Environmental Product Declaration

WoodWorks® Tegular, Vector®, Concealed and Linear Ceiling Panels

COMPOSITE WOOD PANELS AND PLANKS WITH REAL WOOD VENEERS

WoodWorks® Vector in Natural Variations™ Light Cherry

Armstrong®
CEILING & WALL SOLUTIONS

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.

For more information visit
armstrongceilings.com/transparency

ASTM INTERNATIONAL

ENVIRONMENTAL PRODUCT DECLARATION

Armstrong CEILING SOLUTIONS

WOODWORKS® TEGULAR, VECTOR®, CONCEALED, AND LINEAR CEILING PANELS

COMPOSITE WOOD PANELS AND PLANKS WITH REAL WOOD VENEERS

According to ISO 14025 AND ISO 21930

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 www.astm.org
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	EPD 380
DECLARED PRODUCT & DECLARED UNIT	0.093 m^2 (1 ft^2) of installed ceiling panel, with reference service life (RSL) of 30-years.
REFERENCE PCR AND VERSION NUMBER (Part A and B)	PCR for Building-Related Products and Services - Part A: LCA Calculation Rules and Report Requirements, UL 10010 v.3.2, December 2018. PCR Guidance for Building-Related Products and Services - Part B: Non-Metal Ceiling and Interior Wall Panel EPD Requirements, UL Environment, v2, 04/2021
DESCRIPTION OF PRODUCT'S INTENDED APPLICATION AND USE (AS IDENTIFIED WHEN DETERMINING PRODUCT RSL)	WoodWorks Composite Wood Ceiling Panels with Face-Cut Veneers
PRODUCT RSL DESCRIPTION (IF APPL.)	30 Years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	October 10, 2022
PERIOD OF VALIDITY	5 years
EPD TYPE	Product-Specific
EPD SCOPE	Cradle-to-gate with options EPD (A1-A3, A4, A5, C1-C4), based on 30-year RSL
YEAR(S) OF REPORTED MANUFACTURER PRIMARY DATA	2021
LCA SOFTWARE & VERSION NUMBER	GaBi 10.6.1.35
LCI DATABASE(S) & VERSION NUMBER	GaBi 2022.1
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1
The sub-category PCR review was conducted by:	Program Operator Provided Program Operator Provided Program Operator Provided
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.	Lindita Bushi, PhD Athena Sustainable Materials Institute lindita.bushi@athenaasmi.org
☐ INTERNAL ☒ EXTERNAL	
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	
LIMITATIONS	

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

Comparison of the environmental performance of Non-Metal Ceiling Panels 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.

ASTM certification of this EPD is not to be construed as representing aesthetics or any other attributes not specifically addressed, nor should it be construed as an ASTM endorsement of the subject of the EPD or a recommendation for its use. There is no warranty by ASTM, express or implied, as to any finding or other matter in the EPD, or as to any product covered by the EPD.
The EPD holder is liable for the information and evidence on which the EPD is based.

Armstrong CEILING SOLUTIONS

WOODWORKS® TEGULAR, VECTOR®, CONCEALED, AND LINEAR CEILING PANELS

COMPOSITE WOOD PANELS AND PLANKS WITH REAL WOOD VENEERS

According to ISO 14025 AND ISO 21930

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.

For more than 150 years, we have built our business on trust and integrity. It set us apart then, and it sets us apart now, along with our ability to collaborate with, and innovate for the people we're here to serve – our customers, our shareholders, our communities, and our employees.

We are committed to developing new and sustainable ceiling solutions, with design and performance possibilities that make a positive difference in spaces where we live, work, learn, heal, and play.

