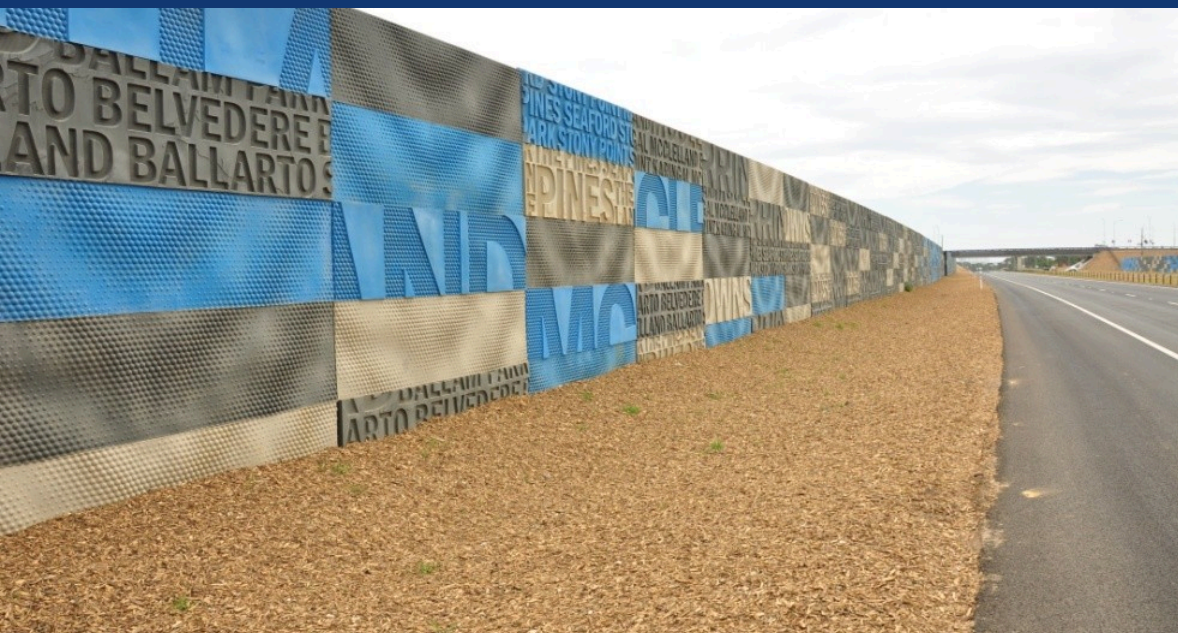


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

SmartEPD-2026-132-0865-01

RMP Global RenewWall Noise Wall System



RMP
GLOBAL



Date of Issue:	Expiration:	Last updated:
May 18, 2026	May 18, 2031	May 18, 2026



General Information

RMP Global

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Product Name:	RMP Global RenewWall Noise Wall System
Declared Unit:	1 m2 of installed noise wall excluding foundations/anchorage.
Declaration Number:	SmartEPD-2026-132-0865-01
Date of Issue:	May 18, 2026
Expiration:	May 18, 2031
Last updated:	May 18, 2026
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, C1 - C4
Market(s) of Applicability:	North America

General Organization Information

RMP Global is pioneering a new era of sustainable infrastructure by transforming plastic waste into high-performance, low-carbon noise wall systems. For nearly 20 years, the company has advanced the use of recycled materials to deliver durable, cost-effective, and aesthetically agile solutions for noise mitigation. With operations across the United States, Canada, Australia, and Europe, RMP Global develops and supplies infrastructure products for transportation, data centers, BESS, residential, commercial, and industrial sectors worldwide.

Further information can be found at: <https://rmpglobal.com/>

Limitations, Liability and Ownership

The EPD owner has sole ownership, liability, and responsibility for the EPD.

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building or construction works level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible 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 upstream or downstream of the life cycle stages declared.

The environmental impact results of products in this document are based on a declared unit and therefore do not provide sufficient information to establish comparisons. The results shall not be used for comparisons without knowledge of how the physical properties of the product impact the precise function at the construction level. The environmental impact results shall be converted to a functional unit basis before any comparison is attempted.

