

Environmental Product Declaration

CEDAR RENDITIONS





DISTINGUISH WITH HIGH DESIGN AND LOW MAINTENANCE.

Cedar Renditions® tells an unforgettable design story. Available in Siding, Soffit and Trim, its compelling aesthetics provide equal design strength as a complementary accent or exterior feature. Its real wood look takes your home to the next level.

Top Features:

- Look of stained wood
- Virtually maintenance free
- Moisture proof
- Easy to install
- Non-combustible
- 100% recyclable
- 25-year prorated limited warranty
- Panel supports up to 200 mph winds
- PVDF top coat offers a robust paint technology
- Overlapping design for longer lengths with horizontal panels

Real stained wood looks amazing, but requires ongoing maintenance. Cedar Renditions delivers the beauty of stained wood in a panel that requires virtually no maintenance. This is due to the fact that it made of recyclable aluminum that does not absorb water, is insect proof, and is imervious to the cold. On top of that, it is painted with a PVDF coating which is designed to minimize fade over the years.

Environmental Product Declaration

Westlake Royal Cedar Renditions™ Aluminum Siding



According to
ISO 14025, ISO 14040,
and ISO 21930

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and ISO 21930. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428 USA	
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	ASTM, General Program Instructions, v8.0, April 29, 2020.	
MANUFACTURER NAME AND ADDRESS	Westlake Royal Chris Johnson 750 Creditstone Road Concord, Ontario L4K 5A5 cjohnson3@westlake.com	
DECLARATION NUMBER	EPD663	
DECLARED PRODUCT & FUNCTIONAL UNIT OF DECLARED UNIT	Westlake Royal Cedar Renditions™ Aluminum Siding Functional Unit = 100 square meters of Cedar Renditions™ over 75 year building lifetime	
REFERENCE PCR AND VERSION NUMBER	Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v4.0 (March 2022). Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding: Roof and Wall Panels, Version 2.0, UL Environment, 2018.	
DESCRIPTION OF PRODUCT(S) APPLICATION/USE	An exterior cladding solution that offers the look of stained wood without the ongoing maintenance.	
CSI MasterFormat Code	074213.13 Formed Metal Wall Panels	
PRODUCT RSL DESCRIPTION	30 Years	
MARKETS OF APPLICABILITY	North America	
DATE OF ISSUE	6/10/2024	
PERIOD OF VALIDITY	5 years	
EPD TYPE	Product Specific	
DATASET VARIABILITY	N/A	
EPD SCOPE	Cradle-to-Grave	
YEAR(S) OF REPORTED PRIMARY DATA	2022	
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.4.0.2	
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent v3.9 & USLCI	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1; CML 4.1; CED (LHV), v.1.0.	
This life cycle assessment was conducted in accordance with ISO 14044:2006 and the reference PCR by:	Sustainable Solutions Corporation	
The sub-category PCR review was conducted by:	Thomas Gloria, PhD (chair) Lindita Bushi, PhD Athena Sustainable Materials Institute Bob Zabcik, P.E., LEED AP BD+C NCI Building Systems	
This declaration was independently verified in accordance with ISO 14025 2006, The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v4.0 (March 2022), based on ISO 21930:2017. Tim Brooke, ASTM International.		
<input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL		
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Lindita Bushi, PhD, Athena Sustainable Materials Institute	

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance using EPD information shall consider all relevant information modules over the full life cycle of the products within the building. This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930 §5.5 are met. It should be noted that different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

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General Information

Description of Company/Organization

Westlake Royal Building Products is out to make the experience of choosing the right siding simple and supremely satisfying - with gorgeous, low maintenance siding that covers a wide range of styles, climates and budgets.

