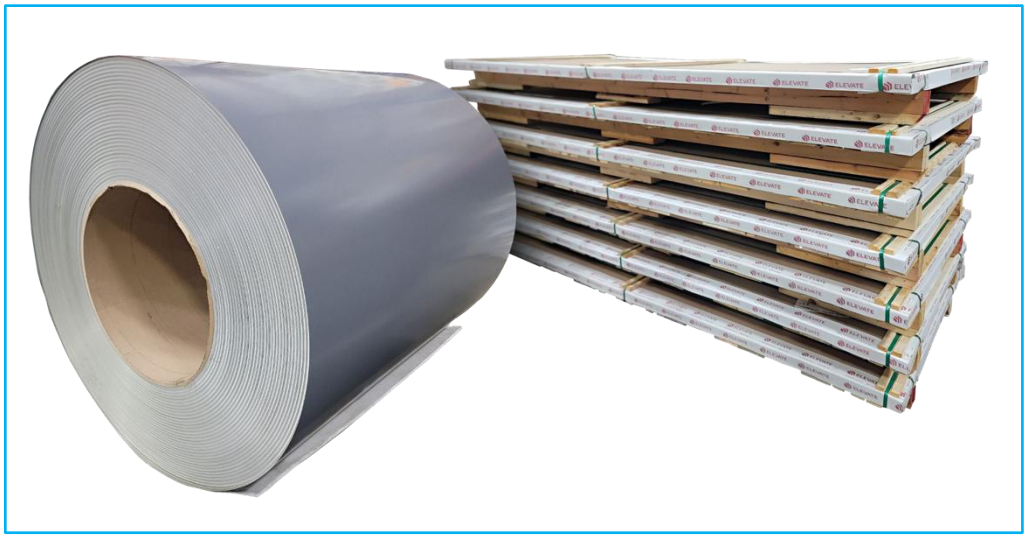
Flat panels are versatile and suitable for use in press brakes to create precise bends and folds, making them ideal for crafting trims, flashings, and edge metal.

Coils

Coil provides the flexibility and strength needed for continuous or large-scale projects. Coils are used in factory and/or mobile roll forming equipment to create a variety of panels, including siding, roofing, and structural components.

FIGURE 1

UNA-CLAD™ Aluminum Architectural Sheet & Coil



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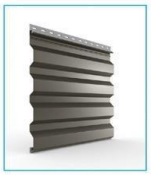

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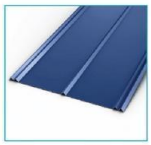

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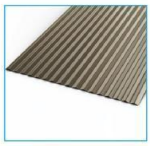

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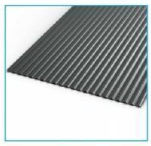

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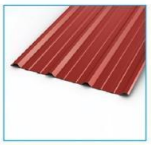
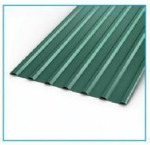


HR ULTRA OMEGA



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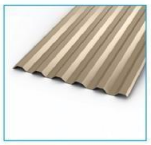
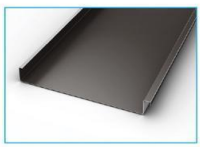


VR CLASSIC OMEGA



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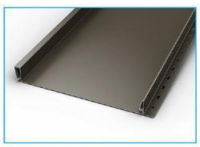

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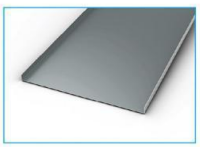

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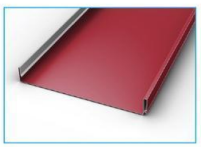

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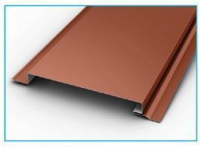
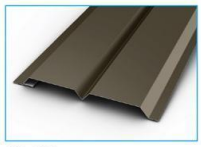


UC-501 FLAT

UC-500 FLAT



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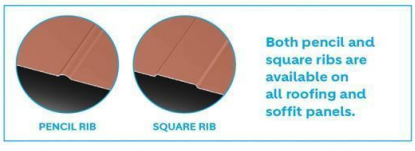


The products covered in this EPD meet the following physical properties:

TABLE 1

Typical Properties of Base Material (Meets or exceeds ASTM D 4637, Type I)

PROPERTY	VALUE
Standard	ASTM B209, Aluminum Association, Standard for Specification, Sheets and Coils
Base Metal	Aluminum 3105
Minimum Yield	21 KSI (145 MPa)
Coefficient of Thermal Expansion	12.6 x 10^{-6} in/in/F° (22.2 m/m.k x 10^{-6})
Modulus of Elasticity	10.0 x 10^{3} x KSI (68.9 MPa)

TABLE 2

Product Components

MATERIAL	AVERAGE PERCENTAGE COMPOSITION
Aluminum Coils and Panels	99.0%
Coating	1.0%

TABLE 3

Recycled Content

RECYCLED CONTENT	PERCENTAGE
Aluminum	68% - 85%

Note: No substances required to be reported as hazardous or dangerous are associated with the production of aluminum coils.

LIFE CYCLE ASSESSMENT

DECLARED UNIT

The declared unit is 100 m^2 of metal product.

SYSTEM BOUNDARY

This EPD is a cradle-to-gate with options (A1-A5 and C1-D), covering the life cycle stages indicated in Table 4.

TABLE 4
Life Cycle Product Stages

PRODUCTION STAGE (MANDATORY)			CONSTRUCTION STAGE		USE STAGE							END-OF-LIFE STAGE				BENEFITS AND LOADS BEYOND SYSTEM BOUNDARY
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water use	De-construction / Demolition	Transport to waste processing or disposal	Waste processing	Disposal of waste	Reuse, Recovery, Recycling Potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

***NOTE**: MND = module not declared; X = module included.*

CUT-OFF

Items excluded from system boundary include:

- production, manufacture and construction of manufacturing capital goods and infrastructure;
- production and manufacture of production equipment, delivery vehicles, and laboratory equipment;
- personnel-related activities (travel, furniture, and office supplies); and
- energy and water use related to company management and sales activities that may be located either within the factory site or at another location.

ALLOCATION PROCEDURE

Allocation follows the requirements and guidance of ISO 14044:2006, Clause 4.3.4; and ISO 21930:2017 section 7.2. Recycling and recycled content is modeled using the cut-off rule.

MANUFACTURING

A1 – A3, Production Stage

Roll Form Panels

Roll forming process is a continuous process where metal passes through a series of precision-contouring rollers that gradually bend the metal into the desired shape. Pre-coated aluminum is received in coils. The coil is unwound and cut to the desired size. The aluminum sheets are then passed through rollers that bend the metal into a specific profile. Upon request, a protective film is placed on the panel's coated side. Panels are shipped in wood crates to ensure product integrity.

