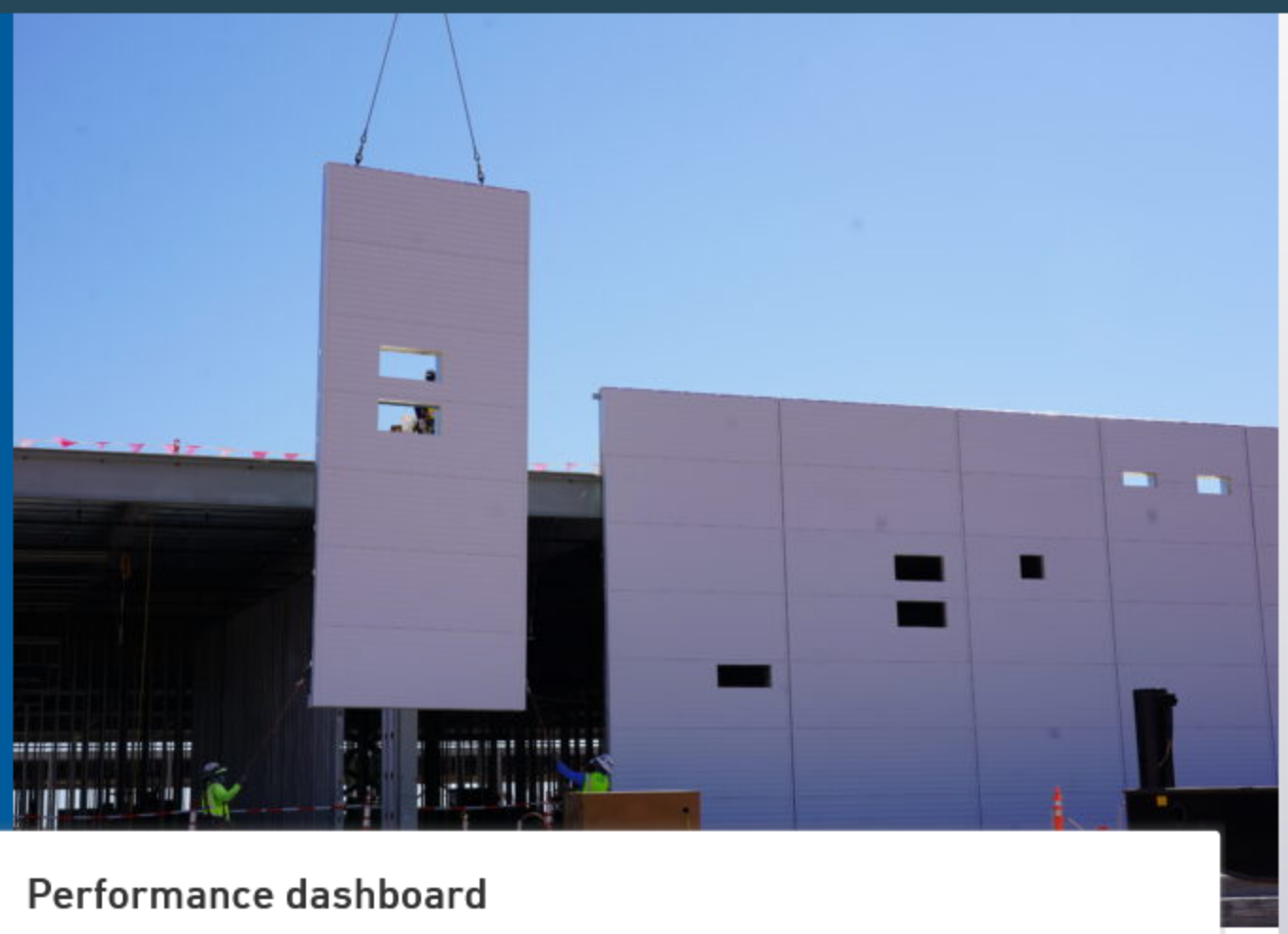
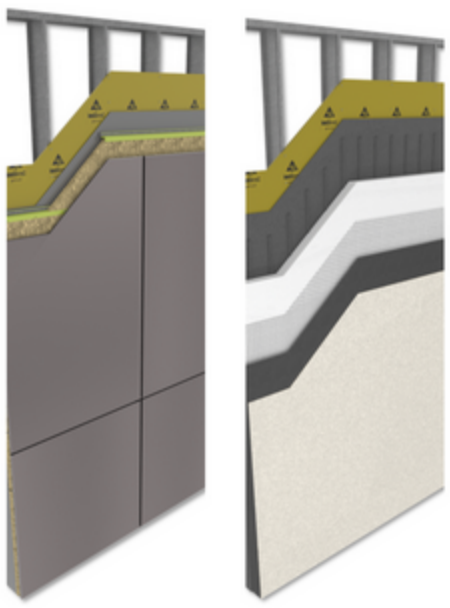
Digital Building Components™

X-Series: Panelized Exterior Wall Systems

Exterior wall panel system (MCM)
Exterior wall panel system (EIFS)

DBC's exterior prefab wall panel systems are customizable facade systems available in multiple materials, finishes, and textures, with optional factory-installed windows. Controlled off-site fabrication help accelerate construction & improve quality, enabling earlier building occupancy compared to traditional field-built systems.





Performance dashboard

Features & functionality

EIFS: A type of cladding that offers exterior walls insulation, water resistance, and a finished look, all integrated into a composite material. Designed to maximize water and thermal resistance.

MCM: A factory-installed rainscreen system with fire-retardant core metal composite material, also known as aluminum composite material (ACM). The joints between MCM panels feature a spline.

Visit Digital Buildings Components for more product information:
X-Series: Panelized Exterior Wall System

For spec help, contact us or call (602) 283-4462

Environment & materials

Improved by:

On-site solar panels which add green energy to manufacturing facility

Custom-made wall systems mitigate design changes and scrap during installation

Certifications, rating systems & disclosures:

IAPMO certification

Health Product Declaration (EIFS and MCM)

See LCA, interpretation & rating systems

SM Transparency Report (EPD)™

VERIFICATION	LCA
3rd-party reviewed	✔
	Transparency Report (EPD)
3rd-party verified	✔

Validity: 12/09/25 – 12/08/30
SM-DBC – 20251209 – 001

This environmental product declaration (EPD) was externally verified by Harmony Environmental, LLC according to ISO 21930:2017; SM Part A; SM Part B for Prefabricated Exterior Wall Panel Assemblies; and ISO 14025:2006.

In accordance with ISO 14044 and the reference PCR, this life cycle assessment was conducted by Sustainable Minds and reviewed by Harmony Environmental, LLC.

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Management • Analysis • Communication
Beyond Sustainability, Striving for Harmony

SUMMARY

Reference PCR
SM Part B: Prefabricated Exterior Wall Panel Assemblies, 2025

Regions; system boundaries
North America; Cradle-to-gate with options

Declared unit
An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building, including all fasteners, clips, brackets, sealants, gaskets, and adhesives required to provide the above function.

LCIA methodology; LCA software; LCI databases
TRACI 2.2; SimaPro Craft 10.2; ecoinvent v3.11, Industry data 2.0, and US-EI 2.2

Public LCA
LCA of X-Series: Panelized Exterior Wall Systems

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LCA results & interpretation

X-Series: Panelized Exterior Wall Systems

X-Series EIFS | X-Series MCM | EPD additional content

Scope and summary

○ Cradle to gate ✔ **Cradle to gate with options** ○ Cradle to grave

Scope description

The scope of the study is cradle-to-gate with options and includes production, transport to the building site, installation, and end-of-life (A1-A5 and C1-C4).