A manufacturer shall not make claims based on an industry-average EPD which leads the market to believe the industry-average is representative of manufacturer-specific or product-specific results.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, 1000, v1.2
	Date of issue: March 14, 2025
	Valid until: March 14, 2030
Sub-category PCR review panel:	 Contact Smart EPD for more information.
General Program Instructions:	 Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	 Alexander Crease
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	Independent external verification of EPD, according to ISO 14025 and reference PCR(s):
	 Rifat Karim  Independent Consultant  rifat.chimique@gmail.com

Product Information

Declared Unit:	1 m2 of installed noise wall excluding foundations/anchorage.
Mass:	29.42 kg
Reference Service Life:	75 Years
Product Specificity:	 Product Average
	 Product Specific
Variation in GWP Result (Products):	0% to 0%
Variation in GWP Result (Facilities):	0% to 0%

Product Description

RenewWalls™, RMP Global's dedicated sound wall system, is a modular system constructed from up to 100% recycled linear low-density polyethylene (LLDPE) panels supported by structural steel components. The system is designed for long-term durability and consistent acoustic performance. RenewWalls™ can be configured for both temporary or permanent noise wall applications. This EPD represents the reflective wall configuration, which has a reported acoustic performance of STC 35. RenewWalls™ may also be offered in absorptive configurations; however, the absorptive configuration is not

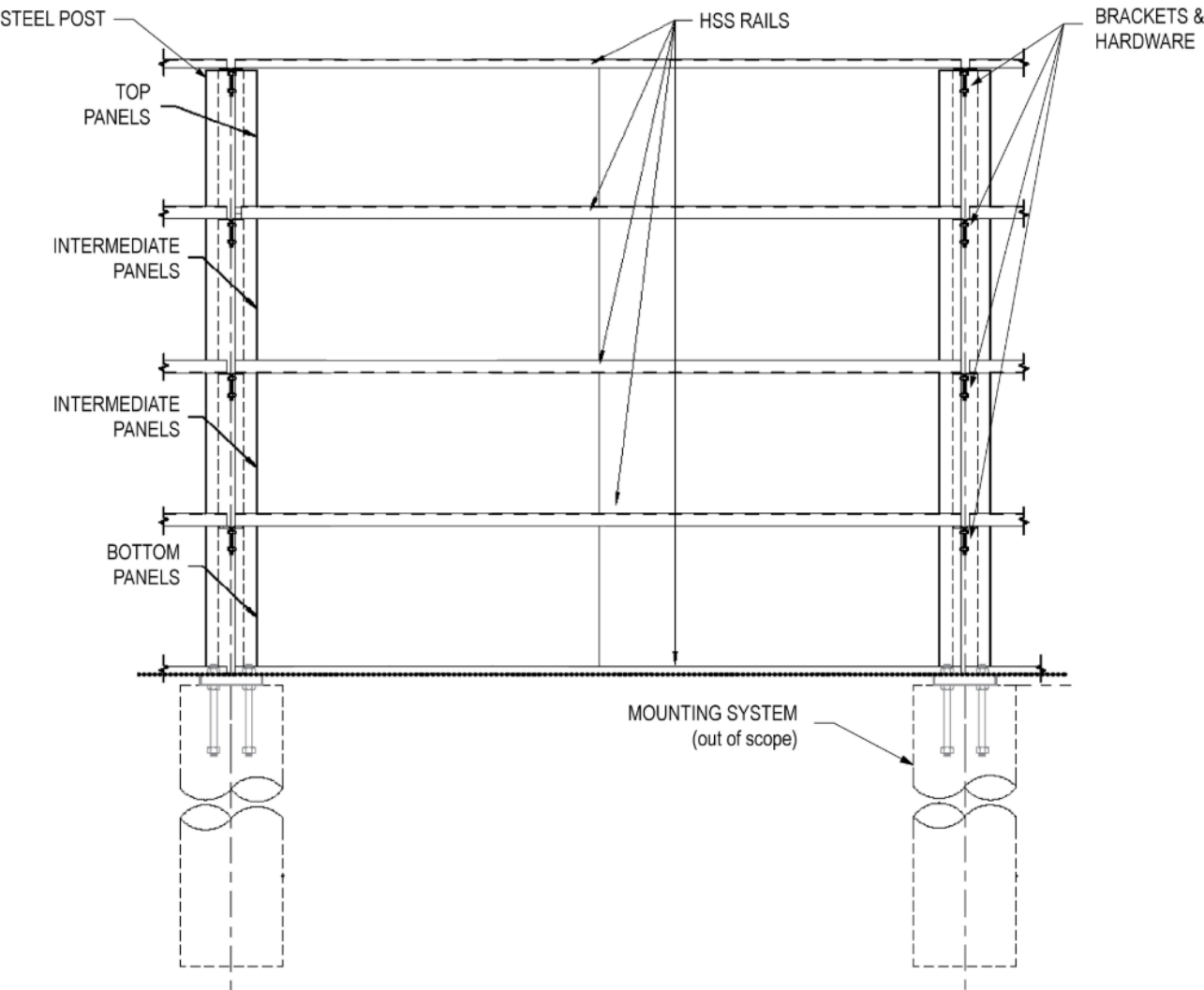
included in the scope of this EPD. The panels are resistant to moisture, UV exposure, and environmental degradation, graffiti resistant, and are also fully recyclable at the end of life, supporting long-term performance with no maintenance.

