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World Industries

In Accordance with ISO 14025
and ISO 21930:2017

MetalWorks™ Aluminum Ceiling & Wall Panels

Interior and Exterior Panel with Acoustical Options

Committed to Sustainability

Armstrong World Industries leads in delivering solutions that meet today's most stringent industry sustainability standards. We are committed to environmental responsibility in all aspects of our business, and carbon reduction is part of our 2030 Company goals and ambitions.

We were one of the first companies to create and publish the Environmental Product Declaration (EPD) in the ceiling industry. We have over a decade of experience using Life Cycle Assessment (LCA) to evaluate environmental impacts of our products starting with design, to raw materials, and through our operations. We are constantly working to optimize our operations and products to reduce their environmental impact. We believe the use of LCA and our commitment to transparency of our products' carbon footprint is critical to contributing to decarbonization of the built environment.

Contents:

- Performance features like acoustics, light reflectance, and durability
- Product application and use
- Product ingredients and their sources
- How the product is produced
- LCA results, including global warming potential and primary energy usage
- Total impacts over the product life cycle

For more information visit

armstrongceilings.com/transparency

Life Cycle Impact Categories (A1-A3) for 1 ft²

Cradle-to-Gate environmental impacts for 1 ft² of MetalWorks™ Aluminum Ceiling & Wall Panels

Embodied Carbon (GWP) (excluding biogenic carbon)
7.03E+00 kg CO_2 eq.

Acidification Potential
1.70E-02 kg SO_2 eq.

Photochem Ozone Creation Potential
1.78E-01 kg O_3 eq.

Eutrophication Potential
6.15E-04 kg N eq.

Ozone Depletion Potential
2.52E-09 kg CFC 11 eq.

ADP (fossil)
1.20E+00 MJ surplus energy

MetalWorks™ Torsion Spring Ceiling Panels

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1. CONTENT OF THE EPD

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 Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs), General Program Instructions, Version: 8.0, Revised 04/29/20
MANUFACTURER NAME AND ADDRESS	Armstrong World Industries 2500 Columbia Avenue Lancaster, PA 17603
DECLARATION NUMBER	EPD959
DECLARED PRODUCT & DECLARED UNIT	0.093m^2 (1ft^2) of installed ceiling panel, with a product reference service life (RSL) and building estimated service life of 75 years.
REFERENCE PCR AND VERSION NUMBER	PCR for Building-Related Products and Services – Part A: LCA Calculation Rules and Report Requirements, UL 10010, UL v.4.0, March 2022 PCR Guidance for Building-Related Products and Services – Part B: Metal Ceiling Panel and Interior Wall Panel EPD Requirements UL 10010-12 (ULE, V1.0 Jan. 2020)
DESCRIPTION OF PRODUCT'S INTENDED APPLICATION AND USE (AS IDENTIFIED WHEN DETERMINING PRODUCT RSL)	MetalWorks™ Aluminum Ceiling and Wall Panels
PRODUCT RSL DESCRIPTION (IF APPL.)	N/A
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	April 1, 2025
PERIOD OF VALIDITY	5 years
EPD TYPE	Product-Specific
DATASET VARIABILITY	Industry Average Only
EPD SCOPE	Cradle to Gate with Options
YEAR(S) OF REPORTED MANUFACTURER PRIMARY DATA	2023
LCA SOFTWARE & VERSION NUMBER	Sphera FE 2024
LCI DATABASE(S) & VERSION NUMBER	Sphera FE version 10.9.0.31 (Schema 8007)
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1
The sub-category PCR review was conducted by:	Lindita Bushi, PhD (Chair) Tom Gloria, PhD Olivia Palmer
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," serves as the core PCR. ☐ INTERNAL ☒ EXTERNAL	Tim Brooke, ASTM International
This EPD conforms with (select one):	☒ ISO 21930:2017 ☐ EN 15804:2013+A1:2014 ☐ EN 15804:2013+A2:2019
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Armstrong World Industries, Inc.
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria, PhD Industrial Ecology Consultants
LIMITATIONS	

Environmental declarations from different programs (ISO 14025) may not be comparable.