Product Description

Product Name: Cedar Renditions™ Siding

- Offers the look of stained wood without the ongoing maintenance
- Modern 6" Flat face panel with tight seams
- Board & Batten profile
- 6" Vented Soffit
- PVDF Finish for exceptional fade resistance
- Non-combustible cladding choice
- System includes; Outside Corner, J-Channel and Matching Trim Coil
- Siding panels made of 27 mil aluminum and accessories use 21 mil aluminum



Manufacturer Specific EPD

This product-specific EPD was developed based on the Westlake Royal Cedar Renditions Life Cycle Assessment. The EPD accounts for raw material extraction and processing, transport, product manufacturing, distribution, installation, maintenance, disposal, and potential benefits and loads following the end of life disposal. Manufacturing data were gathered directly from company personnel. When updated company-specific data were not available the ratio of production, within the 2022 calendar year, was used as a proxy.

Application

Cedar Renditions™ is an exterior cladding solution that offers the look of stained wood without the ongoing maintenance.

Material Composition

The average composition of Cedar Renditions™ is as follows:

Material	Cedar Renditions™
Aluminum	93.60%
Paint	6.40%
Total	100.00%

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Technical Data

The following technical data is applicable for the delivered product.

Technical Data		
Requirement	Specification	Unit
Length	6" Siding & Soffit = 3.66 Board & Batten = 3.05	m
Width	Face width- 6" Siding & Soffit = 6 Board & Batten = 7.9	in
Tensile strength	172	Mpa
Modulus of elasticity	69	Gpa
U-value of assembly including interruptions to insulation	0	W/(m ² *K)
R value of typical materials where continuous	0.5	m ² *K/W
Water vapor permeance	Minimal	Metric perms
Airborne sound reduction	NA	dB
Sound absorption coefficient	NA	%

Placing on the Market / Application Rules

The standards that can be applied for Cedar Renditions™ are:

- International Building Code (IBC)
- International Residential Code (IRC)
- Florida Building Code
- Can/ULC-S315

Properties of Declared Product as Shipped

Siding products are put in a box with layers of paper between panels. The boxes are then stacked on a pallet and taped together.

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Methodological Framework

Functional Unit

The declaration refers to the functional unit of 100 square meters (including overlap) of Westlake Royal Cedar Renditions™ Aluminum Siding as specified in the PCR.

Name	Cedar Renditions™	
	Value	Unit
Functional unit	100.00	m ²
Reference Service Life (RSL)	30.00	years
Estimated Service Life (ESL)	75.00	years
Mass	272.09	kg
Density	2700.00	kg/m ³
Thickness to achieve Functional or Declared Unit (0.026 in.)	0.066	cm

System Boundary

This is a Cradle-to-Grave Environmental Product Declaration. The following life cycle phases were considered:

Product Stage			Construction Process Stage		Use Stage							End of Life Stage*				Benefits and Loads Beyond the System Boundaries
Raw material supply	Transport	Manufacturing	Transport from gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /demolition	Transport	Waste processing	Disposal	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	X	X	X	X	X	X	X	X	X	X	X	X

Description of the System Boundary Stages Corresponding to the PCR
(X = Included; MND = Module Not Declared)

*This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

Allocation

Allocation was determined on a per mass basis for primary data. For secondary data, cut-off methodology was used. This LCA follows an attributional approach as outlined in ISO 21930 Section 7.1.1. No burdens are allocated across the system boundary with secondary material, secondary fuel, or recovered energy flows arising from waste.

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Cut-off Criteria

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissible.

For Hazardous Substances the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available.
- If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No processes were neglected or excluded. Capital items for the production processes (machine, buildings, etc.) were not taken into consideration.

Data Sources

Primary data were collected for every process in the product system under the control of Westlake Royal for the Ontario, Canada site. Secondary data from the SimaPro Ecoinvent v3.9 & USLCI databases were utilized. These data were evaluated and have temporal, geographic, and technical coverage appropriate to the scope of the aluminum siding product.

Data Quality

The data sources used are complete and representative of North America in terms of the geographic and technological coverage and are a recent vintage (i.e. less than ten years old). The data used for primary data are based on direct information sources of the manufacturer. Secondary data sets were used for raw materials extraction and processing, end of life, transportation, and energy production flows. Wherever secondary data are used, the study adopts critically reviewed data for consistency, precision, and reproducibility to limit uncertainty.