Further information can be found at: <https://rmpglobal.com/sound-walls/>

Product Specifications

Product Classification Codes:	Masterformat - 32 35 16
	Masterformat - 34 70 00
	UNSPSC - 30121707
	EC3 - OtherMaterials

Product Composition Diagram



Material Composition

Material/Component Category	Origin	% Mass
100% Recycled LLDPE	North America	63.2
Additives	North America	0.6
Galvanized Steel	North America	26.8

Packaging Material	Origin	kg Mass
Steel Stillage	North America	3.68E-01
Cardboard Box	North America	5.63E-01
Wood Shipping Pallet	North America	1.83E+00

Biogenic Carbon Content	kg C per m2
Biogenic carbon content in product	None
Biogenic carbon content in accompanying packaging	1.98

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year:	2024-2025
Manufacturing Specificity:	✖ Industry Average ✖ Manufacturer Average ✔ Facility Specific

Averaging:
Averaging was not conducted for this EPD.

System Boundary

Production	A1	Raw material supply	✔
	A2	Transport	✔
	A3	Manufacturing	✔

Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND

Note:

ND = Module not declared

Plants

 CPI Products 500 N Spring St, Port Washington, WI 53074, USA

Product Flow Diagram



Software And Database

LCA Software:

CarbonGraph v. 2025.11.11.p02

LCI Foreground Database(s):

Ecoinvent v. 3.11 | North America; Rest-of-World; Global
Allocation, cut-off, EN15804

LCI Background Database(s):

Ecoinvent v. 3.11 | North America; Rest-of-World; Global
Allocation, cut-off, EN15804

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Data quality was assessed for both primary foreground data and secondary background data, including temporal, geographic, and technological representativeness, accuracy, precision, and completeness. Primary data were used for the RenewWall bill of materials, recycled LLDPE content, manufacturing energy, packaging and logistics, installation fuel use, and deconstruction assumptions. These data are considered representative of the declared product system, with primary records primarily from 2024–2025 and manufacturing energy based on facility utility data allocated by machine operating time and occupied floor area.

Secondary background data were primarily sourced from ecoinvent v3.11 using the Allocation cut-off, EN 15804 system model, supplemented by industry-average EPD data for steel components. U.S.-specific datasets were used where available; where unavailable, RoW, RER, or GLO datasets were selected based on technological representativeness. Some uncertainty remains due to the use of proxy datasets for proprietary additives, estimated pelletization energy, non-U.S. background datasets, and default transport and end-of-life assumptions. Sensitivity analyses were conducted for these key assumptions and showed relatively small differences that did not materially affect the study conclusions.

Background data for this study was sourced from ecoinvent v3.11 using the “Allocation, cut-off, EN 15804” system model. This system model was selected to align with the requirements of ISO 21930 and the SmartEPD Part A PCR. The cut-off approach assigns the burdens of primary material production to the first life cycle and models recycled materials as entering the product system burden-free, with only the impacts of collection, sorting, and reprocessing included. This is particularly relevant for the RenewWall system, which incorporates 100% post-industrial recycled LLDPE feedstock, as it ensures that recycling processes are appropriately accounted for without double counting upstream burdens.

The “Allocation, cut-off, EN 15804” variant of the cut-off model applies the cut-off at the end-of-waste stage, meaning that recycling and material preparation processes are included prior to entry into the product system. This approach is considered representative of the actual supply chain for segregated post-industrial materials, where feedstocks are already collected and processed before being collected and used in manufacturing. The selected system model therefore provides a consistent and standards-aligned framework for modeling recycled content and supports comparability with other EPDs developed under ISO 21930. Given the influence of background data selection on life cycle results, this modeling choice was evaluated through sensitivity analysis using an alternative ecoinvent v3.11 system model (“cut-off by classification”). While some variation in results was observed, the overall conclusions of the study were not affected. The selected system model is therefore considered appropriate, conservative, and representative for the purposes of this EPD.

Data Sources

Material/Process Module Category		Material/Process Inventory Name	Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Materials & Pre-Processing	A1	Recycled LLDPE Feedstock	Market for polyethylene, low density, flakes, coloured, recycled	Europe (RER)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Materials & Pre-Processing	A1	Electricity for Pelletization	Market for electricity, medium voltage	United States - ReliabilityFirst Corporation (US-RFC)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Materials & Pre-Processing	A1	Galvanized Steel Sourcing & Fabrication	Industry-Wide Hot Dip Galvanized	North America (NA)	2019	American Galvanizers Association	ND	ND