Application

The X-Series EIFS system is a type of wall system that offers exterior wall insulation, water resistance, and a finished look, all integrated into a composite material. It is composed of multiple layers, each serving a distinct purpose. The cold-formed steel frame provides structural strength and dimensional stability, ensuring precise integration with the building structure. Exterior gypsum sheathing adds a rigid, fire-resistant substrate and structural support, while the air & water resistive barrier prevents air infiltration and water intrusion to protect the building envelope and improve energy performance. EPS insulation delivers continuous thermal resistance, reducing heat transfer and enhancing overall efficiency. The reinforcing mesh and base coat contribute durability, crack resistance, and impact protection, and the finish coat provides the desired appearance while offering weather protection and UV resistance.

Declared unit

An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building. All fasteners, clips, brackets, sealants, gaskets, and adhesives necessary to ensure the specified function are included. For the optional disclosure of panels with openings, all associated infill components are installed at the DBC facility, and their impacts are included in the results.

This study considers 2.6 panels per declared unit, with a typical panel size of 3.02 x 4.72 m at a typical thickness of 0.270 m, having a density of 327 kg/m^3 and RSI of 40.6 m^{2}K/W. The minimum and maximum spans available for the panel are 1.22 x 3.05 m to 4.11 x 10.7 m. The mass of panels per declared unit is 1,263 kg. The anticipated reference service life is 75 years. For panels with openings, 11.8% of the area is openings, and the RSI of windows filling those designated openings is 1.23 m^{2}K/W.

Production

Raw materials and components were sourced from single suppliers, and supplier locations were used to model distances and transport modes to the facility. Those components are assembled on site. DBC operates on-site solar panels connected to the electricity grid, with the solar contribution ranging from 32% to 54%. A portion of the facility's energy demand is met by solar generation, while the remainder is supplied from the grid. The finished panel systems are packaged into bunks, with wood blocks to stabilize and elevate the load, cardboard corner guards to protect edges from impact and abrasion, packing foam to cushion and reduce vibration during transport, shrink wrap to secure and consolidate the load, and plywood boards to provide structure and protect against puncture or compression.

Construction and end of life

Packaged exterior wall panel systems are assumed to be shipped 951 km by diesel-powered truck from the manufacturing facility to the job site. The panels are moved and lifted into place by diesel-powered cranes, with diesel consumption of 6.12 liters per declared unit. Backer rods, silicone sealant, cement board, clips, connectors, and fasteners are used to secure the panels and panel joint enclosures. Shrink wrap is transported 32.2 km to landfill, while other packaging materials including cardboard guards, plywood board, packing foam, and wood blocks are returned to DBC for reuse. Since panels are fabricated to the design, no installation scrap is generated. At the end of life, products are transported 32.2 km by diesel-powered trucks to a construction or inert waste landfill.

Material composition by wt%

LAYER	COMPONENT/ MATERIAL	AVG. % WT
Steel framing	Steel	20-27%
Sheathing	Glass sheathing	30-34%
Air and water resistive barrier	AWRB membranes	2-7%
Insulation	EPS insulation	3-15%
Mesh & base coat	Base coat	5-10%
Finish coat	Finish coat	5-10%
Finish coat	Primer	1-4%
Product packaging	Wood blocks	4-7%
Product packaging	Plywood board	3-5%
Product packaging	Packing foam	1-2%
Product packaging	Other packaging	<2%
All other components		1-2%

Total impacts by life cycle stage [mPts/decl unit]

LIFE CYCLE STAGE	MPTS/DECL. UNIT
Raw material extraction	8.85E+02
Transport to factory	1.18E+01
Manufacturing	2.10E+02
Construction	1.75E+02
End of life	5.88E+01
Total impacts = 1.34E+03 mPts	

What's causing the greatest impacts

All life cycle stages

The production stage dominates the results across all impact categories making up more than 70% of total impacts. Within these cradle-to-gate modules, raw material extraction and upstream production of wall system components supplied to the DBC facility accounted for the largest share of impacts in all categories. Although other life cycle modules also contributed, their influence was relatively minor compared to the cradle-to-gate impacts. Beyond the gate, the next most significant stages were product distribution and installation. End-of-life processes related to dismantling and final waste treatment also had noticeable contributions, particularly in smog formation, non-carcinogenic effects, and ecotoxicity.

Production stage

Raw material extraction and upstream processing (A1) and manufacturing (A3) are the most impactful modules in the product life cycle. A look at the GWP per each layer of the system shows that more than half of the results are attributed to cold-formed steel framing, while the other layers collectively accounted for the remainder. This trend was consistent across other impact categories. Electricity consumption dominated the results for manufacturing operations. Additional contributors to manufacturing included landfilling of manufacturing waste and the sourcing of packaging materials for final product packaging. Transportation of materials and components to the manufacturing facility (A2) contributes minimally to the results.

Construction stage

Installation (A5) activities dominate impacts in the construction stage across most categories, especially carcinogenics and freshwater eutrophication. These potential impacts are primarily attributed to the use of ancillary materials such as panel attachment materials, sealants, and fasteners, as well as the energy required to lift and position panels during installation. Product distribution (A4) impacts come from the transportation between the manufacturing facility and the installation site.

End-of-life stage

The transportation to landfill (C2) is the dominant contributor to most impact categories except ecotoxicity, freshwater eutrophication, carcinogenics, and non-carcinogenics. Potential transportation impacts were particularly notable for smog formation, driven by emissions during waste transport to disposal. Landfilling of products at the end of life during waste disposal (C4) largely contributed to the non-carcinogenics and ecotoxicity impact categories. Demolition (C1) and waste processing (C3) are assumed to be negligible.

Sensitivity analysis

Sensitivity analyses were performed to evaluate the robustness of the results, focusing on parameters contributing most significantly to the environmental impacts. Two parameters under DBC's direct control were selected for testing: share of solar energy in the DBC facility's electricity mix, and the waste management practices applied to manufacturing waste.

DBC currently operates on-site solar panels that supply a portion of its electricity demand. Changing the share of solar power significantly affects impacts in module A3 but has only a minor influence on the overall life cycle. The largest changes occur in global warming potential, ozone depletion, and acidification, where electricity use dominates, while impacts such as ecotoxicity and eutrophication are less sensitive because they are driven more by factors like waste management. Global warming, ozone depletion, smog, acidification, and carcinogenics demonstrate the potential to exceed a 20% change in A3 impacts.

Altering waste management practices strongly affects impacts in module A3 and leads to noticeable changes in overall life cycle results. The effect is most pronounced for ecotoxicity and freshwater eutrophication, where landfilling is a dominant contributor to A3 impacts. In contrast, global warming potential (GWP) and ozone depletion are less sensitive to waste management changes, as they are driven primarily by other factors such as electricity consumption. Non carcinogenics, ecotoxicity, and freshwater eutrophication demonstrate the potential to exceed a 20% change in A3 impacts. Ecotoxicity and freshwater eutrophication show the potential to exceed a 20% change in overall life cycle impacts.

Overall, some impact categories respond more to variations in electricity sourcing or waste management, but the contribution of those variations to the total results, in most impact categories, was minimal.

Manufacturing data

Reporting period: January 2023 through August 2024
Location: Phoenix, AZ

Embodied carbon

Embodied carbon can be defined as the cradle-to-gate (A1-A3) global warming potential impacts. The total embodied carbon per declared unit of X-Series EIFS is 2.52E+03 kg CO_2-eq.

How we're making it greener

DBC's panelized exterior wall systems are designed for maximum thermal efficiency, reduced structural impact, optimized energy use, and minimal material waste, directly supporting sustainable construction goals. By leveraging custom framing software that communicates directly with our roll former, DBC ensures framing components are cut to precise dimensions, virtually eliminating material waste. Materials are fabricated and procured to custom lengths, further reducing waste compared to traditional methods.

Additionally, DBC's prefabrication approach shortens on-site installation time and requires smaller crews of 5–6 workers, resulting in lowered carbon emissions compared to conventional construction, while delivering a more environmentally responsible and efficient building solution.