Period Under Review

The period under review is the full calendar year of 2022.

Treatment of Biogenic Carbon

The uptake and release of biogenic carbon throughout the product life cycle follows ISO 21930 Section 7.2.7

Comparability and Benchmarking

Environmental Declarations from different programs (ISO 14025) may not be comparable. A comparison or an evaluation of EPD data is only possible if all data sets to be compared were created according to ISO 21930 and the building context, respectively the product-specific characteristics of performance, is taken into account. Environmental declarations from different programs may not be comparable. Comparison of the environmental performance of metal panel and cladding products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building use phase as instructed under this PCR. Full conformance with the ASTM, General Program Instructions, v8.0, April 29, 2020, Product Category Rule Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v4.0 (March 2022), and Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding: Roof and Wall Panels, Version 2.0, UL Environment, 2018. allows EPD comparability only when all stages of the product's life cycle have been considered, when they comply with all referenced standards, use the same sub-category PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible.

Units

The LCA results within this EPD are reported in SI units.

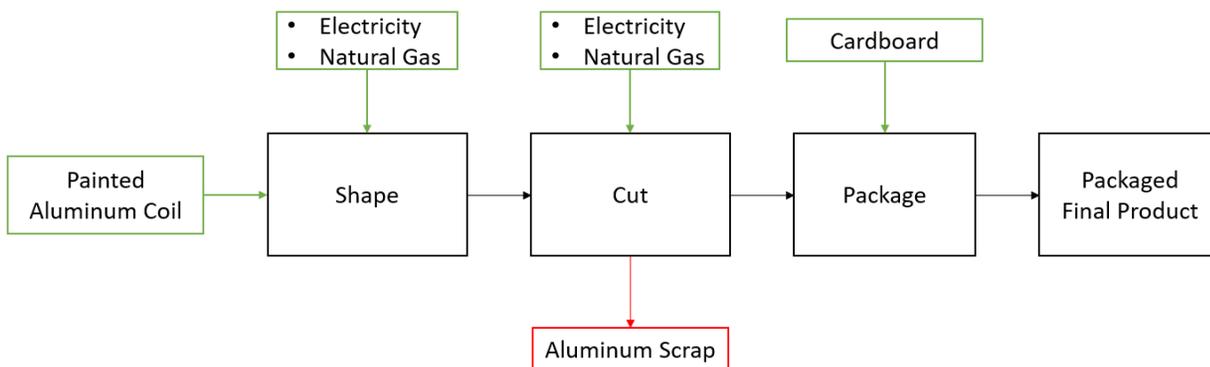
Additional Environmental Information

Background data

For life cycle modeling of the considered products, SimaPro is used. The SimaPro database contains consistent and documented datasets which are documented in the online SimaPro documentation. To ensure comparability of results in the LCA, the basic data of the SimaPro database were used for energy, transportation and auxiliary materials.

Manufacturing

The Westlake Ontario, Canada site starts with a painted aluminum coil. This coil is run through a machine to cut it to length. The product is then packaged and distributed to customers.



Packaging

According to the PCR, 78% of plastic packaging and 20% of all other packaging materials are recycled. The rest are sent to landfill. The packaging material is composed of cardboard, polypropylene, wood and paper.

Cedar Renditions™	
Material	Quantity (% By Weight)
Wood	86%
Polypropylene	0%
Cardboard	13%
Paper	1%
Total	100%



Transportation

The product is transported 554 km from the manufacturer to the building site via diesel power truck/trailer, according to the PCR.

Transport to Building Site (A4)		
Name	Cedar Renditions™	Unit
Fuel type	Diesel	-
Liters of fuel	42.6	l/100km per functional unit
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	554	km
Gross density of products transported	2700	kg/m ³
Weight of products transported	387	kg
Volume of products transported	0.14	m ³

Product Installation

Diesel, Electricity, and nails are required for the installation of the siding per the product PCR and expert opinion. A 5% installation scrap rate is assumed.