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
			Steel After Fabrication			(AGA). Hot-Dip Galvanized Steel After Fabrication Environmental Product Declaration. 2022.		
Materials & Pre-Processing	A1	Steel HSS Sourcing & Fabrication	Fabricated Hollow Structural Sections	North America (NA)	2019-2020	American Institute of Steel Construction; Steel Tube Institute	ND	ND
Upstream Transport	A2	Inbound Pellet Transportation	Market for transport, freight, lorry, unspecified	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Manufacturing	A3	Rotomolding Electricity	Market for electricity, medium voltage	United States - ReliabilityFirst Corporation (US-RFC)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Manufacturing	A3	Waste Wood Treatment	Market for waste wood, untreated	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Transport	A4	Panel Transportation to Jobsite	Market for transport, freight, lorry, >32 metric ton, diesel, EURO 3	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Installation	A5	Fuel for Installation Equipment	Market for diesel, burned in building machine	Global (GLO)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Deconstruction	C1	Fuel for Deconstruction	Market for diesel, burned in building machine	Global (GLO)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Waste Transport	C2	Transport to Waste Processing	Market for transport,	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation	ND	ND

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
			freight, lorry, unspecified			cutoff, EN15804		
Waste Processing	C3	Steel Recycling	Treatment of waste reinforcement steel, sorting plant	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Waste Processing	C3	Plastic Recycling	Treatment of waste polyethylene, for recycling, unsorted, sorting	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND
Disposal	C4	Plastic Disposal	Treatment of waste plastic, mixture, sanitary landfill	Rest-of-World (RoW)	2011-2025	ecoinvent v3.11, allocation cutoff, EN15804	ND	ND

Life Cycle Module Description

A1–A3: Production

Modules A1–A3 include raw material supply, material processing, and manufacturing of the RenewWall Noise Wall system. Recycled LLDPE feedstock is mechanically processed from post-industrial material, cleaned, compounded with UV stabilizers and pigmentation, and pelletized before being shipped to the panel manufacturer. The panels are then manufactured through rotational molding using allocated facility electricity and natural gas. A1–A3 also include production of galvanized steel I-beams, HSS members, brackets, bolts, nuts, and washers used in the product. Foundation and anchorage materials are excluded from the system boundary because they are project-specific, externally specified, and vary based on site conditions and structural requirements. Additionally, these modules include the production, reuse, and end-of-life treatment of upstream packaging materials for materials, and reusable steel stillages used for panel transport. Steel components are manufactured by separate suppliers and shipped directly to the jobsite rather than being assembled at the panel manufacturing facility.

A4: Transport to Jobsite

Module A4 includes transportation of finished RenewWall panels from the rotomolding facility to the jobsite using heavy-duty diesel trucks. Panels are shipped in reusable steel stillages, and the return transport of collapsed empty stillages back to the manufacturer is included. A4 also includes transportation of galvanized steel I-beams, HSS beams, brackets, and hardware from steel suppliers to the jobsite, using representative freight assumptions where project-specific supplier transport data are not available.

A5: Installation

Module A5 covers installation of the RenewWall system at the project site. Installation consists of lifting, positioning, and mechanically fastening panels and steel members using diesel-powered construction equipment, including a mobile crawler crane, telehandler, and elevated work platform. No additional on-site manufacturing, welding, coating, electricity use, water use, ancillary materials, or installation scrap is modeled. Foundations and anchorage are excluded from the declared product scope.

Non-Declared: Modules: B1-B7

Modules B1–B7 are not declared because the RenewWall Noise Wall is a passive product with no expected operational energy use, water use, maintenance, repair, replacement, or refurbishment over the declared service life.

C1: Deconstruction

Module C1 includes mechanical disassembly of the RenewWall system at end of life. Deconstruction is modeled as the reverse of installation, using comparable diesel-powered equipment and fuel consumption to remove panels and steel members from the installed wall. Because the system is mechanically fastened, materials are assumed to be separated into plastic and steel streams during dismantling.

C2: Transport to Waste Processing

Module C2 includes transportation of dismantled materials from the project site to waste processing, recycling, or disposal facilities. The transported material streams include LLDPE panels and galvanized steel components. Transport is modeled using default waste and scrap transport assumptions, including road, rail, and barge freight distances.

C3: Waste Processing for Recycling

Module C3 includes processing of a fraction of recovered materials sent to recycling. For LLDPE panels, the recycled fraction is modeled as being sorted and mechanically processed for recycling. For steel components, the recycled fraction is modeled as being sorted and prepared for recovery through established steel recycling pathways. Recycling benefits beyond the product system are not included because Module D is not declared.

C4: Disposal

Module C4 includes final disposal of materials not recovered for recycling. The non-recycled portion of LLDPE panels is modeled as landfilled, and a small fraction of steel components is also modeled as landfilled. No energy recovery is modeled, and no avoided burden or benefit beyond the system boundary is reported.

Non-Declared: Module D

Module D is not declared because product-specific and market-representative data were not available to credibly model net benefits or loads beyond the system boundary.