Flat Panels

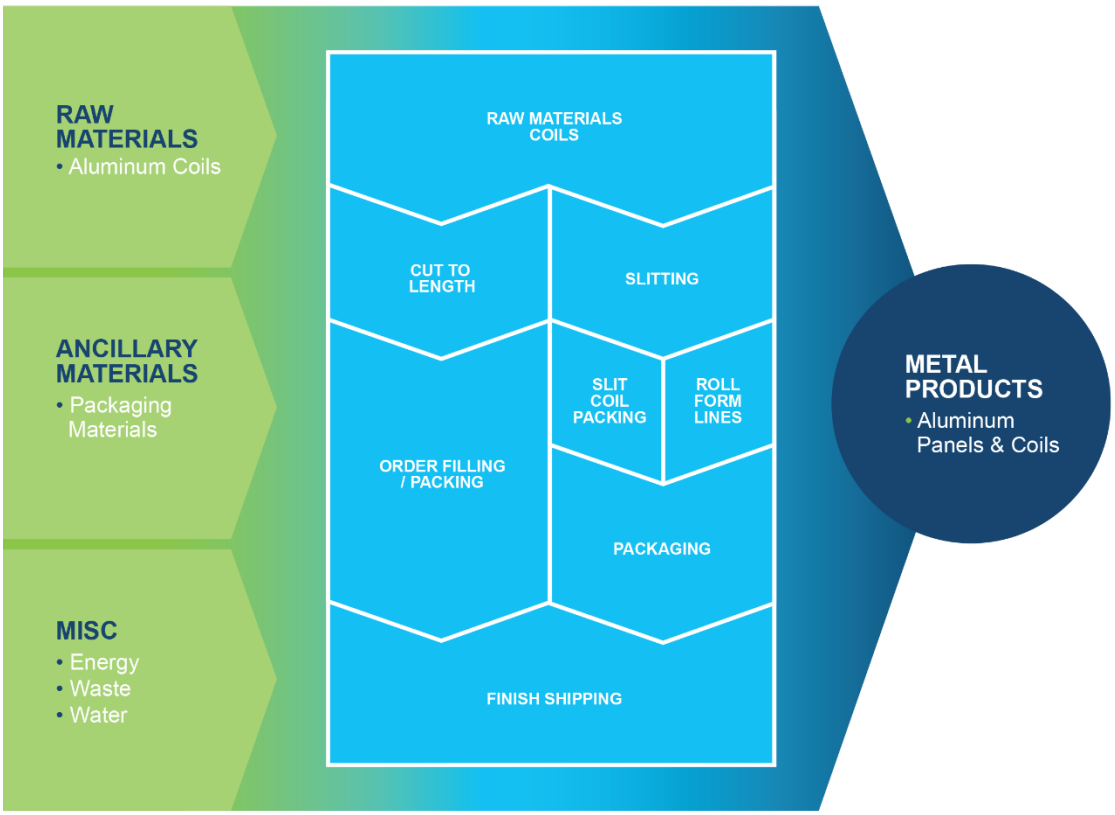
Pre-coated aluminum is received in coils. The coil is unwound and cut to the desired size. Panels are packaged on wood skids with edge boards. Edges, trim and flashing are cut and formed by the customer.

Coils

Pre-coated aluminum is received in coils. The coil is unwound and cut to the desired width and length. The coil is wound onto a cardboard coil and placed on a pallet for shipment.

FIGURE 2

Process Flow Diagram of UNA-CLAD™ Aluminum Architectural Sheet & Coil



A4, TRANSPORTATION

An average truck and transport distance from the plant to the construction site is assumed.

A5, INSTALLATION

The installation scenario includes the energy and ancillary materials typically consumed to mechanically install aluminum metal panels on a standard-shaped roof of 20,000 square feet, with a total panel weight of 11,920 pounds.

B1 – B7, USE STAGE

Use stage information modules have been omitted from this LCA study.

C1 – C4, END-OF-LIFE STAGE

At the end of building service life and during product replacement, the metal panels may be recycled, reused, recovered and repurposed, or disposed. Aluminum is highly recyclable, therefore, 95% of product recyclability at the end-of-life was assumed. The remaining 5% was assumed to be disposed of in a landfill. Average distances for waste processing were considered.

D, BENEFITS BEYOND BOUNDARY

A net scrap approach was taken to represent the benefits and impacts related to the potential aluminum recycling and raw material substitution.