Comparison of the environmental performance of Metal Ceiling and Wall System 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 energy use phase as instructed under this PCR.

Full conformance with this PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences in results for upstream or downstream of the life cycle stages declared.

The owner of the declaration shall be liable for the underlying information and evidence; ASTM, or its affiliates, shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence.

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2. GENERAL INFORMATION

2.1 DESCRIPTION OF ORGANIZATION

Armstrong World Industries, Inc. (AWI) is a leader in the design and manufacture of innovative commercial and residential ceiling, wall and suspension system solutions in the Americas. At home, at work, in healthcare facilities, classrooms, stores, or restaurants, Armstrong World Industries offers interior solutions that help to enhance comfort, save time, improve building efficiency and overall performance, and create beautiful spaces.

2.2 PRODUCT DESCRIPTION

MetalWorks™ aluminum ceiling and wall panels provide excellent sound absorption and durability including impact-, scratch-, and soil-resistance. MetalWorks™ panels are available in a wide range of standard and custom sizes, shapes, and perforated panels.

2.2.1 Product-Specific EPD

This declaration represents manufacturer-specific average for aluminum ceiling and wall panels. Multiple products within the aluminum product line were analyzed and a weighted average was calculated.

2.2.2 Product Identification

MetalWorks™ aluminum ceiling and wall panels are available in a wide range of standard and custom sizes, shapes, and perforated panels.

Relevant product codes are as follows:

Construction Specifications Institute:
07 42 13 Metal Wall Panels
09 51 00 Acoustical Ceilings
09 51 33 Acoustical Metal Pan Ceilings
09 54 00 Specialty Ceilings
09 54 23 Linear Metal Ceilings
09 78 13 Metal Interior Wall Paneling

UNSPSC:
30161602 Ceiling Panels

2.2.3 Product Specification

Technical specifications are provided in Section 2.5. This declaration covers MetalWorks™ aluminum ceiling and wall panels with weighted average calculation within the product line that differ by shape, size, and finishes.

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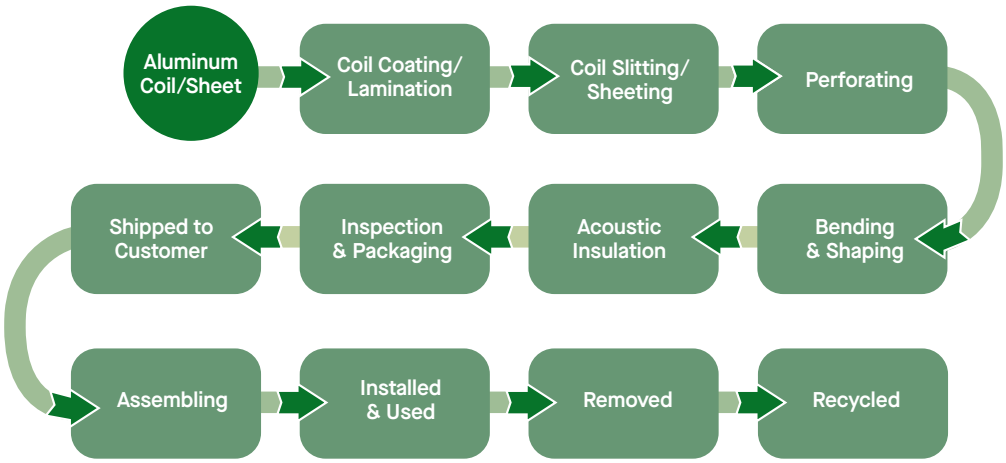
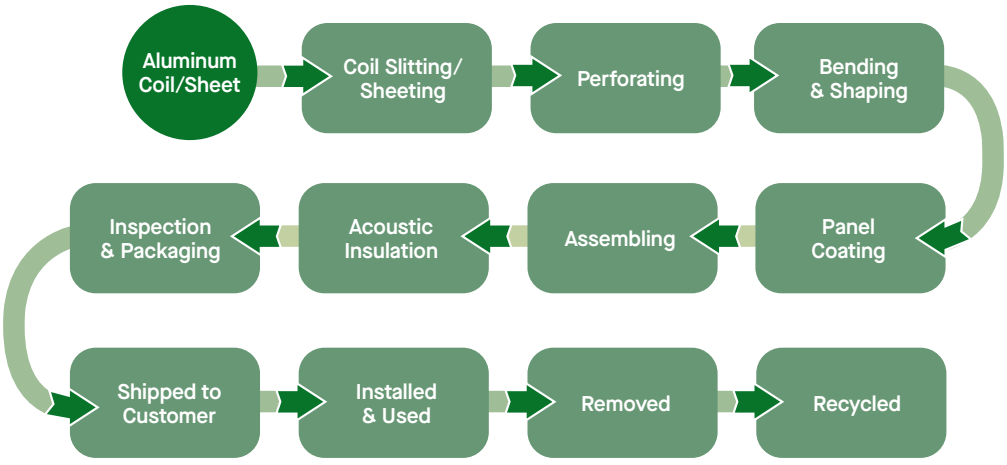
2.2.4 Flow Diagram