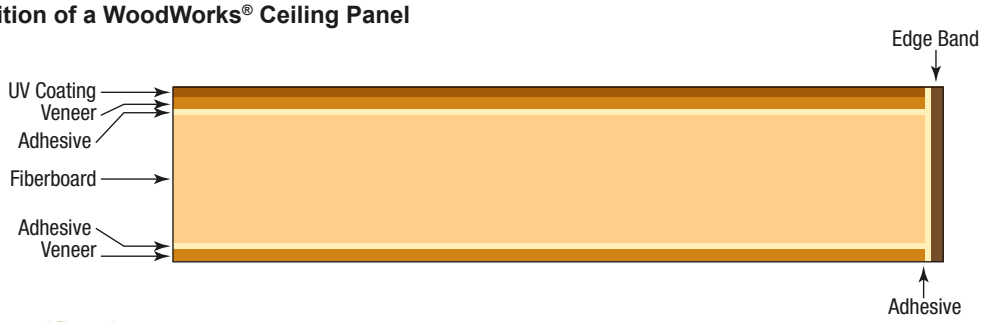
2.2 PRODUCT DESCRIPTION

WoodWorks® Ceiling and Wall Panels are real wood veneers on fire rated particle board particle board with face-cut veneers. The life cycle assessment does not include hanger wires, molding, or attachment/hold down clips (UNSPSC Code 30161601 and CSI 09-50-00).

Features:
- Includes upturns for continuous visuals and clouds with WoodWorks trim
- CleanAssure™ family of products – includes disinfectable panels, suspension systems, and trim
- Select products included in the FAST134 program – ready to ship in 4 weeks or less
- 18" x 18" Tegular infill panels now available for Metaphors® Coffers; for details, visit armstrongceilings.com/metaphors
- Shorter lead times and lower cost than custom millwork

2.2.1 Product Identification

Figure 1. Composition of a WoodWorks® Ceiling Panel



2.2.2 Product Specification

These products generally fall under ASTM ASTM E1264-22, Standard Classification for Acoustical Ceiling Products, Section 5.2 designation as Type XX. This report covers WoodWorks Tegular, Vector®, Concealed and Linear Ceiling Panels and Planks.