LIFE CYCLE ASSESSMENT RESULTS

TABLE 5: **UNA-CLAD™ Aluminum Architectural Sheet & Coil**, per 100 m^2.*

IMPACT ASSESSMENT UNIT	PRODUCTION (A1-A3)	TRANSPORT (A4)	INSTALLATION (A5)	DEMOLITION (C1)	TRANSPORT TO WASTE PROCESSING (C2)	DISPOSAL OF WASTE (C4)	BENEFITS BEYOND THE SYSTEM BOUNDARY (D)
Global warming potential (GWP)[1] (kg CO_2 eq)							
0.032 (0.81 mm) gauge	4.84E+02	8.89E-03	1.20E+01	9.69E+00	6.69E-01	2.68E-01	-1.59E+03
0.040 (1.00 mm) gauge	6.11E+02	1.12E-02	1.20E+01	1.22E+01	8.45E-01	3.38E-01	-2.00E+03
0.050 (1.30 mm) gauge	7.64E+02	1.40E-02	1.20E+01	1.53E+01	1.06E+00	4.22E-01	-2.50E+03
0.063 (1.60 mm) gauge	9.62E+02	1.77E-02	1.20E+01	1.93E+01	1.33E+00	5.32E-01	-3.15E+03
Depletion potential of the stratospheric ozone layer (ODP) (kg CFC-11 eq)							
0.032 (0.81 mm) gauge	1.49E-05	3.72E-13	2.31E-07	1.54E-06	2.80E-11	2.36E-08	-1.07E-04
0.040 (1.00 mm) gauge	1.88E-05	4.70E-13	2.31E-07	1.94E-06	3.53E-11	2.99E-08	-1.35E-04
0.050 (1.30 mm) gauge	2.35E-05	5.87E-13	2.31E-07	2.43E-06	4.42E-11	3.73E-08	-1.69E-04
0.063 (1.60 mm) gauge	2.95E-05	7.39E-13	2.31E-07	3.06E-06	5.56E-11	4.70E-08	-2.13E-04
Eutrophication potential (EP) (kg N eq)							
0.032 (0.81 mm) gauge	1.07E+00	6.85E-06	6.63E-03	1.04E-02	5.15E-04	4.70E-04	-4.77E+00
0.040 (1.00 mm) gauge	1.35E+00	8.65E-06	6.63E-03	1.31E-02	6.51E-04	5.94E-04	-6.03E+00
0.050 (1.30 mm) gauge	1.69E+00	1.08E-05	6.63E-03	1.64E-02	8.13E-04	7.42E-04	-7.53E+00
0.063 (1.60 mm) gauge	2.13E+00	1.36E-05	6.63E-03	2.07E-02	1.02E-03	9.35E-04	-9.49E+00
Acidification potential of soil and water sources (AP) (kg SO_2 eq)							
0.032 (0.81 mm) gauge	1.99E+00	1.14E-04	3.13E-02	9.29E-02	8.56E-03	2.27E-03	-6.82E+00
0.040 (1.00 mm) gauge	2.51E+00	1.44E-04	3.13E-02	1.17E-01	1.08E-02	2.87E-03	-8.61E+00
0.050 (1.30 mm) gauge	3.14E+00	1.80E-04	3.13E-02	1.47E-01	1.35E-02	3.59E-03	-1.08E+01
0.063 (1.60 mm) gauge	3.95E+00	2.26E-04	3.13E-02	1.85E-01	1.70E-02	4.52E-03	-1.36E+01
Formation potential of tropospheric ozone (POCP) (kg O_3 eq)							
0.032 (0.81 mm) gauge	2.97E+01	2.91E-03	4.53E-01	2.76E+00	2.19E-01	3.43E-02	-5.88E+01
0.040 (1.00 mm) gauge	3.75E+01	3.68E-03	4.53E-01	3.49E+00	2.77E-01	4.33E-02	-7.43E+01
0.050 (1.30 mm) gauge	4.69E+01	4.60E-03	4.53E-01	4.36E+00	3.46E-01	5.41E-02	-9.29E+01
0.063 (1.60 mm) gauge	5.91E+01	5.79E-03	4.53E-01	5.49E+00	4.36E-01	6.82E-02	-1.17E+02
Resource Use							
Abiotic depletion potential for non-fossil mineral resources ($ADP_{elements}$)*							
0.032 (0.81 mm) gauge	1.58E-03	0.00E+00	2.07E-06	1.93E-08	0.00E+00	2.60E-07	7.62E-03
0.040 (1.00 mm) gauge	2.00E-03	0.00E+00	2.07E-06	2.44E-08	0.00E+00	3.28E-07	9.62E-03
0.050 (1.30 mm) gauge	2.50E-03	0.00E+00	2.07E-06	3.05E-08	0.00E+00	4.10E-07	1.20E-02
0.063 (1.60 mm) gauge	3.15E-03	0.00E+00	2.07E-06	3.85E-08	0.00E+00	5.17E-07	1.52E-02
Abiotic depletion potential for fossil resources (ADP_{fossil}) (MJ, NCV)							
0.032 (0.81 mm) gauge	3.83E+03	1.26E-01	6.68E+01	1.33E+02	9.49E+00	3.07E+00	-1.43E+04
0.040 (1.00 mm) gauge	4.84E+03	1.59E-01	6.68E+01	1.69E+02	1.20E+01	3.88E+00	-1.81E+04
0.050 (1.30 mm) gauge	6.05E+03	1.99E-01	6.68E+01	2.11E+02	1.50E+01	4.85E+00	-2.26E+04
0.063 (1.60 mm) gauge	7.62E+03	2.51E-01	6.68E+01	2.65E+02	1.89E+01	6.11E+00	-2.84E+04
Renewable primary energy resources as energy (fuel), ($RPRE^2$)* (MJ, NCV)							
0.032 (0.81 mm) gauge	8.48E+02	0.00E+00	1.32E+00	2.61E+00	0.00E+00	9.55E-02	-4.81E+03
0.040 (1.00 mm) gauge	1.07E+03	0.00E+00	1.32E+00	3.30E+00	0.00E+00	1.21E-01	-6.07E+03
0.050 (1.30 mm) gauge	1.34E+03	0.00E+00	1.32E+00	4.13E+00	0.00E+00	1.51E-01	-7.59E+03
0.063 (1.60 mm) gauge	1.69E+03	0.00E+00	1.32E+00	5.20E+00	0.00E+00	1.90E-01	-9.56E+03
Renewable primary resources as material, ($RPRM^2$)* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable primary resources as energy (fuel), ($NRPRE^2$)* (MJ, NCV)							
0.032 (0.81 mm) gauge	4.65E+03	1.26E-01	6.98E+01	1.36E+02	9.49E+00	3.60E+00	-1.86E+04
0.040 (1.00 mm) gauge	5.87E+03	1.59E-01	6.98E+01	1.72E+02	1.20E+01	4.55E+00	-2.35E+04
0.050 (1.30 mm) gauge	7.34E+03	1.99E-01	6.98E+01	2.15E+02	1.50E+01	5.69E+00	-2.94E+04
0.063 (1.60 mm) gauge	9.24E+03	2.51E-01	6.98E+01	2.71E+02	1.89E+01	7.17E+00	-3.70E+04
Non-renewable primary resources as material, ($NRPRM^2$)* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Consumption of fresh water, (FW^2) (m^3)							
0.032 (0.81 mm) gauge	9.81E+00	0.00E+00	5.54E-02	3.42E-02	0.00E+00	4.25E-03	-4.17E+01
0.040 (1.00 mm) gauge	1.24E+01	0.00E+00	5.54E-02	4.32E-02	0.00E+00	5.36E-03	-5.26E+01
0.050 (1.30 mm) gauge	1.55E+01	0.00E+00	5.54E-02	5.40E-02	0.00E+00	6.70E-03	-6.58E+01
0.063 (1.60 mm) gauge	1.95E+01	0.00E+00	5.54E-02	6.80E-02	0.00E+00	8.44E-03	-8.29E+01