LCA Discussion

Allocation Procedure

No co-product allocation was required in the foreground system, as the manufacturing processes modeled for RenewWalls™ do not produce co-products requiring partitioning of inputs or outputs. Foreground material and process inputs were assigned directly to the declared product wherever product-specific data were available. At the manufacturing facility level, shared energy consumption was attributed to RenewWalls™ using physical and operational relationships. Direct process energy was attributed based on machine operating time, while indirect facility energy, such as lighting and HVAC, was attributed based on the equipment floor area associated with production. Background datasets were modeled using ecoinvent v3.11 "Allocation, cut-off, EN 15804"; any allocation embedded in those datasets was applied as provided by the database.

Cut-off Procedure

All material and energy flows contributing greater than 1% of total mass or energy were included, with cumulative coverage exceeding 95%. No material or energy flows meeting the defined inclusion criteria were deliberately excluded. No environmentally relevant substances or processes were excluded under the applied cut-off criteria. The following processes and flows were excluded based on the defined cut-off criteria:

- Minor ancillary materials with negligible mass and energy contribution (e.g., labels, inks, and packaging aids)
- Low-energy auxiliary inputs not directly associated with product performance (e.g., office consumables)
- Capital goods and infrastructure, which are excluded by system boundary definition

The exclusion of these flows is not expected to significantly affect the conclusions of the study. Based on the cumulative mass, energy, and environmental relevance of excluded processes, the total contribution of omitted flows is estimated to be well below the defined cut-off thresholds and does not materially

influence the reported life cycle impact results. No flows associated with potentially environmentally relevant substances (e.g., regulated additives) were excluded solely due to low mass, and no exclusions were applied that would materially affect the study conclusions.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results: ✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Liters of Fuel:	38 l/100km
Vehicle Type:	Medium- and Heavy-Duty Truck
Transport Distance:	625 (includes backhaul) km
Capacity Utilization:	20 %
Packaging Mass:	3.68E-01 kg
Gross density of products transported:	8.41E+01 kg/m ³
Capacity utilization volume factor:	<1
Assumptions for scenario development:	Panels are packaged in reusable metal-frame stillages which hold 6 panels each. Each truck holds 20 stillages for a total of 120 panels. Once the panels are delivered, the stillages are collapsed and returned to the manufacturer. A conservative ratio of one truckload of returned folded stillages for every three truckloads of shipped full stillages was used. Transport of galvanized steel products for final product assembly was not included in this table. Supplier selection for steel varies by project location and transport is not controlled by RMP Global. Components are typically sourced regionally to minimize freight distance. In the absence of consistent supplier-specific logistics data across projects, the PCR default commodity transport assumptions defined in the SmartEPD Part A PCR Annex A, Table 24 were used.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	0 %
Ancillary Materials:	0 kg
Net Fresh Water Consumption Specified by Water Source and Fate:	0 m ³
Other Resources:	0 kg
Electricity Consumption:	0 kWh
Other Energy Carriers:	15 MJ
Product Lost per Declared/Functional Unit:	0 kg

Waste Materials at the Construction Site Before Waste Processing:	0 kg
Output Materials Resulting from On-site Waste Processing:	0 kg
Mass of Packaging Waste Specified by Type:	0 kg
Biogenic Carbon Contained in Packaging (kg C):	0 kg
Direct Emissions to Ambient Air, Soil and Water:	0 kg
VOC Emissions:	1.55 ug/m3
Assumptions for scenario development:	RenewWall noise walls are installed using a 5-ton mobile crawler crane, a 3.5-ton telehandler, and a 60 ft elevated work platform (EWP), operating collectively for approximately 1.38 minutes per m ² installed. The combined equipment consumes diesel at a rate of 17.67 L/hr, resulting in an average fuel consumption of 0.405 L per declared unit. Ancillary installation materials are excluded from the scope as system foundations are not included. The manufacturing, transportation, and end-of-life of installation equipment, as well as workforce-related impacts, are also excluded. Fuel consumption values are based on two RMP Global reference installation studies, with results calculated per declared unit and averaged.

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected Separately:	26.66 kg
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Recovery

Recycling:	11.26 kg
Landfill:	14.86 kg

Disposal

Product or Material for Final Disposal:	14.86 kg
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Assumptions for scenario development:

At end-of-life, RenewWall panels can be recycled or reused due to their design for disassembly into monomaterial components of galvanized steel and LLDPE plastic. While reuse is possible, insufficient data is available to quantify reuse rates; therefore, panels and galvanized steel components are modeled using industry-average end-of-life recycling rates. End-of-life modeling includes disassembly (C1), transport to waste processing facilities (C2), recycling processing (C3), and final landfill disposal (C4). Disassembly is assumed to require the same equipment and fuel use as installation, mirroring Module A5. Transport distances and methods follow SmartEPD Part A PCR defaults for "Waste & Scrap." Structural steel (including hardware) is assumed to be 97% recycled and 3% landfilled, while LLDPE panels are assumed to be 21.9% recycled and 78.1% landfilled based on industry-average construction and demolition plastic recycling rates. This recycling rate is applied in place of the PCR default of 0% for plastics in the U.S., as it is considered more representative of the product's monomaterial design, mechanical fastening, and intended recyclability. End-of-life activities are assumed to be carried out by third-party contractors using standard industry practices, and the manufacturing, transport, and disposal of equipment, as well as workforce-related impacts, are excluded.