MetalWorks™ Aluminum Ceiling & Wall Panels are manufactured from Aluminum coil or sheet. Depending on customer specifications, the aluminum may be pre-finished prior to cutting, shaping, forming, perforated or post-finished after cutting, shaping, forming, perforated as required by product specification. Please see both flow diagrams below.

Pre-finished Flow Diagram



Post-finished Flow Diagram



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2.3 PRODUCT AVERAGE

2.3.2 Product-Specific EPD

This EPD is specific to MetalWorks™ aluminum ceiling and wall panels. A weighted average approach was applied. Inputs were developed based on 2023 production volumes and weights for MetalWorks™ products.

2.4 APPLICATION

The products covered by this EPD are designed to be installed in a suitable metal grid system.

2.5 MATERIAL COMPOSITION

Major raw materials used in ceiling panel manufacturing are summarized in the table below.

TABLE 1. MATERIAL COMPOSITION

Material	MetalWorks™ Aluminum Ceiling & Wall Panels
Aluminum	85-95%
Acoustic Infill/Fleece	0-5%
Coatings	0-5%
Metal Components/Hardware	0-5%

2.6 TECHNICAL REQUIREMENTS

TABLE 2. TECHNICAL DATA

Property	Test Method	MetalWorks™ Aluminum Ceiling & Wall Panels
Sound absorption coefficient (NRC)	ASTM C423	0.65 to 0.95
Sound Transmission Class (STC)	ASTM E413, ASTM E90	–
Sound attenuation between rooms sharing a common ceiling plenum (CAC)	ASTM E1414, ASTM E413	–
Light reflectance	ASTM E1477	Varies based on color
Flame spread/smoke development	ASTM E84, ASTM E1264	Class A

2.7 PROPERTIES OF DECLARED PRODUCT AS DELIVERED

The final EPD is available on the Armstrong website (armstrongceilings.com/epd) and is under the Finish category in the EC3 Tool (buildingtransparency.org).

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3. METHODOLOGICAL FRAMEWORK

This study provides life cycle inventory and environmental impacts relevant to Armstrong® suspended ceilings. The LCA follows an attributional approach as outlined in ISO 21930 Section 7.1.1 – see also PCR Part A-6.

3.1 DECLARED UNIT

The declaration refers to the declared unit of 0.093 m^2 (1 ft^2) of installed ceiling panel, as defined by the PCR.

3.2 FUNCTIONAL/DECLARED UNIT PROPERTIES

TABLE 3. FUNCTIONAL OR DECLARED UNIT PROPERTIES

Product	Declared Unit m^2 (ft^2)	Declared Thickness cm (in)	Surface Weight kg/0.093 m^2 (lb/ft^2)	Density kg/m^3 (lb/ft^3)
MetalWorks Aluminum	0.093 (1)	0.106 (0.0417)	1.04 (2.23)	2712.632 (169.34)

3.3 SYSTEM BOUNDARY

The scope of the study includes production, installation, and end of life. Production of capital equipment, facilities, and infrastructure required for manufacture are outside the scope of this assessment. Details of inclusions and exclusions from the system boundary are listed below.