See how we make it greener

LCA results

LIFE CYCLE STAGE	RAW MATERIAL EXTRACTION	TRANSPORT	MANUFACTURING	CONSTRUCTION	END OF LIFE
Information modules: Included (X) | Use phase modules and Module D are not declared	(X) A1 Raw materials extraction	(X) A2 Transport to factory	(X) A3 Manufacturing	(X) A4 Delivery	(X) C1 Demolition
				(X) A5 Installation	(X) C2 Transportation
					(X) C3 Waste processing
					(X) C4 Disposal

SM Single Score

Learn about SM Single Score results

Impacts per declared unit	8.85E+02 mPts	1.18E+01 mPts	2.10E+02 mPts	1.75E+02 mPts	5.88E+01 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Material sourcing and upstream production of wall system components.	Transportation of the components to the manufacturing facility.	Use of electricity in the manufacturing facility.	Transportation of the product to installation sites and use of ancillary materials during installation.	Transport to waste processing and disposal of material flows transported to a landfill.

TRACI v2.2 results per declared unit

LIFE CYCLE STAGE		RAW MATERIAL EXTRACTION	TRANSPORT	MANUFACTURING	CONSTRUCTION	END OF LIFE
Ecological damage						
Impact category	Unit					
Global warming	kg CO_2 eq	1.94E+03	9.87E+01	4.86E+02	4.46E+02	6.59E+01
Ozone depletion	kg CFC-11 eq	8.46E-05	1.35E-06	9.58E-06	6.33E-06	1.19E-06
Acidification	kg SO_2 eq	6.51E+00	1.37E-01	1.69E+00	1.03E+00	3.80E-01
Marine eutrophication	kg N eq	7.13E-01	1.71E-01	2.65E-01	1.34E-01	8.78E-02
Freshwater eutrophication	kg P eq	1.75E-01	4.13E-03	1.65E-01	6.34E-02	1.34E-02
Human health damage						
Impact category	Unit					
Smog	kg O_3 eq	7.99E+01	1.97E+00	2.61E+01	1.76E+01	1.02E+01
Respiratory effects	kg $PM_{2.5}$ eq	9.28E-01	3.05E-02	2.49E-01	2.08E-01	4.68E-02
Additional environmental information						
Impact category	Unit					
Carcinogenics	CTU_h	3.49E-04	2.55E-06	2.15E-05	6.46E-05	2.89E-06
Non-carcinogenics	CTU_h	3.03E-04	1.59E-05	2.98E-04	8.87E-05	1.59E-04
Ecotoxicity	CTU_e	1.27E+04	3.62E+02	1.63E+04	3.75E+03	5.32E+03

References

LCA Background Report
Life Cycle Assessment of X-Series: Panelized Exterior Wall Systems, DBC 2025; SimaPro Craft 10.2; ecoinvent and Industry data 2.0 databases; TRACI 2.2.

ISO 14025, "Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services"

ISO 21930:2017, "Sustainability in Building Construction — Environmental Declaration of Building Products" serves as the core PCR along with Sustainable Minds Part A.

SM Part A: LCA calculation rules and report requirements, version 2023
August, 2023. PCR review conducted by the Sustainable Minds TAB, tab@sustainableminds.com.

SM Part B: Prefabricated Exterior Wall Panel Assemblies
October, 2025. PCR review conducted by Thomas P. Gloria, Ph.D., Chair (Industrial Ecology Consultants) t.gloria@industrial-ecology.com; Hugues Imbeault-Tétreault, Ing., M.Sc.A. (Groupe AGÉCO); Lindita Bushi, Ph.D. (Athena Sustainable Materials Institute).

Download PDF SM Transparency Report [EPD]™

SM Transparency Reports (TR) are ISO 14025 Type III environmental declarations (EPD) that enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. Environmental declarations of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore cannot be used as comparative assertions unless the conditions as defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied. In order to support comparative assertions, this EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines, use the same sub-category PCR where applicable, include all relevant information modules, be limited to EPDs applying a functional unit, and be based on equivalent scenarios with respect to the context of construction works. Some LCA impact categories and inventory items are still under development and can have high levels of uncertainty. To promote uniform guidance on the data collection, calculation, and reporting of results, the ACLCA methodology (ACLCA 2019) was used.

Rating systems

The intent is to reward project teams for selecting products from manufacturers who have verified improved life-cycle environmental performance.

LEED BD+C: New Construction | v4.1 - LEED v4.1

Building product disclosure and optimization

Environmental product declarations

○ Industry-wide (generic) EPD	1 product
✔ Product-specific Type III EPD	1.5 products

Green Globes for New Construction and Sustainable Interiors

Materials and resources

- ✔ NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
- ✔ NC 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs

BREEAM New Construction 2018

Mat 02 - Environmental impacts from construction products

Environmental Product Declarations (EPD)

○ Industry-average EPD	.5 points
○ Multi-product specific EPD	.75 points
✔ Product-specific EPD	1 point

VERIFICATION	LCA
3rd-party reviewed	✔
	Transparency Report (EPD)
3rd-party verified	✔

Validity: 12/09/25 – 12/08/30
SM-DBC – 20251209 – 001

This environmental product declaration (EPD) was externally verified by Harmony Environmental, LLC according to ISO 21930:2017; SM Part A; SM Part B for Prefabricated Exterior Wall Panel Assemblies; and ISO 14025:2006.

In accordance with ISO 14044 and the reference PCR, this life cycle assessment was conducted by Sustainable Minds and reviewed by Harmony Environmental, LLC.

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SUMMARY

Reference PCR
SM Part B: Prefabricated Exterior Wall Panel Assemblies, 2025

Regions; system boundaries
North America; Cradle-to-gate with options

Declared unit
An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building, including all fasteners, clips, brackets, sealants, gaskets, and adhesives required to provide the above function.

LCIA methodology; LCA software; LCI databases
TRACI 2.2; SimaPro Craft 10.2; ecoinvent v3.11, Industry data 2.0, and US-EI 2.2

Public LCA
LCA of X-Series: Panelized Exterior Wall Systems

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LCA results & interpretation

X-Series: Panelized Exterior Wall Systems

X-Series EIFS | X-Series MCM | EPD additional content

Scope and summary

○ Cradle to gate ✔ **Cradle to gate with options** ○ Cradle to grave

Scope description

The scope of the study is cradle-to-gate with options and includes production, transport to the building site, installation, and end-of-life (A1-A5 and C1-C4).

Application

The X-Series MCM system is a factory-assembled rainscreen system with fire-retardant core metal composite material (MCM), also known as aluminum composite material (ACM). The cold-formed steel frame provides structural strength and dimensional stability, ensuring precise integration with the building structure. Exterior gypsum sheathing adds a rigid, fire-resistant substrate and structural support, while the air & water resistive barrier prevents air infiltration and water intrusion to protect the building envelope and improve energy performance. Z-girts create a secure structural attachment point for both insulation and panels, while also facilitating effective water drainage and ventilation within the wall assembly. In certain designs, a hat channel is added to enhance structural support, improve ventilation, and ensure precise panel alignment. The exterior finish layer features aluminum composite material panels that deliver superior weather resistance, long-term durability, and a modern, high-end architectural appearance.

Declared unit

An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building. All fasteners, clips, brackets, sealants, gaskets, and adhesives necessary to ensure the specified function are included. For the optional disclosure of panels with openings, all associated infill components are installed at the DBC facility, and their impacts are included in the results.

This study considers 2.6 panels per declared unit, with a typical panel size of 3.02 x 4.72 m at a typical thickness of 0.295 m, having a density of 437 kg/m^3 and RSI of 42.4 m^{2}K/W. The minimum and maximum spans available for the panel are 1.22 x 3.05 m to 4.11 x 10.7 m. The mass of panels per declared unit is 1,841 kg. The anticipated reference service life is 75 years. For panels with openings, 15.1% of the area is openings, and the RSI of windows filling those designated openings is 1.23 m^{2}K/W.