Installation into the building (A5)		
Name	Cedar Renditions™	Unit
Auxiliary materials	1.94	kg
Water consumption	0.00	m ³
Other resources	0.00	kg
Electricity consumption	2.00	kWh
Other energy carriers	144.95	MJ
Product loss per functional unit	13.60	kg
Waste materials at construction site	128.50	kg
Output substance (recycle)	12.92	kg
Output substance (landfill)	0.68	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	23.03	kg
Packaging waste (landfill)	91.86	kg
Packaging waste (incineration)	0.00	kg
Direct emissions to ambient air*, soil, and water	200.69	kg CO ₂
VOC emissions	-	kg

*CO2 emissions to air from disposal of packaging

Reference Service Life		
Name	Value	Unit
Reference Service Life	30	years
Estimated Building Service Life	75	years
Number of Replacements	1.5	replacements

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Product Use

No routine maintenance is required to prolong the lifetime of the product, but cleaning is recommended to maintain its appearance. Throughout the building service life, the aluminum siding or soffit is normally cleaned with water and household cleaning supplies. An estimate was made that 4.5 liters of water and 2.6 grams of soap would be consumed via cleaning on the siding products per square meter over the lifetime of the building. B1, B3, B5, B6, and B7 are assumed to be null.

Maintenance (B2)		
Name	Value	Unit
Maintenance process information (cite source in report)	-	-
Maintenance cycle	-	Cycles/RSL
Maintenance cycle	-	Cycles/ESL
Net freshwater consumption	4.5	l
Ancillary materials specified by type (e.g. cleaning agent)	2.6	g
Other resources	-	kg
Energy input, specified by activity, type and amount	-	kWh
Other energy carriers specified by type	-	kWh
Power output of equipment	-	kW
Waste materials from maintenance (specify materials)	-	kg
Direct emissions to ambient air, soil and water	-	kg
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants)	-	

Disposal

At the end of life, 100% of the product is assumed to be recycled. C3 is assumed to be null except for the MR indicator.

End of life (C1-C4)		
Name	Cedar Renditions™	Unit
Collected separately	258.49	kg
Collected as mixed construction waste	13.60	kg
Reuse	0.00	kg
Recycling	258.49	kg
Landfilling	13.60	kg
Incineration with energy recovery	0.00	kg
Energy conversion	0%	%
Material for final deposition	272.09	kg
Removals of biogenic carbon	0.00	kg
Disposal transportation distance	100.00	km



Re-use Phase

Cedar Renditions™ is recycled at end-of-life.

Reuse, Recovery, And/Or Recycling Potential (D)		
Name	Value	Unit
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	0.00	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)	0.00	MJ
Net energy benefit from material flow declared in C3 for energy recovery	0.00	MJ
Recycling potential	207.87	kg
Process and conversion efficiencies		
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors)		



Cedar Renditions™ Results per Functional Unit Over the Building Lifetime of 75 Years - Including 1.5 Replacements

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2	B4	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO ₂ -Eq.	4.5E+03	2.0E+01	2.9E+02	1.8E+00	7.3E+03	4.8E+01	2.5E+00	0.0E+00	6.9E+00	-1.1E+04
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.7E-04	7.6E-10	1.2E-05	2.4E-07	2.8E-04	1.1E-05	9.7E-11	0.0E+00	5.1E-08	-4.8E-07
AP Air	Acidification potential for air emissions	kg SO ₂ -Eq.	2.7E+01	1.2E-01	1.5E+00	6.8E-03	4.4E+01	4.6E-01	1.5E-02	0.0E+00	2.4E-03	-7.1E+01
EP	Eutrophication potential	kg N-Eq.	9.1E+00	6.6E-03	1.1E+00	5.1E-02	1.6E+01	5.1E-02	8.5E-04	0.0E+00	9.3E-02	-1.1E+00
SP	Smog formation potential	kg O ₃ -Eq.	3.6E+02	3.2E+00	2.3E+01	8.2E-02	6.0E+02	1.4E+01	4.2E-01	0.0E+00	3.7E-02	-5.4E+02
FFD	Fossil fuel depletion	MJ-surplus	2.1E+03	3.8E+01	1.4E+02	9.4E-01	3.5E+03	9.8E+01	4.9E+00	0.0E+00	5.4E-01	-7.0E+03

* These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined, and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

*All use phase and disposal stages have been considered and only those with non-zero values have been reported.