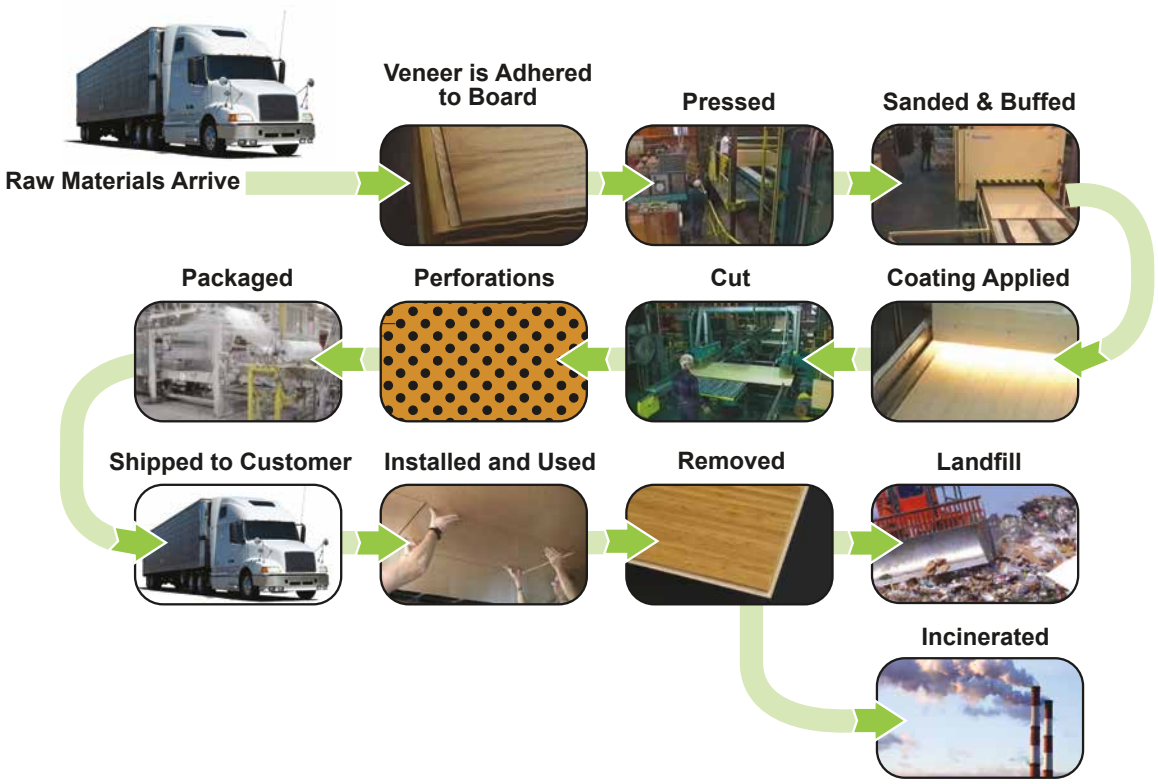
Armstrong CEILING SOLUTIONS

WOODWORKS® TEGULAR, VECTOR®, CONCEALED, AND LINEAR CEILING PANELS

COMPOSITE WOOD PANELS AND PLANKS WITH REAL WOOD VENEERS

According to ISO 14025 AND ISO 21930

WoodWorks® composite wood Ceiling Panels with face-cut veneers are manufactured in Eugene, Oregon using an adhesion and coating process. Particleboard and veneer sheets are delivered to the manufacturing facility. The veneer sheets are then adhered to the particleboard and pressed to ensure a good bond. The sheets are then cut to size, sanded, and buffed for an even finish. The panels are then given a final protective coating that is UV cured. Perforations are added to the finished product. After packaging, the material is shipped and installed. At the end of its useful life, the ceiling panel can then be recycled, sent to a landfill, or incinerated.



2.3 PRODUCT AVERAGE

2.3.1 Product-Specific EPD

This EPD is specific to Woodworks Tegular, Vector, Concealed and Linear composite wood panels and panels produced iA weighted average approach was applied. Inputs were developed based on 2021 production volumes and weights for Woodworks Tegular, Vector, Concealed and Linear composite wood panels and panels

2.4 APPLICATION

The products covered by this EPD are designed to be installed in a direct-attach method or a suitable metal grid system. Panels and planks can be installed on ceiling and/or walls.

2.5 MATERIAL COMPOSITION

TABLE 1. MATERIAL COMPOSITION

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

Material	Quantity (% by weight)
Particleboard	85-95%
Veneer	1-5%
Adhesive Binder	1-5%
UV Coating Finish	0.05-1.5%
Edge Band	1-5%

TABLE 2. TECHNICAL DATA

Name & Test Method	Value	Unit
Sound absorption coefficient (NRC) (ASTM C423)	up to 0.70	NRC
Light reflectance (ASTM E1477)	Varies based on color	n/a
Interzone attenuation of open office components (AC) (ASTM E1111 and ASTM E1110)	–	n/a
Sound Transmission Class (STC) (ASTM E413 and ASTM E90)	–	dB
Sound attenuation between rooms sharing a common ceiling plenum (CAC) (ASTM E1414 and Classification E413)	–	dB
Surface burning characteristics of building materials (ASTM E84, ASTM E1264)	Class A	Flame spread/ smoke developed

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).

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.

Armstrong CEILING SOLUTIONS

WOODWORKS® TEGULAR, VECTOR®, CONCEALED, AND LINEAR CEILING PANELS

COMPOSITE WOOD PANELS AND PLANKS WITH REAL WOOD VENEERS

According to ISO 14025 AND ISO 21930

3.1 DECLARED UNIT

The declaration refers to the declared unit of 0.093 m^2 (1 ft^2) of installed ceiling panel, with reference service life (RSL) of 30-years.

3.2 DECLARED UNIT PROPERTIES

TABLE 3. DECLARED UNIT PROPERTIES

Name	Value	Unit
Declared unit (wall, ceiling, and column panels, covers, and assemblies)	0.093 (1)	m^2 (ft^2)
Declared thickness	1.905 (0.75)	cm (in)
Surface weight	13.27 (2.72)	kg/m^2 (lb/ft^2)
Density	697 (43.5)	kg/m^3 (lb/ft^3)

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.

TABLE 4. ELEMENTS INCLUDED IN THE CRADLE TO GATE WITH OPTIONS STUDY

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

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. For this study, the end-of-life product scenario was based on the US EPA 2018 Data on Construction and Demolition Debris. Based on this data, ~74% of wood construction and demolition waste is landfilled and ~22% is incinerated. Based on this data, ~74% of wood construction and demolition waste is landfilled and ~22% is incinerated.

3.5 REFERENCE SERVICE LIFE AND ESTIMATED BUILDING SERVICE LIFE

In accordance with the PCR, the Reference Service Life (RSL) for this study was assumed to be 30 years.