Production

Raw materials and components were sourced from single suppliers, and supplier locations were used to model distances and transport modes to the facility. Those components are assembled on site. DBC operates on-site solar panels connected to the electricity grid, with the solar contribution ranging from 32% to 54%. A portion of the facility's energy demand is met by solar generation, while the remainder is supplied from the grid. The finished panel systems are packaged into bunks, with wood blocks to stabilize and elevate the load, cardboard corner guards to protect edges from impact and abrasion, packing foam to cushion and reduce vibration during transport, shrink wrap to secure and consolidate the load, and plywood boards to provide structure and protect against puncture or compression.

Construction and end of life

Packaged exterior wall panel systems are assumed to be shipped 1,315 km by diesel-powered truck from the manufacturing facility to the job site. The panels are moved and lifted into place by diesel-powered cranes, with diesel consumption of 10.3 liters per declared unit. Backer rods, silicone sealant, cement board, clips, connectors, and fasteners are used to secure the panels and panel joint enclosures. Shrink wrap is transported 32.2 km to landfill, while other packaging materials including cardboard guards, plywood board, packing foam, and wood blocks are returned to DBC for reuse. Since panels are fabricated to the design, no installation scrap is generated. At the end of life, products are transported 32.2 km by diesel-powered trucks to a construction or inert waste landfill.

Material composition by wt%

LAYER	COMPONENT/ MATERIAL	AVG. % WT
Steel framing	Steel	20-27%
Sheathing	Glass sheathing	30-34%
Air and water resistive barrier	AWRB membranes	2-7%
Air and water resistive barrier	Flashing	<2%
Z girt		4-8%
Insulation	Mineral wool insulation	3-15%
MCM panel		10-14%
Product packaging	Wood blocks	4-7%
Product packaging	Plywood board	3-5%
Product packaging	Packing foam	1-2%
Product packaging	Other packaging	<2%
All other components		1-2%

Total impacts by life cycle stage [mPts/decl unit]

LIFE CYCLE STAGE	MPTS/DECL. UNIT
Raw material extraction	2.80E+03
Transport to factory	3.18E+01
Manufacturing	3.59E+02
Construction	2.07E+02
End of life	8.40E+01
Total impacts = 3.49E+03 mPts	

What's causing the greatest impacts

All life cycle stages

The production stage dominates the results across all impact categories making up more than 75% of total impacts. Within these cradle-to-gate modules, raw material extraction and upstream production of wall system components supplied to the DBC facility accounted for the largest share of impacts in all categories. Although other life cycle modules also contributed, their influence was relatively minor compared to the cradle-to-gate impacts. Beyond the gate, the next most significant stages were product distribution and installation. End-of-life processes related to dismantling and final waste treatment also had noticeable contributions, particularly in smog formation, non-carcinogenic effects, and ecotoxicity.

Production stage

Raw material extraction and upstream processing (A1) and manufacturing (A3) are the most impactful modules in the product life cycle. A look at the GWP per each layer of the system shows that more than half of the results are attributed to cold-formed steel framing, while the other layers collectively accounted for the remainder. This trend was consistent across other impact categories. Electricity consumption dominated the results for manufacturing operations (A3). Additional contributors to manufacturing included landfilling of manufacturing waste and the sourcing of packaging materials for final product packaging. Transportation of materials and components to the manufacturing facility (A2) contributes minimally to the results.

Construction stage

Installation (A5) activities dominate impacts in the construction stage across about half of impact categories, especially smog, carcinogenics, and freshwater eutrophication. These potential impacts are primarily attributed to the use of ancillary materials such as panel attachment materials, sealants, and fasteners, as well as the energy required to lift and position panels during installation. Product distribution (A4) impacts come from the transportation between the manufacturing facility and the installation site.

End-of-life stage

The transportation to landfill (C2) is the dominant contributor to most impact categories except ecotoxicity, freshwater eutrophication, carcinogenics, and non-carcinogenics. Potential transportation impacts were particularly notable for smog formation, driven by emissions during waste transport to disposal. Landfilling of products at the end of life during waste disposal (C4) largely contributed to the non-carcinogenics and ecotoxicity impact categories. Demolition (C1) and waste processing (C3) are assumed to be negligible.

Sensitivity analysis

Sensitivity analyses were performed to evaluate the robustness of the results, focusing on parameters contributing most significantly to the environmental impacts. Two parameters under DBC's direct control were selected for testing: share of solar energy in the DBC facility's electricity mix, and the waste management practices applied to manufacturing waste.

DBC currently operates on-site solar panels that supply a portion of its electricity demand. Changing the share of solar power significantly affects impacts in module A3 but has only a minor influence on the overall life cycle. The largest changes occur in global warming potential, ozone depletion, and acidification, where electricity use dominates, while impacts such as ecotoxicity and eutrophication are less sensitive because they are driven more by factors like waste management. Global warming, ozone depletion, and acidification demonstrate the potential to exceed a 20% change in A3 impacts.

Altering waste management practices strongly affects impacts in module A3 and leads to noticeable changes in overall life cycle results. The effect is most pronounced for ecotoxicity and freshwater eutrophication, where landfilling is a dominant contributor to A3 impacts. In contrast, global warming potential (GWP) and ozone depletion are less sensitive to waste management changes, as they are driven primarily by other factors such as electricity consumption. Non carcinogenics, ecotoxicity, and freshwater eutrophication each show the potential for more than a 20% change in A3 impacts, with corresponding impacts also exceeding 20% across the overall life cycle.

Overall, some impact categories respond more to variations in electricity sourcing or waste management, but the contribution of those variations to the total results, in most impact categories, was minimal.

Manufacturing data

Reporting period: January 2023 through August 2024
Location: Phoenix, AZ

Embodied carbon

Embodied carbon can be defined as the cradle-to-gate (A1-A3) global warming potential impacts. The total embodied carbon per declared unit of X-Series MCM is 3.46E+03 kg CO_2-eq.

How we're making it greener

DBC's panelized exterior wall systems are designed for maximum thermal efficiency, reduced structural impact, optimized energy use, and minimal material waste, directly supporting sustainable construction goals. By leveraging custom framing software that communicates directly with our roll former, DBC ensures framing components are cut to precise dimensions, virtually eliminating material waste. Materials are fabricated and procured to custom lengths, further reducing waste compared to traditional methods.

Additionally, DBC's prefabrication approach shortens on-site installation time and requires smaller crews of 5–6 workers, resulting in lowered carbon emissions compared to conventional construction, while delivering a more environmentally responsible and efficient building solution.

See how we make it greener

LCA results

LIFE CYCLE STAGE	RAW MATERIAL EXTRACTION	TRANSPORT	MANUFACTURING	CONSTRUCTION	END OF LIFE
	(X) A1 Raw material extraction	(X) A2 Transport to factory	(X) A3 Manufacturing	(X) A4 Delivery	(X) C1 Demolition
				(X) A5 Installation	(X) C2 Transportation
Information modules: Included (X) | Use phase modules and Module D are not declared					(X) C3 Waste processing
					(X) C4 Disposal

SM Single Score

Learn about SM Single Score results

Impacts per declared unit	2.80E+03 mPts	3.18E+01 mPts	3.59E+02 mPts	2.07E+02 mPts	8.40E+01 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Material sourcing and upstream production of wall system components.	Transportation of the components to the manufacturing facility.	Use of electricity in the manufacturing facility.	Transportation of the product to installation sites and use of ancillary materials during installation.	Transport to waste processing and disposal of material flows transported to a landfill.