Includes	Excludes
– Raw materials production (A1)	– Construction of capital equipment and other infrastructure flows
– Inbound transport of raw materials to production facility (A2)	– Maintenance and operation of support equipment
– Manufacturing of panels (A3)	– Human labor and employee transport
– Electricity and fuel combustion (A3)	– Manufacture and transport of packaging materials not associated with final product
– Packaging of final products (A3)	– Use Phase (B1 to B7)
– Transportation to the job site (A4)	– Benefits and loads beyond the system boundary (D)
– Installation and installation waste (A5)	
– Deconstruction – manual, no impact (C1)	
– Transport (C2)	
– Waste Processing (C3)	
– Disposal (C4)	

3.4 PRODUCT-SPECIFIC CALCULATIONS FOR END-OF-LIFE PHASE (MODULES C1-C4)

At this time, there is no industry consensus for product-specific assumption behind reported scenarios for information in modules C1-C4. Armstrong facilitates ceiling panels recycling through our Takeback program. The recovery data is based on internal averages for commingled ceiling panels that arrived at Armstrong factories from the construction and demolition site at end of product life. Remaining panels were assumed to be landfilled as per standard industry practice.

3.5 REFERENCE SERVICE LIFE AND ESTIMATED BUILDING SERVICE LIFE

In accordance with the PCR, the Reference Service Life (RSL) and building estimated service life for this study was assumed to be 75 years.

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3.6 ALLOCATION

Allocation at the manufacturing plant was based on the surface-based production volume (ft^2). This is the basis on which products are processed and sold, regardless of product weight. No burdens are allocated across the system boundary with secondary material, secondary fuel, or recovered energy flows arising from waste. Allocation of background data (energy and materials) was taken from the Sphera LCA FE database.

3.7 CUT-OFF RULES

No known flows are deliberately excluded from this EPD. The system boundary was defined based on relevance to the goal of the study. For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

3.8 DATA SOURCES

Primary data for this study was collected from the manufacturing facility for 2023 and datasets for materials upstream from manufacturing were obtained from the Sphera FE database version 10.9.0.31.

3.9 DATA QUALITY

The data quality ranges from good to very good. The temporal quality of the data is very good with both manufacturing-specific data and GaBi background data from 2024. Because primary and secondary data were collected specifically to the location of manufacture when possible, geographical representativeness is considered to be good.

3.10 PERIOD UNDER REVIEW

All the primary data in the scope of this analysis was collected from Armstrong manufacturing facilities during 2023.

3.11 COMPARABILITY AND BENCHMARKING

We do not have any data on comparable non-competitive products to report.

3.12 ESTIMATES AND ASSUMPTIONS

The datasets for materials upstream from manufacturing are from the GaBi database. When inventories were not available for materials, conservative proxy datasets were chosen based on similarity of material. Additionally and consistent with the PCR, the following assumptions in Table 5 related to transport, installation, and deconstruction procedures were made.

TABLE 5. TRANSPORT, INSTALLATION, AND DECONSTRUCTION PROCEDURES

Product transport from point of manufacture to building site	Mode: Diesel-powered truck/trailer Distance: 800 km
Product transport from building site to waste processing	Mode: Diesel-powered truck/trailer Distance: 35 km
Installation & deconstruction procedures	Manual (no operational energy use)

3.13 UNITS

Units commonly used in the North American market are included in addition to the required SI units.

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4. TECHNICAL INFORMATION AND SCENARIOS

All data is reported as a weighted average across our ceiling plant locations.

4.1 MANUFACTURING

The manufacturing process has been described in a simple flow chart in Section 2.2.4. When a product is manufactured at multiple locations, a volume-based averaging of the input parameters approach was used. Any manufacturing waste was reported in the primary data for this study.