Results

Environmental Impact Assessment Results

EF3.1

per 1 m2 of product of installed noise wall excluding foundations/anchorage..

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Unit	Method	A1	A2	A3	A1 - A3	A4	A5	C1	C2	C3	C4
GWP- total	kg CO2 eq	EF3.1	1.48e+1	4.06e+0	6.80e+0	2.56e+1	2.91e+1	1.51e+0	1.51e+0	8.51e-1	9.19e-1	1.35e+0
GWP- fossil	kg CO2 eq	EF3.1	1.83e+1	4.05e+0	6.03e+0	2.84e+1	2.91e+1	1.51e+0	1.51e+0	8.50e-1	8.41e-1	1.35e+0
GWP-biogenic	kg CO2 eq	EF3.1	-3.61e+0	1.39e-3	7.67e-1	-2.85e+0	8.81e-3	2.87e-4	2.87e-4	3.82e-4	7.72e-2	6.60e-4
GWP-luluc	kg CO2 eq	EF3.1	1.58e-2	1.88e-3	4.79e-4	1.81e-2	1.32e-2	1.54e-4	1.54e-4	4.56e-4	4.94e-4	9.92e-5
ODP	kg CFC11 eq	EF3.1	7.49e-8	5.68e-8	2.33e-8	1.55e-7	4.16e-7	2.36e-8	2.36e-8	1.16e-8	8.80e-9	4.32e-9
AP	mol H+ eq	EF3.1	5.95e-2	1.69e-2	1.70e-2	9.34e-2	1.53e-1	1.25e-2	1.25e-2	4.20e-3	5.35e-3	1.14e-3
POCP	kg NMVOC eq	EF3.1	1.14e+0	4.58e-1	1.93e-1	1.80e+0	4.44e+0	4.14e-1	4.14e-1	1.19e-1	1.50e-1	2.94e-2
EP-fw	kg P eq	EF3.1	1.22e-3	4.23e-4	3.34e-3	4.97e-3	2.98e-3	4.57e-5	4.57e-5	8.87e-5	1.01e-4	1.61e-5
EP-marine	kg N eq	EF3.1	1.67e-2	1.76e-2	7.76e-3	4.21e-2	1.73e-1	1.63e-2	1.63e-2	4.64e-3	6.09e-3	1.05e-2
ADP-fossil	MJ, net calorific value	EF3.1	7.81e+1	5.70e+1	1.14e+2	2.49e+2	4.19e+2	1.96e+1	1.96e+1	1.17e+1	8.16e+0	3.61e+0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Comparisons between product-specific or industry-average EPDs should not be made at the design stage, before a building or construction system is defined. Comparisons may be made only at the time of product selection, when performance requirements and specifications are established and all environmental impacts are on the basis of the declared unit.

All comparisons must comply with ISO 21930 or EN 15804. EPDs are not intended as comparative assertions and may have limited or no comparability if they differ in system boundaries, product category rules, or included impact categories. In such cases, comparisons may be misleading and result in suboptimal material or product selection.

Resource Use Indicator

per 1 m2 of product of installed noise wall excluding foundations/anchorage..

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	C1	C2	C3	C4
RPRE	MJ	5.09e+1	8.18e-1	0	5.17e+1	5.75e+0	1.23e-1	1.23e-1	1.91e-1	3.07e-1	4.96e-2
RPRM	MJ	0	ND	0	0	ND	0	ND	ND	ND	ND
RPRT	MJ	5.09e+1	8.18e-1	0	5.17e+1	5.75e+0	1.23e-1	1.23e-1	1.91e-1	3.07e-1	4.96e-2
NRPRE	MJ	0	5.70e+1	1.14e+2	1.71e+2	4.19e+2	1.96e+1	1.96e+1	1.17e+1	0	0
NRPRM	MJ	3.46e+0	ND	0	3.46e+0	ND	0	ND	ND	ND	ND
NRPRT	MJ	3.46e+0	5.70e+1	1.14e+2	1.75e+2	4.19e+2	1.96e+1	1.96e+1	1.17e+1	0	0
SM	kg	1.86e+1	ND	0	1.86e+1	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m3	2.69e-1	8.05e-3	2.47e-2	3.01e-1	6.13e-2	1.26e-3	1.26e-3	1.70e-3	1.74e-3	-5.42e-2
RE	MJ	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Resource use indicators were calculated using a hybrid approach combining background dataset results and foreground calculations. Energy indicators (RPRE, NRPRE) and freshwater use (FW) were derived from life cycle inventory results. Material indicators (RPRM, NRPRM) were calculated using net calorific values applied to primary material inputs. Secondary material and fuel indicators (SM, RSF, NRSF, RE) were calculated based on explicitly modeled foreground flows. Negative values in energy indicators were set to zero where they represent avoided burden credits rather than physical resource use.