*The CED (LHV) Methodology, SimaPro, v1.0 is used to calculate the EPD results- energy indicators.

Results shown below were calculated using CML 2001 - April 2013 Methodology.

CML 4.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2	B4	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO ₂ -Eq.	4.5E+03	2.0E+01	3.0E+02	1.8E+00	7.4E+03	4.8E+01	2.5E+00	0.0E+00	6.9E+00	-1.1E+04
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.2E-04	7.5E-10	8.6E-06	2.2E-07	2.1E-04	1.1E-05	9.7E-11	0.0E+00	5.1E-08	-4.8E-07
AP Air	Acidification potential for air emissions	kg SO ₂ -Eq.	2.6E+01	9.8E-02	1.4E+00	6.3E-03	4.2E+01	4.6E-01	1.5E-02	0.0E+00	2.4E-03	-7.1E+01
EP	Eutrophication potential	kg(PO ₄) ³ -Eq.	5.4E+00	1.7E-02	5.4E-01	2.2E-02	9.1E+00	5.1E-02	8.5E-04	0.0E+00	9.3E-02	-1.1E+00
POCP	Formation potential of tropospheric ozone photochemical oxidants	kg ethane-Eq.	1.5E+00	4.5E-03	9.1E-02	8.2E-04	2.4E+01	1.4E+01	4.2E-01	0.0E+00	3.7E-02	-5.4E+02
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.5E-02	0.0E+00	7.8E-04	1.4E-05	1.5E+02	9.8E+01	4.9E+00	0.0E+00	5.4E-01	-7.0E+03
ADPF	Abiotic depletion potential for fossil resources	MJ	4.1E+04	2.6E+02	2.3E+03	1.0E+01	6.6E+04	4.8E+01	2.5E+00	0.0E+00	8.6E+00	-1.1E+04

*All use phase and disposal stages have been considered and only those with non-zero values have been reported.

*The CED (LHV) Methodology, SimaPro, v1.0 is used to calculate the EPD results- energy indicators.

Results below contain the resource use throughout the life cycle of the product.

Resource Use

Parameter	Parameter	Unit	A1-A3	A4	A5	B2	B4	C1	C2	C3	C4	D
RPR _E	Renewable primary energy as energy carrier	MJ	6.1E+03	0.0E+00	3.1E+02	2.4E+01	9.7E+03	6.5E+00	0.0E+00	0.0E+00	2.1E-01	-6.4E+04
RPR _M	Renewable primary energy resources as material utilization	MJ	0.0E+00									
NRPR _E	Nonrenewable primary energy as energy carrier	MJ	4.2E+04	2.6E+02	2.4E+03	1.3E+01	6.8E+04	6.8E+02	3.3E+01	0.0E+00	4.6E+00	-1.0E+05
NRPR _M	Nonrenewable primary energy as material utilization	MJ	2.2E+02	0.0E+00	1.1E+01	0.0E+00	3.5E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	1.1E+02	0.0E+00	1.9E+00	0.0E+00	1.6E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00									
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00									
RE	Energy recovered from disposed waste	MJ	0.0E+00									
FW	Use of net fresh water	m ³	1.5E+03	0.0E+00	7.3E+01	5.5E-01	2.3E+03	3.4E-02	0.0E+00	0.0E+00	4.1E-03	-1.4E+05

*All use phase and disposal stages have been considered and only those with non-zero values have been reported.