TRACI v2.2 results per declared unit

LIFE CYCLE STAGE		RAW MATERIAL EXTRACTION	TRANSPORT	MANUFACTURING	CONSTRUCTION	END OF LIFE
Ecological damage						
Impact category	Unit					
Global warming	kg CO_2 eq	2.63E+03	2.66E+02	5.64E+02	7.14E+02	9.58E+01
Ozone depletion	kg CFC-11 eq	3.59E-05	3.65E-06	1.01E-05	1.00E-05	1.74E-06
Acidification	kg SO_2 eq	9.92E+00	3.70E+01	1.77E+00	1.50E+00	5.53E-01
Marine eutrophication	kg N eq	1.13E+00	4.61E-02	3.21E-01	2.11E-01	1.25E-01
Freshwater eutrophication	kg P eq	2.21E-01	1.11E-02	2.96E-01	7.81E-02	1.40E-02
Human health damage						
Impact category	Unit					
Smog	kg O_3 eq	1.11E+02	5.30E+00	2.76E+01	2.66E+01	1.49E+01
Respiratory effects	kg $PM_{2.5}$ eq	1.48E+00	8.21E-02	2.57E-01	3.03E-01	6.82E-02
Additional environmental information						
Impact category	Unit					
Carcinogenics	CTU_h	1.29E-03	6.87E-06	2.38E-05	7.12E-05	4.43E-06
Non-carcinogenics	CTU_h	5.72E-04	4.29E-05	5.36E-04	1.31E-04	2.26E-04
Ecotoxicity	CTU_e	3.16E+04	9.77E+02	3.20E+04	4.82E+03	7.56E+03

References

LCA Background Report
Life Cycle Assessment of X-Series: Panelized Exterior Wall Systems, DBC 2025; SimaPro Craft 10.2; ecoinvent and Industry data 2.0 databases; TRACI 2.2.

ISO 14025, "Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services"

ISO 21930:2017, "Sustainability in Building Construction — Environmental Declaration of Building Products" serves as the core PCR along with Sustainable Minds Part A.

SM Part A: LCA calculation rules and report requirements, version 2023
August, 2023. PCR review conducted by the Sustainable Minds TAB, tab@sustainableminds.com.

SM Part B: Prefabricated Exterior Wall Panel Assemblies
October, 2025. PCR review conducted by Thomas P. Gloria, Ph.D., Chair (Industrial Ecology Consultants) t.gloria@industrial-ecology.com; Hugues Imbeault-Tétreault, Ing., M.Sc.A. (Groupe AGÉCO); Lindita Bushi, Ph.D. (Athena Sustainable Materials Institute).

Download PDF SM Transparency Report [EPD]™

SM Transparency Reports (TR) are ISO 14025 Type III environmental declarations (EPD) that enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. Environmental declarations of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore cannot be used as comparative assertions unless the conditions as defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied. In order to support comparative assertions, this EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines, use the same sub-category PCR where applicable, include all relevant information modules, be limited to EPDs applying a functional unit, and be based on equivalent scenarios with respect to the context of construction works. Some LCA impact categories and inventory items are still under development and can have high levels of uncertainty. To promote uniform guidance on the data collection, calculation, and reporting of results, the ACLCA methodology (ACLCA 2019) was used.

Rating systems

The intent is to reward project teams for selecting products from manufacturers who have verified improved life-cycle environmental performance.

LEED BD+C: New Construction | v4.1 - LEED v4.1

Building product disclosure and optimization

Environmental product declarations

○ Industry-wide (generic) EPD	1 product
✔ Product-specific Type III EPD	1.5 products

Green Globes for New Construction and Sustainable Interiors

Materials and resources

- ✔ NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
- ✔ NC 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs

BREEAM New Construction 2018

Mat 02 - Environmental impacts from construction products

Environmental Product Declarations (EPD)

○ Industry-average EPD	.5 points
○ Multi-product specific EPD	.75 points
✔ Product-specific EPD	1 point

VERIFICATION	LCA
3rd-party reviewed	✔
	Transparency Report (EPD)
3rd-party verified	✔

Validity: 12/09/25 – 12/08/30
SM-DBC – 20251209 – 001

This environmental product declaration (EPD) was externally verified by Harmony Environmental, LLC according to ISO 21930:2017; SM Part A; SM Part B for Prefabricated Exterior Wall Panel Assemblies; and ISO 14025:2006.

In accordance with ISO 14044 and the reference PCR, this life cycle assessment was conducted by Sustainable Minds and reviewed by Harmony Environmental, LLC.

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Harmony Environmental, LLC
Management • Analysis • Communication
Beyond Sustainability, Striving for Harmony

SUMMARY

Reference PCR
SM Part B: Prefabricated Exterior Wall Panel Assemblies, 2025

Regions; system boundaries
North America; Cradle-to-gate with options

Declared unit
An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building, including all fasteners, clips, brackets, sealants, gaskets, and adhesives required to provide the above function.

LCIA methodology; LCA software; LCI databases
TRACI 2.2; SimaPro Craft 10.2; ecoinvent v3.11, Industry data 2.0, and US-EI 2.2

Public LCA
LCA of X-Series: Panelized Exterior Wall Systems

Digital Building Components
624 N 44th Ave
Phoenix, AZ 85043
https://www.digitalbuilding.com
602-283-4462

Contact us

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EPD additional content

X-Series: Panelized Exterior Wall Systems

X-Series EIFS | X-Series MCM | EPD additional content

Data

Background This product-specific plant-specific declarations was created by collecting production data from the DBC facility in Phoenix, AZ. All unit processes were modeled using primary data. Secondary data sources include those available in ecoinvent v3.11, Industry data 2.0, and US-EI 2.2 databases. Literature data was used to fill any data gaps to complete the inventory.

Allocation Primary manufacturing data for X-Series EIFS and MCM systems were collected separately for their respective production periods. Allocation of manufacturing resources was performed proportionally to the total square footage produced for each wall system type. Square footage was selected as the allocation metric because it best represents manufacturing effort, capturing material throughput and processing time.

While some recycled materials are used in the upstream production of components and for product packaging, there are no recycled materials used within the DBC facility. The recycled materials come burden free to the product system. There were no co-products manufactured. The allocation procedures used in background data sets were accepted without modification.

Cut-off criteria for including mass and energy flows are set at 1% of renewable primary energy use, 1% of nonrenewable primary energy use, 1% of the total mass input for a unit process, and 1% of environmental impacts. The total of excluded input flows per module shall not exceed 5% for energy, mass, or environmental impacts. An exception is made for substances with hazardous or toxic properties, which must be reported even if they fall below the 1% mass threshold. No known flows are deliberately excluded from this declaration, and no substances considered to be hazardous or toxic according to the TRI or local regulations are present in the products. Therefore, these criteria have been met. Biogenic carbon is included in the reported results.

Quality

Inventory data quality is judged by its precision (measured, calculated, or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied on a study serving as a data source), and representativeness (geographical, temporal, and technological).

Sustainable Minds worked with the DBC team to obtain a comprehensive set of primary data associated with the manufacturing processes and supply chain. For purchased components, data was obtained from existing EPDs wherever possible, providing transparent, product-specific environmental information. Where suitable EPDs were not available, assumptions for upstream processing were developed using inputs from DBC, supplemented with secondary resources such as published product documentations, publicly available technical specifications, and relevant industry reports. The product system was checked for mass balance and completeness of the inventory. Capital goods were excluded since they are assumed not to significantly affect the conclusions of the LCA. Otherwise, no data were knowingly omitted. The inventory was considered complete based on our understanding of the manufacturing site, supply chain, and a review with key stakeholders on the DBC team.

Primary data were collected with a similar level of detail, while background data were sourced primarily from the ecoinvent database, and other databases were used if data were not available in ecoinvent or the data set was judged to be more representative. Where country-specific data were unavailable, global or rest-of-world averages were used as proxies. Other methodological choices were made consistently throughout the model.