3.6 ALLOCATION

Allocation at the manufacturing plant was based on production volume. Allocation of background data (energy and materials) taken from the GaBi databases.

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 2021 and datasets for materials upstream from manufacturing were obtained from the GaBi database version 10.6.1.35.

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 2021.

3.10 PERIOD UNDER REVIEW

All the primary data in the scope of this analysis was collected from manufacturing facilities during 2021.

3.11 COMPARABILITY AND BENCHMARKING

WoodWorks® ceiling and wall panels offer a unique set of product attributes and 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 3 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.

4. TECHNICAL INFORMATION AND SCENARIOS

4.1 MANUFACTURING

The manufacturing process has been described in a simple flow chart in Section 2.2.3.

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.

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)

Name	Value	Unit
Fuel type	Diesel	
Liters of fuel	3.14E-03	L/100km
Vehicle type	Truck	
Transport distance	805	km
Capacity utilization	67	%
Weight of products transported	1.23	kg
Volume of products transported	0.0017	m^3
Capacity utilization volume factor packaging products	1	

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. You can reference this document at armstrongceilings.com/installationinstructions

TABLE 7. INSTALLATION INTO THE BUILDING (A5)

Name	Value	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	0.167	kg
Waste materials at the construction site before waste processing, generated by product installation	3.16E-01	kg
Output materials resulting from on-site waste processing	-	kg
Mass of packaging waste specified by type		
Plastic	1.59E-03	kg
Metal	0.00E+00	kg
Cardboard	3.18E-03	kg
Wood	3.62E-02	kg
Biogenic carbon contained in packaging	6.32E-02	kg CO_2
Direct emissions to ambient air, soil and water	-	kg
VOC emissions	Negligible	µg/m^3

4.5 USE

A product's RSL depends on the product properties and reference in-use conditions. The default RSL assumed in this PCR is 30 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 landfill disposal of ceiling panels, scrap, and packaging at the end of installation.

TABLE 8. END OF LIFE (C1-C4)

Name		Value	Unit
Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method, and transportation)			
Collection process (specified by type)	Collected separately	0	kg
	Collected with mixed construction waste	0	kg
Recovery (specified by type)	Reuse	0	kg
	Recycling	0	kg
	Incineration	0	kg
	Incineration with energy recovery	0	kg
	Energy conversion (specify efficiency rate)	–	
Disposal (specified by type)	Product or material for final disposal	1.23	kg
Removals of biogenic carbon (excluding packaging)		0	kg CO_2

4.7 REUSE PHASE

TABLE 9. REUSE, RECOVERY, AND/OR RECYCLING POTENTIALS (D), RELEVANT SCENARIO INFORMATION

Name	Value	Unit
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	0	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)	0	MJ
Net energy benefit from material flow declared in C3 for energy recovery	0	MJ
Process and conversion efficiencies	–	
Further assumptions for scenario development	–	

5. ENVIRONMENTAL INDICATORS DERIVED FROM LCA

5.1 LCA RESULTS

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

TABLE 10. 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

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.

TABLE 11. TRACI 2.1 IMPACT ASSESSMENT FOR 0.093 m^2 (1ft^2) OF WOODWORKS*

Parameter	Parameter	Unit	A1	A2	A3	A4	A5	C2	C4
GWP	Including Biogenic Carbon	kg CO_2 - Eq.	0.992	0.020	0.586	0.016	0.446	0.015	0.406
GWP	Excluding Biogenic Carbon	kg CO_2 - Eq.	-0.612	0.019	0.724	0.017	0.672	0.015	0.656
ODP	Ozone Depletion Potential	kf CFC - 11 Eq.	4.49E-09	8.74E-17	9.50E-15	4.99E-18	1.86E-15	3.03E-19	1.5817E-15
AP	Acidification potential	kg SO_2 - Eq.	8.66E-03	8.59E-05	2.57E-04	5.23E-05	4.61E-03	4.38E-05	0.00355
EP	Eutrophication potential	kg N - Eq.	6.85E-04	1.16E-05	8.69E-05	3.64E-06	2.41E-03	2.82E-06	0.00181
SFP	Smog Formation Potential	kg O_3 - Eq.	0.085	0.002	0.006	0.001	0.010	0.001	0.009561614
ADP (fossil)	Abiotic Resource Depletion	MJ	17.400	0.679	2.040	0.037	0.866	0.003	0.728

*Modules C1 and C3 are null.