*The CED (LHV) Methodology, SimaPro, v1.0 is used to calculate the EPD results- energy indicators.

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Results below contain the output flows and wastes throughout the life cycle of the product.

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B2	B4	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	1.5E+00	0.0E+00	7.7E-02	6.3E-04	2.4E+00	1.8E-03	0.0E+00	0.0E+00	1.6E-05	0.0E+00
NHWD	Non-hazardous waste disposed	kg	7.6E+02	0.0E+00	1.3E+02	4.0E-01	1.4E+03	9.5E-01	0.0E+00	0.0E+00	1.4E+01	0.0E+00
HLRW	High-level radioactive waste	kg or m ³	0.0E+00									
ILLRW	Intermediate- and low-level radioactive waste	kg or m ³	5.3E-02	0.0E+00	4.7E-03	4.2E-05	9.4E-02	5.1E-03	0.0E+00	0.0E+00	2.4E-05	0.0E+00
CRU	Components for re-use	kg	0.0E+00									
MR	Materials for recycling	kg	1.5E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E+02	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00									
EE	Recovered energy exported from system	MJ	0.0E+00									

*All use phase and disposal stages have been considered and only those with non-zero values have been reported.

*The CED (LHV) Methodology, SimaPro, v1.0 is used to calculate the EPD results- energy indicators.

Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B2	B4	C1	C2	C3	C4	D
BCRP	Biogenic carbon removal from product	kg CO ₂	0.00E+00									
BCEP	Biogenic carbon emissions from product	kg CO ₂	0.00E+00									
BCRK	Biogenic carbon removal from packaging	kg CO ₂	3.47E+02	0.00E+00	0.00E+00	0.00E+00	5.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic carbon emissions from packaging	kg CO ₂	0.00E+00	0.00E+00	3.47E+02	0.00E+00	5.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic carbon emissions from combustion of waste from renewable sources used in production process	kg CO ₂	0.00E+00									
CCE	Calcination carbon emissions	kg CO ₂	0.00E+00									
CCR	Carbonation carbon removal	kg CO ₂	0.00E+00									
CWNR	Carbon emissions from combustion of waste from non-renewable sources used in production process	kg CO ₂	0.00E+00									

*All use phase and disposal stages have been considered and only those with non-zero values have been reported.

*The CED (LHV) Methodology, SimaPro, v1.0 is used to calculate the EPD results- energy indicators.

Environmental Product Declaration

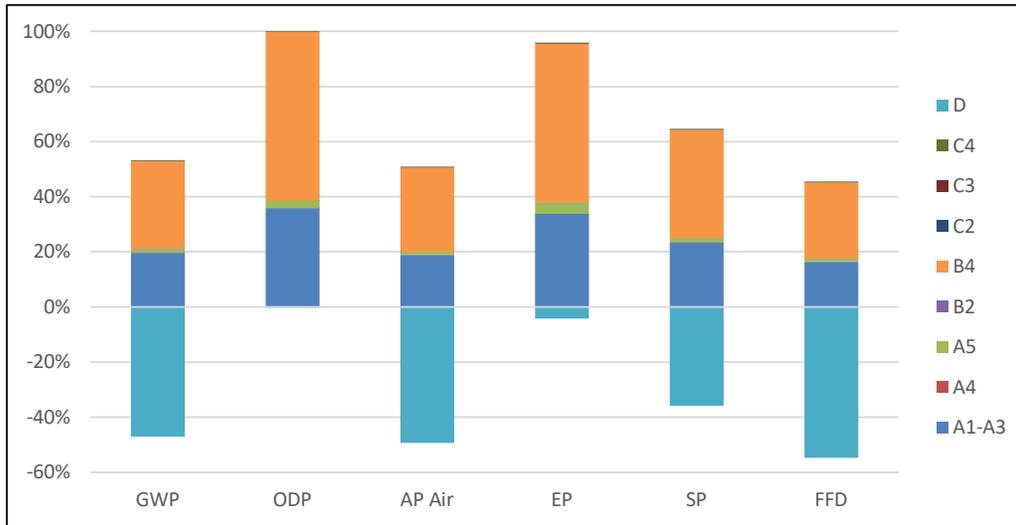
Westlake Royal Cedar Renditions™ Aluminum Siding