4.2 PACKAGING

Armstrong® ceiling panels are well packaged in a variety of wooden panels, rigid corrugate, and stretch wrap. Stacks of material are banded to wooden pallets for shipping.

The US Corrugated Packaging Alliance (CPA) dataset was used in the LCA study. This dataset was developed from the Life Cycle Assessment of U.S. Average Corrugated Panel. The U.S. average corrugated panel studied in the LCA consists of 66.8% liner board and 33.2% corrugated medium with an average basis weight of 131.6 lb./1000 ft^2 (msf 0.643 kg/m^2). The industry average container-board utilized about 52% recovered fiber, primarily old, corrugated containers (OCC), with the balance supplied mostly by kraft and semi-chemical pulp.

The data set covers all relevant process steps/technologies over the supply chain of the represented cradle to gate inventory with a very good overall data quality. The inventory is based on industry data and is completed where necessary, with secondary data.

4.3 TRANSPORTATION

The following information specifies any transport after the manufacturing gate. Details of type of transport, type of vehicle, distance, type, and amount of energy carrier are listed. These values are consistent with industry standard assumptions.

TABLE 6. TRANSPORT TO THE BUILDING SITE (A4)

Material	Unit	MetalWorks™ Aluminum Ceiling & Wall Panels
Fuel type	–	Diesel
Liters of fuel (Diesel)	L/100km/m^3	35
Vehicle type	–	Truck
Transport distance	km	800
Capacity utilization (including empty runs)	%	78
Gross density of products transported	kg/m^3	2,713
Capacity utilization volume factor	–	1

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4.4 PRODUCT INSTALLATION

The ceiling system must be installed in accordance with Armstrong Ceilings installation guidelines. Our ceiling system installation brochure, "Installing Suspended Ceilings", is a general application overview, covering essential steps of a basic suspended ceiling installation. Installation instructions can be downloaded from product line web pages.

The information in Table 7 shall be provided for all construction products to specify the end-of-life scenarios used for packaging or to support the development of the end-of-life scenarios for packaging at the construction works level where the module is not declared. Scenarios shall only model processes, for example, recycling systems that have been proven to be economically and technically viable.

It is assumed that the on-site scrap material will be sent to a landfill within 35 km (21.7 miles) of the jobsite. Production, transport, waste processing and disposal of 7% of installation waste are included in module A5, calculations for waste at the construction site.

TABLE 7. INSTALLATION INTO THE BUILDING (A5)

Name	MetalWorks™ Aluminum Ceiling & Wall Panels	Unit
Ancillary materials	0	kg
Net freshwater consumption specified by water source and fate (X m^3 river water evaporated, X m^3 city water disposed to sewer)	0	m^3
Other resources	0	kg
Electricity consumption	0	kWh
Other energy carriers	0	MJ
Product loss per declared unit	0	kg
Waste materials at the construction site before waste processing, generated by product installation	0	kg
Output materials resulting from on-site waste processing	0	kg
Mass of packaging waste specified by type		
Plastic	0.00001	kg
Metal	0.000	kg
Cardboard	0.00005	kg
Wood	0.265	kg
Biogenic carbon contained in packaging	0.04	kg CO_2
Direct emissions to ambient air, soil and water	0	kg
VOC emissions	> 0.05	mg/m^3

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4.5 USE

A product's RSL depends on the product properties and reference in-use conditions. The default RSL and building estimated service life assumed in this PCR is 75 years for both ceiling and wall products.

4.6 DISPOSAL

End of Life

The end-of-life phase for the ceiling panels was included in the study. End-of-life impacts include recycling of ceiling and wall panels.