[1] GWP 100; 100-year time horizon GWP factors are provided by the IPCC 2013 Fifth Assessment Report (AR5)..
[2] Calculated per ACLCA ISO 21930 Guidance.

Secondary Material, Fuel and Recovered Energy							
Secondary Materials, (SM[3])* (kg)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels, (RSF[3])* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (NRSF[3])* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy, (RE[3])* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Waste & Output Flows							
Hazardous waste disposed, (HW[3])* (kg)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed, (NHWD[3])* (kg)							
0.032 (0.81 mm) gauge	6.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E+01	0.00E+00
0.040 (1.00 mm) gauge	7.95E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E+01	0.00E+00
0.050 (1.30 mm) gauge	9.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.88E+01	0.00E+00
0.063 (1.60 mm) gauge	1.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.88E+01	0.00E+00
High-level radioactive waste, (HLRW[3])* (kg)							
0.032 (0.81 mm) gauge	6.45E-07	0.00E+00	-2.19E-10	1.48E-09	0.00E+00	2.87E-10	-3.83E-06
0.040 (1.00 mm) gauge	8.15E-07	0.00E+00	-2.19E-10	1.87E-09	0.00E+00	3.63E-10	-4.84E-06
0.050 (1.30 mm) gauge	1.02E-06	0.00E+00	-2.19E-10	2.34E-09	0.00E+00	4.54E-10	-6.05E-06
0.063 (1.60 mm) gauge	1.28E-06	0.00E+00	-2.19E-10	2.95E-09	0.00E+00	5.72E-10	-7.62E-06
Intermediate and low-level radioactive waste, (ILLRW[3])* (kg)							
0.032 (0.81 mm) gauge	2.65E-06	0.00E+00	-1.06E-09	7.15E-09	0.00E+00	1.38E-09	-1.51E-05
0.040 (1.00 mm) gauge	3.34E-06	0.00E+00	-1.06E-09	9.03E-09	0.00E+00	1.75E-09	-1.91E-05
0.050 (1.30 mm) gauge	4.18E-06	0.00E+00	-1.06E-09	1.13E-08	0.00E+00	2.19E-09	-2.38E-05
0.063 (1.60 mm) gauge	5.27E-06	0.00E+00	-1.06E-09	1.42E-08	0.00E+00	2.75E-09	-3.00E-05
Components for reuse, (CRU[3])* (kg)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling, (MR[3])* (kg)							
0.032 (0.81 mm) gauge	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	1.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	2.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	2.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery, (MER[3])* (kg)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy exported from the product system, (EE[3])* (MJ, NCV)							
0.032 (0.81 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.040 (1.00 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.050 (1.30 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.063 (1.60 mm) gauge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