TABLE 12. LCA RESULTS - RESOURCE USE FOR . 3 m 1ft OF WOODWORKS

Parameter	Description	Unit	A1	A2	A3	A4	A5	C2	C4
RPRe	Renewable primary resources used as energy carrier (fuel)	MJ	32.693	0.027	0.858	0.001	0.083	0.003	0.880
RPRm	Renewable primary resources with energy content used as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRRM	Non-renewable primary resources used as an energy carrier (fuel)	MJ	44.118	0.684	2.157	0.037	0.885	0.003	0.749
NRPRM	Non-renewable primary resources with energy content used as material	MJ	0	0	0	0	0	0.00E+00	0.00E+00
SM	Secondary materials	kg	0	0	0	0	0	0	0
RSF	Renewable secondary fuels	kg	0	0	0	0	0	0	0
NRDF	Non-renewable secondary fuels	m^3	0	0	0	0	0	0	0
RE	Recovered Energy	MJ	0	0	0	0	0	0	0
FW	Use of net fresh water	m^3	1.54E-02	1.03E-04	-3.15E-03	5.19E-06	2.08E-04	4.73E-07	5.47E-04

*Modules C1 and C3 are null.

TABLE 13. LCA RESULTS: OUTPUT FLOWS AND WASTE CATEGORIES FOR . 3 m 1ft OF WOODWORKS

Parameter	Description	Unit	A1	A2	A3	A4	A5	C2	C4
HWD	Hazardous waste disposed	kg	1.13E-09	2.84E-12	1.19E-10	1.54E-13	3.32E-11	1.11E-14	2.98E-11
NHWD	NHWD Non-hazardous waste disposed	kg	1.29E-02	6.01E-05	6.69E-03	3.19E-06	1.19E+00	2.50E-07	9.16E-01
HLRW	HLRW High-level radioactive waste, conditioned, to final repository	kg	1.69E-07	2.15E-09	5.66E-08	1.22E-10	8.89E-09	7.55E-12	9.45E-09
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	1.42E-04	1.81E-06	4.73E-05	1.03E-07	7.80E-06	6.37E-09	8.19E-06
CRU	Components for re-use	kg	0	0	0	0	0	0	0
MR	Materials for recycling	kg	0	0	0	0	0	0	0
MER	Materials for energy recovery	kg	0	0	0	0	0	0	0
EE	Recovered energy exported from the product system	MJ	0	0	0	0	0	0	0