TABLE 8. END OF LIFE (C1-C4)

Name		MetalWorks™ Aluminum Ceiling & Wall Panels	Unit/ft²
Collection process (specified by type)	Collected separately	0	kg
	Collected with mixed construction waste	0	kg
Recovery (specified by type)	Reuse	0	kg
	Recycling	1.008	kg
	Incineration	0	kg
	Incineration with energy recovery	0	kg
	Energy conversion (specify efficiency rate)	0	kg
Disposal (specified by type)	Product for final disposal (landfill)	0.0312	kg
Removals of biogenic carbon (excluding packaging)		0.000	kg CO_2

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5. ENVIRONMENTAL INDICATORS DERIVED FROM LCA

5.1 LCA RESULTS FROM LCIA

The Life Cycle Assessment (LCA) was performed according to ISO 14040 guidelines and follows the specific PCR instructions. The cradle-to-gate with options LCA consists of raw material production, transport of raw materials to production facility prior to processing, manufacturing of ceiling and wall panels, packaging; transportation to job site and installation, and end of life including disposal or recycling to Armstrong factories.

TABLE 9. DESCRIPTION OF THE SYSTEM BOUNDARY MODULES*

(X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

	Production			Construction		Use							End Of Life				Benefits and Loads Beyond System Boundary
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
EPD Type	Raw material supply	Transport	Manufacturing	Transport to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Deconstruction	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
						B6 Operational Energy Use of Building Integrated System During Product Use											
						B7 Operational Water Use of Building Integrated System During Product Use											
Cradle to Gate with Options	X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	MND

* Results for modules A1-A3 results are aggregated, as described in the PCR.

5.2 LCA RESULTS FROM LCIA

Life cycle impacts reported below are based on TRACI 2.1 methodology. Results are provided in reference to the declared unit. For the other impact categories, results are presented in the tables below using the ISO 21930 standard and for the declared unit. Because products include biobased content, they store or sequester carbon. Table 11 includes both Global Warming Potential (GWP) excluding biogenic and GWP including biogenic carbon. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. 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.

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TABLE 10. TRACI 2.1 IMPACT ASSESSMENT FOR 0.093 m² (1 FT²) OF METALWORKS™ ALUMINUM CEILING & WALL PANELS*

MetalWorks™ Aluminum Ceiling & Wall Panels								
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C2**	**C4**
GWP, excluding biogenic	kg CO_2 eq.	3.77E+00	1.44E-02	3.24E+00	8.30E-02	3.36E-02	1.50E-02	5.03E-02
ODP	kg CFC 11 eq.	2.52E-09	4.30E-17	1.98E-14	2.47E-16	7.54E-16	4.48E-17	7.18-E-17
AP	kg SO_2 eq.	1.54E-02	4.14E-05	1.56E-03	3.88E-04	1.14E-04	4.31E-05	1.73E-05
EP	kg N eq.	5.00E-04	4.33E-06	1.10E-04	3.45E-05	2.15E-05	4.52E-06	1.41E-06
SFP	kg O_3 eq.	1.38E-01	9.37E-04	3.93E-02	8.92E-03	1.06E-04	9.76E-04	3.59E-04
FFD	MJ Surplus	5.32E+00	2.74E-02	6.70E+00	1.58E-01	2.59E-02	2.86E-02	9.70E-03

* Modules C1 and C3 are null

5.3 LCA RESULTS FROM LCI

TABLE 11. LCA RESULTS - RESOURCE USE FOR 0.093 m² (1 FT²) OF METALWORKS™ ALUMINUM CEILING & WALL PANELS*

MetalWorks™ Aluminum Ceiling & Wall Panels									
Parameter	**Parameter²**	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C2**	**C4**
RPRe	Renewable primary resources used as energy carrier (fuel)	MJ, LHV	1.61E+01	8.53E-03	2.84E+00	4.90E-02	5.31E-02	8.89E-03	4.62E-03
RPRm	Renewable primary resources with energy content used as material	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPRE	Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	5.13E+01	1.93E-01	4.84E+01	1.11E+00	2.08E-01	2.01E-01	6.99E-02
NRPRM	Non-renewable primary resources with energy content used as material	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM	Secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Renewable secondary fuels	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRDF	Non-renewable secondary fuels	m^3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE	Recovered Energy	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	m^3	5.21E-02	2.84E-05	7.40E-03	1.63E-04	1.02E-04	2.95E-05	9.93E-06