Upstream EPDs used as data sources

- Box stud insulation: Owens Corning EPD for Thermafiber® Mineral Wool
- U channel: CEMCO EPD for Cold formed steel framing and accessory products
- Gypsum sheathing: Georgia-Pacific Gypsum EPD for 5/8" DensGlass® Fireguard® Sheathing Gypsum Panel
- Diverter track: ClarkDietrich EPD for HDS® Framing System
- Insulfoam: EPS Industry Alliance EPD for EPS Thermal Insulation
- Cement: Salt River Materials Group EPD for Portland Cement
- Z girt: Advanced Architectural Products EPD for GREENGirt
- MCM panel: Alpolic EPD for Metal Composite Panel

Electricity data sets used for manufacturing

- Grid electricity: Electricity mix, eGrid subregion, AZNM/US U
- Solar electricity: Electricity, production mix photovoltaic, at plant/US US-EI U

Scenarios and additional technical information

Major assumptions and limitations:

- Primary data were modeled based on information provided by DBC for specific projects under consideration. However, upstream supply chain data are subject to variability, which may impact the accuracy of the results.
- For upstream components with EPDs, only material compositions were used. LCIA results were not incorporated due to methodological differences. Upstream processes were modeled with secondary data, adjusted for consistency. Results may have differed if primary facility data were available.
- For upstream components without EPDs, material compositions were based on proxies (e.g., similar EPDs, SDSs), with upstream processes modeled from secondary data sets. Results may have differed if actual upstream facility data had been collected.
- For manufacturing facility waste, granular data on waste streams was not available, and all waste was conservatively assumed to be landfilled.
- Generic data sets were used for material inputs, transportation, and waste processing, which are considered to be of good quality. However, actual impacts from material suppliers, transport carriers, and local waste processing may vary, potentially affecting the accuracy of the results.
- No renewable certificates or purchased CO_2 offsets were included.

Major system boundary exclusions:

- Construction of major capital equipment
- Manufacturing, maintenance, and operation of support equipment
- Human labor and employee transport
- Manufacture and transport of packaging materials not associated with the final product
- Disposal of packaging materials not associated with the final product
- Manufacturing facility air conditioning
- Product use

Flow diagram

Data sets contributing 10% or more to any environmental impact category

Data set name	Database name and version	Software type and version	Geography	Reference year	Data set allocation
Steel cold rolled coil {GLO} | blast furnace route and electric arc furnace route | production mix, at plant | 1kg, typical thickness between 0.15 - 3 mm. typical width between 600 - 2100 mm | LCI result	Industry data 2.0	SimaPro Craft 10.2	Global	2021	System expansion
Transport, freight, lorry, 16-32 metric ton, diesel, EURO 6 {RoW}| market for transport, freight, lorry, 16-32 metric ton, diesel, EURO 6 | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2014	Cut-off
Glass wool mat {RoW}| glass wool mat production | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2024	Cut-off
Fibre, polyester {GLO}| market for fibre, polyester | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Global	2018	Cut-off
Gypsum plasterboard {RoW}| gypsum plasterboard production | Cut-off, U (manually updated to match upstream EPD)	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2019	Cut-off
Stone wool {RoW}| stone wool production | Cut-off, U (manually updated to match upstream EPD)	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2024	Cut-off
Steel, low-alloyed {GLO}| market for steel, low-alloyed | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Global	2020	Cut-off
Municipal solid waste {RoW}| treatment of municipal solid waste, sanitary landfill | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2023	Cut-off
Inert waste {RoW}| treatment of inert waste, sanitary landfill | Cut-off, U	ecoinvent v3.11	SimaPro Craft 10.2	Rest of world	2024	Cut-off

X-Series EIFS: LCIA results, resource use, output and waste flows, and carbon emissions & removals per declared unit

Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
Life cycle impact assessment results									
Ozone depletion	kg CFC-11 eq	9.56E-05	3.30E-06	3.03E-06	MND	0	8.64E-07	0	3.30E-07
Global warming	kg CO2 eq	2.52E+03	2.41E+02	2.05E+02	MND	0	5.39E+01	0	1.20E+01
Smog	kg O3 eq	1.08E+02	4.79E+00	1.28E+01	MND	0	8.06E+00	0	2.19E+00
Acidification	kg SO2 eq	8.34E+00	3.34E-01	6.93E-01	MND	0	2.61E-01	0	1.19E-01
Carcinogenics	CTUh	3.73E-04	6.21E-06	5.84E-05	MND	0	9.40E-08	0	2.79E-06
Non carcinogenics	CTUh	6.18E-04	3.88E-05	4.99E-05	MND	0	2.56E-06	0	1.56E-04
Respiratory effects	kg PM2.5 eq	1.21E+00	7.42E-02	1.34E-01	MND	0	3.28E-02	0	1.41E-02
Ecotoxicity	CTUe	2.93E+04	8.83E+02	2.87E+03	MND	0	1.33E+01	0	5.31E+03
Freshwater eutrophication	kg P eq	3.44E-01	1.01E-02	5.33E-02	MND	0	1.91E-04	0	1.32E-02
Marine eutrophication	kg N eq	9.95E-01	4.17E-02	9.20E-02	MND	0	6.75E-02	0	2.03E-02
Resource use indicators									
Renewable primary energy used as energy carrier (fuel)	MJ, LHV	8.54E+03	6.31E+00	1.28E+02	MND	0	1.29E+00	0	2.23E+00
Renewable primary resources with energy content used as material	MJ, LHV	4.24E+00	0	0	MND	0	0	0	0
Total use of renewable primary resources with energy content	MJ, LHV	8.54E+03	6.31E+00	1.28E+02	MND	0	1.29E+00	0	2.23E+00
Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	3.41E+04	3.19E+03	2.53E+03	MND	0	7.04E+02	0	2.85E+02
Non-renewable primary resources with energy content used as material	MJ, LHV	2.34E+03	0	5.88E+02	MND	0	0	0	0
Total use of non-renewable primary resources with energy content	MJ, LHV	3.64E+04	3.19E+03	3.12E+03	MND	0	7.04E+02	0	2.85E+02
Secondary materials	kg	4.23E+00	0	0	MND	0	0	0	0
Renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Non-renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Recovered energy	MJ, LHV	0	0	0	MND	0	0	0	0
Use of net fresh water resources	m3	3.55E+03	2.93E+01	4.71E+02	MND	0	5.33E+00	0	1.50E+01
Abiotic depletion potential for fossil resources	MJ, LHV	3.42E+04	3.18E+03	3.00E+03	MND	0	7.02E+02	0	2.83E+02
Output flows and waste category indicators									
Hazardous waste disposed	kg	1.29E+00	3.31E-02	1.45E-01	MND	0	5.20E-03	0	5.97E-02
Non-hazardous waste disposed	kg	1.71E+02	2.64E-01	1.28E+01	MND	0	2.03E-02	0	1.26E+03
High-level radioactive waste, conditioned, to final repository	kg	6.20E-03	4.38E-05	4.92E-04	MND	0	9.08E-06	0	1.10E-05
Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	1.48E-02	9.20E-05	1.24E-03	MND	0	1.95E-05	0	2.62E-05
Components for re-use	kg	0	0	2.23E+02	MND	0	0	0	0
Materials for recycling	kg	1.58E+01	0	0	MND	0	0	0	0
Materials for energy recovery	kg	2.19E-07	0	2.50E+00	MND	0	0	0	0
Exported energy	MJ, LHV	0	0	0	MND	0	0	0	0
Carbon emissions and removals									
Biogenic Carbon Removal from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Removal from Packaging	kg CO2	-3.49E+02	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Packaging	kg CO2	1.74E-01	0	3.49E+02	MND	0	0	0	0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0
Calcination Carbon Emissions	kg CO2	6.39E-01	0	0	MND	0	0	0	0
Carbonation Carbon Removals	kg CO2	0	0	0	MND	0	0	0	0
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0

X-Series EIFS (with openings): LCIA results, resource use, output and waste flows, and carbon emissions & removals per declared unit

Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
Life cycle impact assessment results									
Ozone depletion	kg CFC-11 eq	8.77E-05	3.23E-06	3.39E-06	MND	0	8.42E-07	0	3.21E-07
Global warming	kg CO2 eq	2.59E+03	2.35E+02	2.30E+02	MND	0	5.25E+01	0	1.16E+01
Smog	kg O3 eq	1.11E+02	4.69E+00	1.38E+01	MND	0	7.85E+00	0	2.14E+00
Acidification	kg SO2 eq	8.47E+00	3.27E-01	7.62E-01	MND	0	2.54E-01	0	1.15E-01
Carcinogenics	CTUh	9.07E-04	6.07E-06	6.62E-05	MND	0	9.15E-08	0	2.94E-06
Non carcinogenics	CTUh	8.37E-04	3.79E-05	5.65E-05	MND	0	2.49E-06	0	1.49E-04
Respiratory effects	kg PM2.5 eq	1.33E+00	7.26E-02	1.49E-01	MND	0	3.19E-02	0	1.36E-02
Ecotoxicity	CTUe	4.35E+04	8.64E+02	3.25E+03	MND	0	1.30E+01	0	5.08E+03
Freshwater eutrophication	kg P eq	3.81E-01	9.85E-03	6.04E-02	MND	0	1.86E-04	0	1.24E-02
Marine eutrophication	kg N eq	1.03E+00	4.08E-02	9.79E-02	MND	0	6.58E-02	0	1.96E-02
Resource use indicators									
Renewable primary energy used as energy carrier (fuel)	MJ, LHV	8.79E+03	6.18E+00	1.45E+02	MND	0	1.26E+00	0	2.17E+00
Renewable primary resources with energy content used as material	MJ, LHV	3.74E+00	0	0	MND	0	0	0	0
Total use of renewable primary resources with energy content	MJ, LHV	8.79E+03	6.18E+00	1.45E+02	MND	0	1.26E+00	0	2.17E+00
Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	3.47E+04	3.12E+03	2.83E+03	MND	0	6.86E+02	0	2.78E+02
Non-renewable primary resources with energy content used as material	MJ, LHV	2.07E+03	0	6.66E+02	MND	0	0	0	0
Total use of non-renewable primary resources with energy content	MJ, LHV	3.68E+04	3.12E+03	3.49E+03	MND	0	6.86E+02	0	2.78E+02
Secondary materials	kg	3.43E+01	0	0	MND	0	0	0	0
Renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Non-renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Recovered energy	MJ, LHV	0	0	0	MND	0	0	0	0
Use of net fresh water resources	m3	2.94E+03	2.00E+01	3.92E+02	MND	0	4.17E+00	0	7.63E+00
Abiotic depletion potential for fossil resources	MJ, LHV	3.44E+04	3.11E+03	3.36E+03	MND	0	6.84E+02	0	2.75E+02
Output flows and waste category indicators									
Hazardous waste disposed	kg	1.62E+00	3.24E-02	1.64E-01	MND	0	5.07E-03	0	5.76E-02
Non-hazardous waste disposed	kg	1.89E+02	2.58E-01	1.45E+01	MND	0	1.97E-02	0	1.23E+03
High-level radioactive waste, conditioned, to final repository	kg	6.77E-03	4.28E-05	5.58E-04	MND	0	8.84E-06	0	1.07E-05
Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	1.60E-02	9.00E-05	1.40E-03	MND	0	1.90E-05	0	2.56E-05
Components for re-use	kg	0.00E+00	0	2.23E+02	MND	0	0	0	0
Materials for recycling	kg	1.40E+01	0	0	MND	0	0	0	0
Materials for energy recovery	kg	1.93E-07	0	2.50E+00	MND	0	0	0	0
Exported energy	MJ, LHV	0	0	0	MND	0	0	0	0
Carbon emissions and removals									
Biogenic Carbon Removal from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Removal from Packaging	kg CO2	-3.49E+02	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Packaging	kg CO2	1.54E-01	0	3.49E+02	MND	0	0	0	0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0
Calcination Carbon Emissions	kg CO2	5.63E-01	0	0	MND	0	0	0	0
Carbonation Carbon Removals	kg CO2	0	0	0	MND	0	0	0	0
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0

X-Series MCM: LCIA results, resource use, output and waste flows, and carbon emissions & removals per declared unit

Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
Life cycle impact assessment results									
Ozone depletion	kg CFC-11 eq	4.97E-05	6.56E-06	3.48E-06	MND	0	1.26E-06	0	4.81E-07
Global warming	kg CO2 eq	3.46E+03	4.78E+02	2.37E+02	MND	0	7.85E+01	0	1.72E+01
Smog	kg O3 eq	1.43E+02	9.51E+00	1.71E+01	MND	0	1.17E+01	0	3.20E+00
Acidification	kg SO2 eq	1.21E+01	6.63E-01	8.38E-01	MND	0	3.80E-01	0	1.73E-01
Carcinogenics	CTUh	1.32E-03	1.23E-05	5.89E-05	MND	0	1.37E-07	0	4.29E-06
Non carcinogenics	CTUh	1.15E-03	7.70E-05	5.37E-05	MND	0	3.73E-06	0	2.22E-04
Respiratory effects	kg PM2.5 eq	1.82E+00	1.47E-01	1.56E-01	MND	0	4.78E-02	0	2.04E-02
Ecotoxicity	CTUe	6.46E+04	1.75E+03	3.06E+03	MND	0	1.94E+01	0	7.54E+03
Freshwater eutrophication	kg P eq	5.28E-01	2.00E-02	5.81E-02	MND	0	2.78E-04	0	1.37E-02
Marine eutrophication	kg N eq	1.50E+00	8.27E-02	1.28E-01	MND	0	9.83E-02	0	2.70E-02
Resource use indicators									
Renewable primary energy used as energy carrier (fuel)	MJ, LHV	8.27E+03	1.25E+01	1.29E+02	MND	0	1.88E+00	0	3.25E+00
Renewable primary resources with energy content used as material	MJ, LHV	1.76E+02	0	0	MND	0	0	0	0
Total use of renewable primary resources with energy content	MJ, LHV	8.45E+03	1.25E+01	1.29E+02	MND	0	1.88E+00	0	3.25E+00
Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	4.17E+04	6.33E+03	2.93E+03	MND	0	1.03E+03	0	4.15E+02
Non-renewable primary resources with energy content used as material	MJ, LHV	3.36E+03	0	5.88E+02	MND	0	0	0	0
Total use of non-renewable primary resources with energy content	MJ, LHV	4.50E+04	6.33E+03	3.52E+03	MND	0	1.03E+03	0	4.15E+02
Secondary materials	kg	7.39E+02	0	0	MND	0	0	0	0
Renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Non-renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Recovered energy	MJ, LHV	0	0	0	MND	0	0	0	0
Use of net fresh water resources	m3	3.68E+03	4.05E+01	3.49E+02	MND	0	6.23E+00	0	1.14E+01
Abiotic depletion potential for fossil resources	MJ, LHV	4.20E+04	6.32E+03	3.40E+03	MND	0	1.02E+03	0	4.12E+02
Output flows and waste category indicators									
Hazardous waste disposed	kg	1.54E+00	6.57E-02	1.55E-01	MND	0	7.58E-03	0	8.65E-02
Non-hazardous waste disposed	kg	3.05E+02	5.24E-01	1.42E+01	MND	0	2.95E-02	0	1.84E+03
High-level radioactive waste, conditioned, to final repository	kg	8.09E-03	8.69E-05	4.98E-04	MND	0	1.32E-05	0	1.60E-05
Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	1.98E-02	1.83E-04	1.25E-03	MND	0	2.84E-05	0	3.82E-05
Components for re-use	kg	6.48E+01	0	2.23E+02	MND	0	0	0	0
Materials for recycling	kg	2.44E+02	0	0	MND	0	0	0	0
Materials for energy recovery	kg	0	0	2.50E+00	MND	0	0	0	0
Exported energy	MJ, LHV	0	0	0	MND	0	0	0	0
Carbon emissions and removals									
Biogenic Carbon Removal from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Removal from Packaging	kg CO2	-3.57E+02	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Packaging	kg CO2	8.49E+00	0	3.49E+02	MND	0	0	0	0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0
Calcination Carbon Emissions	kg CO2	1.13E+01	0	0	MND	0	0	0	0
Carbonation Carbon Removals	kg CO2	0	0	0	MND	0	0	0	0
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0

X-Series MCM (with openings): LCIA results, resource use, output and waste flows, and carbon emissions & removals per declared unit

Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
Life cycle impact assessment results									
Ozone depletion	kg CFC-11 eq	4.61E-05	6.12E-06	3.89E-06	MND	0	1.16E-06	0	4.45E-07
Global warming	kg CO2 eq	3.44E+03	4.46E+02	2.63E+02	MND	0	7.26E+01	0	1.61E+01
Smog	kg O3 eq	1.41E+02	8.88E+00	1.83E+01	MND	0	1.09E+01	0	2.96E+00
Acidification	kg SO2 eq	1.17E+01	6.19E-01	9.22E-01	MND	0	3.51E-01	0	1.59E-01
Carcinogenics	CTUh	1.52E-03	1.15E-05	6.91E-05	MND	0	1.27E-07	0	4.22E-06
Non carcinogenics	CTUh	1.35E-03	7.18E-05	6.04E-05	MND	0	3.45E-06	0	2.04E-04
Respiratory effects	kg PM2.5 eq	1.84E+00	1.37E-01	1.74E-01	MND	0	4.42E-02	0	1.88E-02
Ecotoxicity	CTUe	7.60E+04	1.64E+03	3.37E+03	MND	0	1.80E+01	0	6.92E+03
Freshwater eutrophication	kg P eq	5.78E-01	1.86E-02	6.19E-02	MND	0	2.57E-04	0	1.63E-02
Marine eutrophication	kg N eq	1.45E+00	7.72E-02	1.35E-01	MND	0	9.10E-02	0	2.54E-02
Resource use indicators									
Renewable primary energy used as energy carrier (fuel)	MJ, LHV	8.33E+03	1.17E+01	1.51E+02	MND	0	1.74E+00	0	3.00E+00
Renewable primary resources with energy content used as material	MJ, LHV	1.49E+02	0	0	MND	0	0	0	0
Total use of renewable primary resources with energy content	MJ, LHV	8.48E+03	1.17E+01	1.51E+02	MND	0	1.74E+00	0	3.00E+00
Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	4.16E+04	5.91E+03	3.26E+03	MND	0	9.49E+02	0	3.84E+02
Non-renewable primary resources with energy content used as material	MJ, LHV	2.85E+03	0	6.92E+02	MND	0	0	0	0
Total use of non-renewable primary resources with energy content	MJ, LHV	4.44E+04	5.91E+03	3.95E+03	MND	0	9.49E+02	0	3.84E+02
Secondary materials	kg	6.67E+02	0.00E+00	0.00E+00	MND	0	0.00E+00	0	0.00E+00
Renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Non-renewable secondary fuels	MJ, LHV	0	0	0	MND	0	0	0	0
Recovered energy	MJ, LHV	0	0	0	MND	0	0	0	0
Use of net fresh water resources	m3	3.69E+03	3.78E+01	4.10E+02	MND	0	5.77E+00	0	1.06E+01
Abiotic depletion potential for fossil resources	MJ, LHV	4.13E+04	5.89E+03	3.82E+03	MND	0	9.46E+02	0	3.81E+02
Output flows and waste category indicators									
Hazardous waste disposed	kg	1.76E+00	6.13E-02	1.71E-01	MND	0	7.01E-03	0	7.93E-02
Non-hazardous waste disposed	kg	3.47E+02	4.89E-01	1.46E+01	MND	0	2.73E-02	0	1.70E+03
High-level radioactive waste, conditioned, to final repository	kg	8.53E-03	8.10E-05	5.84E-04	MND	0	1.22E-05	0	1.48E-05
Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	2.05E-02	1.70E-04	1.47E-03	MND	0	2.63E-05	0	3.54E-05
Components for re-use	kg	5.50E+01	0	2.23E+02	MND	0	0	0	0
Materials for recycling	kg	2.07E+02	0	0	MND	0	0	0	0
Materials for energy recovery	kg	0	0	2.50E+00	MND	0	0	0	0
Exported energy	MJ, LHV	0	0	0	MND	0	0	0	0
Carbon emissions and removals									
Biogenic Carbon Removal from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Product	kg CO2	0	0	0	MND	0	0	0	0
Biogenic Carbon Removal from Packaging	kg CO2	-3.56E+02	0	0	MND	0	0	0	0
Biogenic Carbon Emission from Packaging	kg CO2	7.22E+00	0	3.49E+02	MND	0	0	0	0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO2	0.00E+00	0	0	MND	0	0	0	0
Calcination Carbon Emissions	kg CO2	9.58E+00	0	0	MND	0	0	0	0
Carbonation Carbon Removals	kg CO2	0	0	0	MND	0	0	0	0
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes	kg CO2	0	0	0	MND	0	0	0	0

SM Transparency Report (EPD)™

VERIFICATION LCA
3rd-party reviewed ✓
Transparency Report (EPD)
3rd-party verified ✓

Validity: 12/09/25 – 12/08/30
SM-DBC – 20251209 – 001

This environmental product declaration (EPD) was externally verified by Harmony Environmental, LLC according to ISO 21930:2017; SM Part A; SM Part B for Prefabricated Exterior Wall Panel Assemblies; and ISO 14025:2006.

In accordance with ISO 14044 and the reference PCR, this life cycle assessment was conducted by Sustainable Minds and reviewed by Harmony Environmental, LLC.

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Beyond Sustainability, Striving for Harmony

SUMMARY
Reference PCR
SM Part B: Prefabricated Exterior Wall Panel Assemblies, 2025
Regions; system boundaries
North America; Cradle-to-gate with options
Declared unit
An installed prefabricated exterior wall panel assembly which covers 400 square feet of a building, including all fasteners, clips, brackets, sealants, gaskets, and adhesives required to provide the above function.
LCIA methodology; LCA software; LCI databases
TRACI 2.2; SimaPro Craft 10.2; ecoinvent v3.11, Industry data 2.0, and US-EI 2.2
Public LCA
LCA of X-Series: Panelized Exterior Wall Systems

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How we make it greener

X-Series: Panelized Exterior Wall Systems

Collapse all

RAW MATERIALS

- **DBC minimizes project deliveries and material waste by combining project-specific material selection with standard procurement**, which not only streamlines logistics but also reduces transportation impacts and on-site inefficiencies.
- **Excess materials are reused in other projects**, avoiding unnecessary scrap disposal and lowering the demand for virgin raw materials, thereby conserving resources and reducing the overall environmental footprint.



MANUFACTURING

- **DBC's panelized exterior wall systems are engineered to maximize thermal efficiency and potentially reduce structural impacts, optimize energy use, and minimize material waste, directly supporting sustainability goals.** This helps contribute to reduced carbon footprints, lower energy costs, and environmentally responsible construction.
- **The use of a custom framing modeling software eliminates material waste as the framing components are cut to accurate size.** DBC fabricates and procures materials to custom lengths, reducing waste significantly compared to traditional methods.
- **DBC facility is powered by on-site solar panels** which provides green energy and reduces the reliance on grid electricity.



INSTALLATION

- **Installation requires little to no design modifications** since the wall systems are prefabricated and tailored to each building's design. This minimizes installation-related energy use and prevents material waste from installation scraps. This also reduces on-site labor and errors.
- **Early coordination with the general contractors and subcontractors** enables a logistics plan that prioritizes single-touch handling, which significantly Lowes the risk of panel damage and the need for replacement materials. Strategic stacking and positioning of panels for transport also reduces unnecessary equipment use, fuel consumption, and job site congestion. This approach reduces material waste, and cuts emissions associated with rework and multi-handling.
- **Shipping materials are returned to the DBC facility for recycling and reuse**, eliminating the need to source new packaging materials for each project shipment.



ADDITIONAL ENVIRONMENTAL INFORMATION

- **Once installed, DBC's panelized exterior wall systems contribute to building sustainability by maximizing thermal efficiency and reducing energy consumption.** These systems are designed to last the expected lifetime of the building, ensuring long-term durability.

SM Transparency Report (EPD)™

VERIFICATION	LCA
3rd-party reviewed	✔
	Transparency Report (EPD)
3rd-party verified	✔

Validity: 12/09/25 – 12/08/30
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