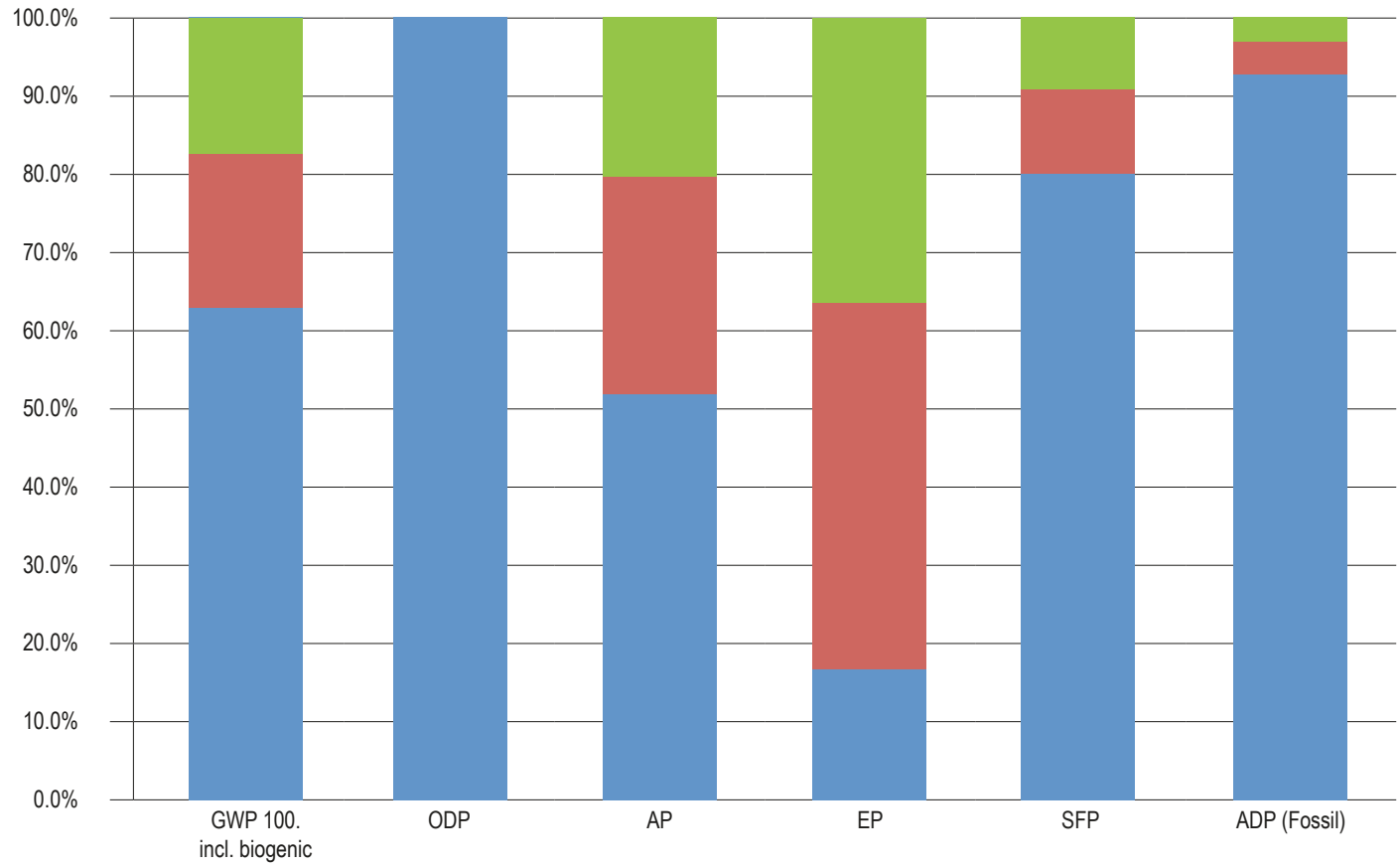
*Modules C1 and C3 are null.

TABLE 14. CARBON EMISSIONS AND REMOVALS DESCRIPTION

Parameter	Description	Unit	1 ft^2	1 m^2
BCRP	Biogenic Carbon Removal from Product	kg CO_2	-1.93E+00	-2.07E+01
BCEP	Biogenic Carbon Emission from Product	kg CO_2	4.03E-01	4.33E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO_2	-6.32E-02	-6.80E-01
BCEK	Biogenic Carbon Emission from Packaging	kg CO_2	2.11E-02	2.27E-01

6. LCA: INTERPRETATION

Based on the LCA Model of the ceiling life cycle covered in this study, it was 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].



KEY

Product (A1-A3)
Construction (A4-A5)
End of Life (C1-C4)

Life Cycle Impact Assessment of WoodWorks® Ceiling and Wall Panels[1,2] relative importance in percentage terms for the Production, Use, and End-of-Life stages for the ceiling panel.

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

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/content/dam/armstrongceilings/commercial/north-america/sds/woodworks-sds.pdf

7.3 QUALITY

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. The Armstrong Ceilings acoustical laboratory is ISO 17025 certified and is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

7.4 ENVIRONMENTAL ACTIVITIES AND CERTIFICATIONS

All environmental certifications can be found at: Armstrongceilings.com

Technical Downloads & Resources: armstrongceilings.com/commercial/en/commercial-ceilings-walls/ceilings/woodworks-ceiling-family.html

7.5 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: Non-Metal Ceiling Panel EPD Requirements.

9. REFERENCES

ISO 14025:2006 – Environmental labels and declarations – Type III environmental declarations – Principles and procedures

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

ISO 14044:2006/Amd1:2017/Amd2:2020 - Environmental management – Life cycle assessment – Requirements and guidelines

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

Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers version 1.2, January 2017.

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: Non-Metal Ceiling Panel EPD Requirements, UL 10010-26, v2.0, 2021.

US EPA, Construction and Demolition Debris Management in the United States, March 2020

BPCS-4562-922