* Modules C1 and C3 are null

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TABLE 12. LCA RESULTS - OUTPUT FLOWS AND WASTE CATEGORIES FOR 0.093 m² (1 FT²) OF METALWORKS™ ALUMINUM CEILING & WALL PANELS*

MetalWorks™ Aluminum Ceiling & Wall Panels									
Parameter	Description	Unit	A1	A2	A3	A4	A5	C2	C4
HWD	Hazardous waste disposed	kg	1.69E-05	2.60E-11	7.40E-09	1.49E-10	2.63E-09	2.71E-11	1.16E-11
NHWD	NHWD Non-hazardous waste disposed	kg	9.81E-01	1.92E-05	1.62E-02	1.10E-04	1.71E-01	2.00E-05	5.84E-02
RWD	Radioactive waste disposal	kg	9.97E-04	5.81E-07	7.07E-04	3.34E-06	4.90E-06	6.06E-07	3.56E-07
HLRW	High-level radioactive waste, conditioned, to final repository	kg	1.20E-06	6.89E-10	8.45E-07	3.96E-09	4.26E-09	7.18E-10	4.09E-10
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	9.96E-04	5.81E-07	7.06E-04	3.34E-06	4.90E-06	6.05E-07	3.56E-07
CRU	Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-02	0.00E+00	1.11E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	Recovered energy exported from the product system	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

* Modules C1 and C3 are null

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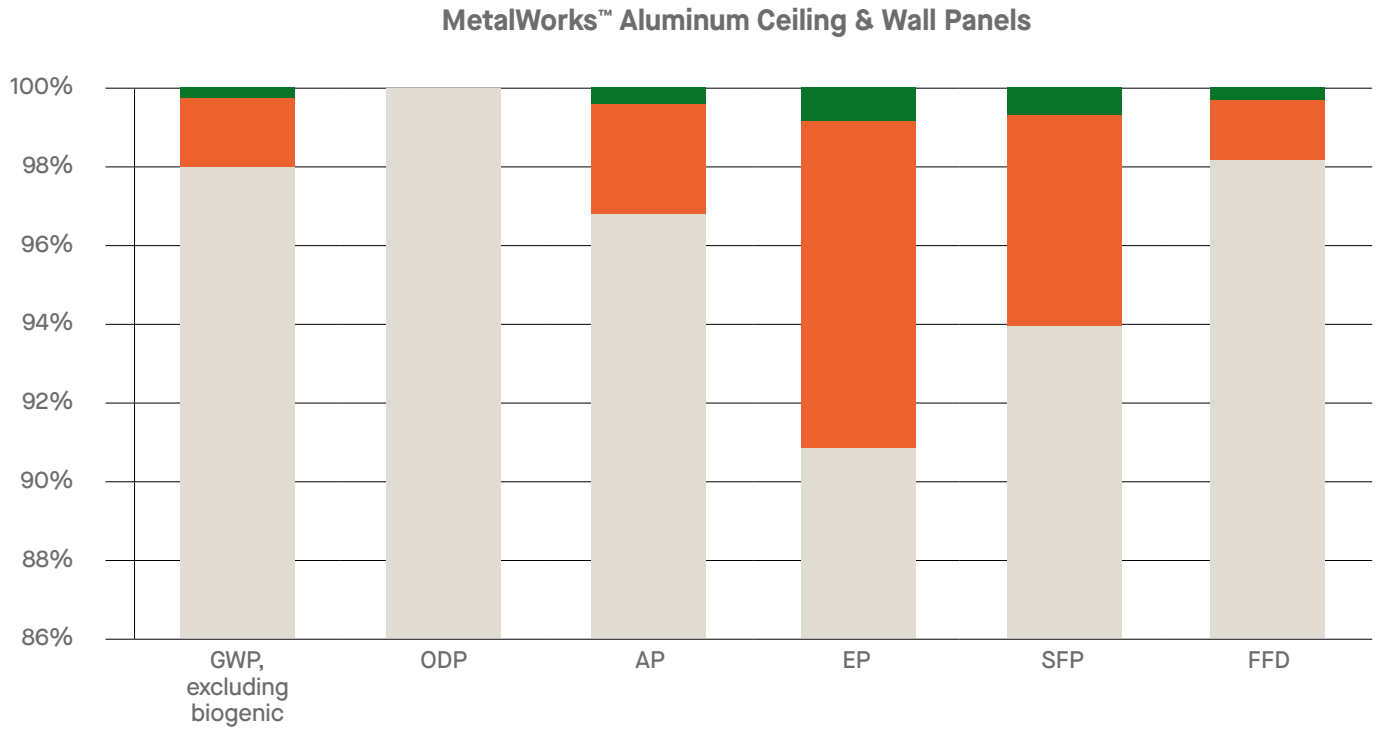
6. LCA: INTERPRETATION