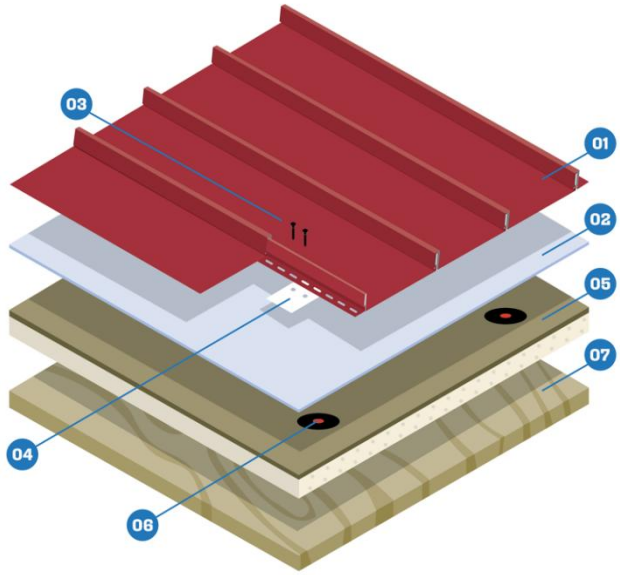
**Emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in these categories. The following optional indicators are not reported and also have high levels of uncertainty: Land use related impacts, toxicological aspects, and emissions from land use change*

***Only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, quantified by the same functional unit, and taking account of replacement based on the product reference service life (RSL) relative to an assumed building service life, can be used to assist purchasers and users in making informed comparisons between products*

When comparing EPDs created using this PCR, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to different results for upstream or downstream of the life cycle stages declared.

[3] Calculated per ACLCA ISO 21930 Guidance.

ADDITIONAL ENVIRONMENTAL INFORMATION



Elevate Metal Roofing System

1. **Elevate Una-Clad Aluminum Panel**
   - Elevate metals are fabricated from 25% to 80% recycled content. Elevate metals reduce the need to mine raw materials by utilizing scrap waste.
   - All Elevate metal products are recyclable at the end of the product life cycle.
2. **Elevate Clad-Gard Underlayment**
3. **Elevate Fasteners with Nylon Washer**
   - Elevate metal fasteners contain up to 100% recycled content.
4. **Elevate UC Bearing Plate**
5. **ISOGARD™ GL or ISOGARD CG Insulation – Mechanically Attached or Adhered**
   - Depending upon thickness, ISOGARD GL and CG insulation contains up to 67% recycled content.
   - All Elevate polyisocyanurate insulations use EPA accepted blowing agents. Elevate ISOGARD GL and ISOGARD CG insulation incorporates a HCFC-free blowing agent that does not contribute to the depletion of the ozone layer (ODP-free).
   - The thermal performance of ISOGARD polyiso insulation is up to 40% better than major competitors when tested by an independent third party in cold temperature 40°F (4°C) applications according to ASTM C1289 standards. The increased R-value per inch means better thermal performance from the same roofing systems using the same amount of insulation compared to leading competitive products on the market today.
6. **Elevate Metal Plates and Fasteners**
   - Elevate metal plates contain a minimum of 25% recycled content.
   - Elevate metal fasteners contain up to 100% recycled content.
7. **Roof Deck**

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