According to
ISO 14025, ISO 14040,
and ISO 21930

Cedar Renditions™ LCA Interpretation

The production life cycle stage (A1-A3) has a large impact across all impact categories. This is due to the upstream production of materials used in the product, along with resources used in the manufacturing of the product. With 1.5 replacements required over a life-span of a building, the replacement stage (B4) also has a large impact from duplicating these stages. Benefits are achieved from the recycling of aluminum in Module D, benefits and loads beyond the system boundary.





Additional Environmental Information

Environmental and Health During Manufacturing

There is no harmful emissive potential. No damage to health or impairment is expected under normal manufacturing of the product.

Environmental and Health During Installation

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

Extraordinary Effects

Fire

Cedar Renditions™ is non-combustible.

Water

There are no extraordinary effects associated with exposure to water for this product.

Mechanical Destruction

Cedar Renditions™ is robust, but can dent.

Delayed Emissions

Global warming potential is calculated using the TRACI 2.1 and CML 4.1 impact assessment methodologies. Delayed emissions are not considered.

Environmental Activities and Certifications

Westlake Royal Building Products has corporate sustainability goals for ESG centered around carbon, water, health & safety, community engagement, diversity & inclusion, and circular economy.

Further Information

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References

- PCR Part A UL Environment: Product Category Rules for Building-Related Products and Services in North America, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, v4.0 (March 2020)
- PCR Part B Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding: Roof and Wall Panels, Version 2.0, UL Environment, 2018.
- SimaPro 9.4.0.2 PRe Sustainability. SimaPro Life Cycle Assessment version 9.1 (software).
- ISO 14025 ISO 14025:2006. Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
- ISO 14040 ISO 14040: 2006/Amd1:2020 - Environmental management – Life cycle assessment – Principles and
- ISO 14044 ISO 14044:2006/Amd1:2017/Amd2:2020 - Environmental management – Life cycle assessment – Requirements and guidelines.
- ISO 21930 ISO 21930:2017, Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services.
- General Program Instructions ASTM, General Program Instructions, v8.0, April 29, 2020.
- ADAAG-1998 Americans with Disabilities Act Accessibility Guidelines.
- ANSI A117.1 Accessible and Usable Buildings and Facilities.
- CBC, Title 24 Barrier Free guidelines.
- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- BHMA A156.21 Thresholds.
- UL 10(b) Gasketing Material for Fire Doors.
- UL 10(c) Positive Pressure Gasketing Material for Fire Doors.
- UL 2818 GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Furnishings
- Characterization Method IPCC. 2014. Climate Change 2013. The Physical Science Basis. Cambridge University Press. (<http://www.ipcc.ch/report/ar5/wg1/>).
- Characterization Method Hauschild M.Z., & Wenzel H. Environmental Assessment of Products. Springer, US, Vol. 2, 1998.
- Characterization Method Heijungs R., Guinée J.B., Huppes G., Lankreijer R.M., Udo de Haes H.A., Wegener Sleeswijk A. Environmental Life Cycle Assessment of Products: Guide and Backgrounds. CML. Leiden University, Leiden, 1997
- Characterization Method Jenkin M.E., & Hayman G.D. Photochemical ozone creation potentials for oxygenated volatile organic compounds: sensitivity to variations in kinetic and mechanistic parameters. Atmospheric Environment. 1999, 33 (8) pp. 1275-1293.
- Characterization Method WMO. 1999. Scientific Assessment of Ozone Depletion: 1998, World Meteorological Organization Global Ozone Research and Monitoring Project - Report No. 44, WMO, Geneva.
- Characterization Method Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers- version 1.2, January 2017.
- TRACI 2.1 Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts, United States Environmental Protection Agency, Version 2.1.

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