The ceiling life cycle covered in this study concluded that the ceiling panel manufacturing process and raw materials in the ceiling panel have the greatest impact on "carbon footprint" as represented by Global Warming Potential [GWP].



Life Cycle Impact Assessment of the ceiling panels[1] relative importance in percentage terms for the Production, Construction, and End-of-Life stages for the ceiling panel.

[1] Based on U.S. EPA TRACI 2.1 Impact Factors

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7. ADDITIONAL ENVIRONMENTAL INFORMATION

7.1 ENVIRONMENT AND HEALTH DURING MANUFACTURING

Armstrong World Industries has a comprehensive environmental, health, and safety management program. Risk reduction begins in the product design process. All products go through a safety, health, and environmental review prior to sale. Armstrong also has a long-standing commitment to the safety and health of all our employees.

Armstrong World Industries is equally committed to reducing our environmental impact. As with safety goals, each manufacturing facility has environmental initiatives focused on responsible use of energy and water, and on waste reduction.

7.2 ENVIRONMENT AND HEALTH DURING INSTALLATION

All recommendations shall be utilized as indicated by SDS and installation guidelines. Specific product SDS and installation instructions can be downloaded at: armstrongceilings.com/pdbupimages-clg/217521.pdf

7.3 ENVIRONMENTAL ACTIVITIES AND CERTIFICATIONS

All environmental certifications can be found at: armstrongceilings.com

7.4 FURTHER INFORMATION

Additional Information can be found at: armstrongceilings.com

8. PROJECT REPORT AND SUPPORTING DOCUMENTATION

This study provides life cycle inventory and environmental impacts relevant to Armstrong® suspended ceilings. This report is intended to fulfill the reporting requirements in Section 5 of ISO 14044 and Product Category Rules Guidance for Building-Related Products and Services UL® Environments (2021) Part B: Interior Wall Panel EPD Requirements, UL® Environment, v.2 04/2021..

Armstrong World Industries has a robust internal Quality Assurance process that is based on industry-accepted best practices and is led by a team of quality professionals who have been certified by the American Society for Quality. The process involves several hundred different measures made throughout the manufacturing processes. In addition, our products are UL® labeled for fire and acoustical performance – a process which involves strict oversight by Underwriters Laboratories. The Armstrong Ceilings acoustical laboratory is ISO 17025 certified and is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

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9. REFERENCES

Armstrong World Industries. [2025]. MetalWorks™ Aluminum Ceiling & Wall Panels Life Cycle Assessment Report [Internal unpublished report]

J. Bare, TRACI: the Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts 2.1 EPA/600/R-12/554 2012

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ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

ISO 14025 - Environmental labeling and declarations Type III environmental declarations Principles and procedures

ISO 14040 - Environmental management – Life Cycle Assessment – Principles and framework, Amd 1: 2020

ISO 14044 - Environmental management – Life Cycle Assessment – Requirements and guidelines, Amd 1: 2017 / Amd 2:2020

UL Product Category Rules for Building-Related Products and Services Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, UL 10010, v3.2; December 2018

UL Product Category Rules for Building-Related Products and Services Part B: Metal Ceiling Panel and Interior Wall Panel EPD Requirements UL 10010-12 (ULE, V1.0 Jan. 2020)

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