Waste and Output Flow Indicators

per 1 m2 of product of installed noise wall excluding foundations/anchorage..

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	C1	C2	C3	C4
HWD	kg	3.36e-1	1.29e-1	4.72e-1	9.37e-1	9.15e-1	2.20e-2	2.20e-2	2.86e-2	4.68e-2	6.00e-3
NHWD	kg	7.23e+0	2.49e+0	1.91e+1	2.89e+1	1.75e+1	3.21e-1	3.21e-1	5.31e-1	1.06e+0	3.87e+1
HLRW	kg	2.42e-5	3.46e-6	1.27e-4	1.55e-4	2.54e-5	5.97e-7	5.97e-7	7.96e-7	1.02e-6	2.13e-7
ILLRW	kg	8.63e-3	8.36e-6	5.26e-4	9.16e-3	6.23e-5	1.46e-6	1.46e-6	1.95e-6	2.38e-6	5.31e-7
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	2.75e+0	2.75e+0	0	0	0	0	1.18e+1	0
MER	kg	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Waste indicators (HWD, NHWD, HLRW, ILLRW) represent life cycle inventory outputs derived from background datasets. Output flow indicators (CRU, MFR, MER, EET, EEE) were calculated based on defined end-of-life scenarios and represent flows crossing the system boundary.

Scaling Factors

Scale factors for calculating GWP-total based on section width

Section Width (ft)	GWP-total A1-A3 (kg CO ₂ e/DU)	Scale Factor A1-A3	GWP-total A1-C4 (kg CO ₂ e/DU)	Scale Factor A1-C4
8'	3.76E+01	1.47	7.43E+01	1.22
10'	3.28E+01	1.28	6.89E+01	1.13
12'	2.96E+01	1.16	6.53E+01	1.07
14'	2.73E+01	1.07	6.28E+01	1.03
16'	2.56E+01	1.00	6.09E+01	1.00
18'	2.43E+01	0.95	5.94E+01	0.98
20'	2.32E+01	0.91	5.82E+01	0.96
22'	2.23E+01	0.87	5.72E+01	0.94
24'	2.16E+01	0.84	5.64E+01	0.93

Scaling factors were developed to account for variations in section width, which was identified in a sensitivity analysis as the primary product configuration parameter capable of producing GWP variation exceeding the $\pm 10\%$ representativeness threshold. For a constant overall wall length, narrower section widths require a greater number of sections, resulting in increased use of vertical steel I-beams and associated hardware per declared unit, and therefore higher impacts per m². Conversely, wider sections reduce material intensity and associated impacts per m².

Scaling factors were derived by modeling alternative section widths (8–24 ft) while holding all other parameters constant and normalizing results to a 16 ft baseline configuration. The scaling factor for each configuration is calculated as the ratio of the modeled GWP for the given section width to the baseline GWP: $Scale\ Factor = GWP(section\ width) / GWP(16\ ft)$

Separate scaling factors are provided for A1–A3 and A1–C4 results and may be applied by multiplying the relevant scale factor by the reported impacts per declared unit. This approach assumes consistent materials, manufacturing processes, and installation conditions across configurations. Scaling is valid only within the modeled range of 8–24 ft and should not be applied outside this range or where design conditions differ materially.

Interpretation

This Environmental Product Declaration (EPD) presents the life cycle assessment results for the RenewWall Noise Wall System in accordance with ISO 21930 standards and SmartEPD requirements. For the declared unit of 1 m² of installed noise wall, the results indicate a cradle-to-gate (A1–A3) global warming potential (GWP-total) of 25.6 kg CO₂e and a cradle-to-grave (A1–C4) GWP-total of 60.9 kg CO₂e.

The results show that environmental impacts are primarily driven by upstream material production (Module A1), as well as transportation to the installation site (Module A4). The relatively high contribution from A4 is driven by the assumed long-distance transport of rotomolded panels from the manufacturing

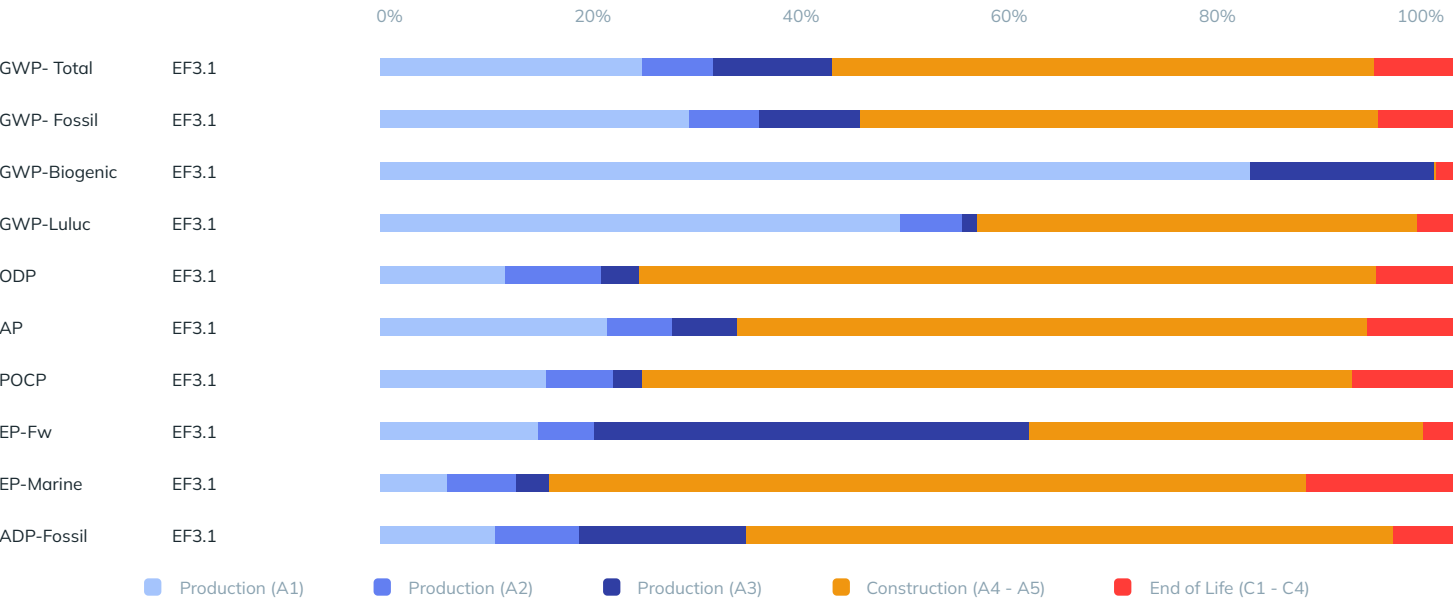
facility to the project site, the low density and bulky geometry of the panels, and the return transport of reusable steel stillages. Although each truck is assumed to carry 120 panels, the panels and stillages reach truck volumetric capacity before reaching maximum payload capacity. Because the transport datasets used in the LCA are modeled on a mass-distance basis, panel transport was modeled conservatively by representing each full truckload as operating at full payload capacity and then allocating the resulting truck-distance impact across the panels transported. This approach is expected to overestimate A4 impacts relative to actual fuel use for a volume-limited load but provides a conservative basis for reporting.

Manufacturing processes (A3), installation and deconstruction activities (A5 and C1), and end-of-life treatment (C2–C4) contribute comparatively smaller shares to total impacts. Sensitivity analysis confirms that the results are robust and that overall conclusions are most influenced by assumptions related to recycled material sourcing and transportation distances, while other parameters, including installation energy, additive composition, and end-of-life assumptions, have limited influence on total GWP.

The reported results represent a baseline product configuration. Variations in section width may influence environmental performance by altering the quantity of structural steel required per unit area, and scaling factors have been developed to support proportional adjustment of results for section widths between 8 and 24 feet. These factors allow the results to remain representative across commercially available configurations within this range.

End-of-life modeling reflects current industry practices and available data. While steel components are assumed to be predominantly recycled at end-of-life, plastic panels are assumed to be partially recycled based on representative construction and demolition waste data. The analysis indicates that end-of-life assumptions have a relatively small influence on total life cycle impacts compared to upstream material production and transportation.

The results are subject to limitations including the use of representative secondary datasets where supplier-specific data were not available, conservative assumptions for transportation and logistics, and assumptions regarding end-of-life treatment in the absence of product-specific field data. These limitations are not expected to materially affect the overall conclusions. Overall, the study demonstrates that environmental performance is primarily governed by material sourcing decisions and freight logistics, and that results are consistent and representative across typical product configurations.



Additional Environmental Information

The RenewWall system is designed for disassembly into durable, monomaterial components, enabling the potential for product reuse at end-of-life. Reuse of panels and galvanized steel components in subsequent projects can significantly reduce environmental impacts by avoiding the need for new material production and associated transportation, which are the primary drivers of life cycle impacts. While reuse rates are not currently quantified due to limited field data, project stakeholders are encouraged to prioritize reuse where feasible by preserving panel integrity during deconstruction, maintaining inventory

tracking, and facilitating redeployment in compatible applications. Supporting reuse practices can extend product life, reduce waste generation, and improve overall environmental performance beyond what is reflected in the life cycle assessment results.

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