

ENVIRONMENTAL PRODUCT DECLARATION

Econiq™ RE CENTRIA Formawall Insulated Metal Panels

In accordance with ISO 14025 and ISO 21930:2017

NUCOR INSULATED PANEL GROUP – A NUCOR COMPANY



Nucor Corporation (Nucor) is North America's most diversified steel and steel products company. They specialize in a wide array of products, such as Formawall insulated metal panel (IMP) produced by CENTRIA, a Nucor company, which is part of Nucor's Insulated Panel Group (IPG). Formawall IMP products for this EPD is manufactured at the Nucor IPG facility located in Sheridan, Arkansas, United States.

Nucor is North America's largest steel producer and recycler, turning approximately 20.6 million net tons of scrap steel in 2023 into new steel. Nucor uses Electric Arc Furnace (EAF) technology at each of its steel recycling facilities. Unlike traditional blast furnace steelmaking—which produces more than 70% of the world's steel using mined iron ore and metallurgical coal as feedstock—EAFs use post-consumer scrap as their major feedstock.

SmartEPD-2026-143-0954-01

Date of Issue

Jun 24, 2026

Expiration Date

Jun 24, 2031

Last Updated

Sep 05, 2026

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information



General Information

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Product Name:	Nucor Econiq™ RE CENTRIA Formawall Insulated Metal Panels
Declared Unit:	100 m2
Declaration Number:	SmartEPD-2026-143-0954-01
Date of Issue:	June 24, 2026
Expiration:	June 24, 2031
Last updated:	September 05, 2026
EPD Scope:	Cradle to gate A1 - A3
Market(s) of Applicability:	North America

General Organization Information

This environmental product declaration (EPD) represents Formawall insulated metal panel (IMP) produced by CENTRIA, a Nucor company, which is part of Nucor's Insulated Panel Group (IPG). Formawall insulated metal panels for this EPD are manufactured at the Nucor IPG facility located in Sheridan, AR, US.

CENTRIA is a recognized leader in the advancement of building cladding, panel, and facade technology, serving the architectural, commercial and industrial industries with energy efficient and cost-effective cladding and insulated metal wall and roof panels. Aware of the increasing interest in transparent reporting of products' environmental performance, CENTRIA seeks to demonstrate their sustainability leadership and leverage business value through evaluating the environmental profile of insulated metal panels (IMPs) and communicating the results via environmental product declarations (EPDs).

As a vertically integrated company, Nucor controls a large and growing part of its supply chain from scrap recycling to raw steelmaking to steel products and distribution. Nucor IMPs utilize steel sheets that are sourced from Nucor steel mills as well as external non-Nucor steel mills. All steel produced by Nucor is 100% recyclable at the end of its useful life.

For production of the raw steel used in Nucor's steel mills, Nucor uses scrap as its primary feedstock, which is largely provided by its wholly owned subsidiary, the David J. Joseph Company (DJJ). DJJ operates more than 60 scrap recycling facilities within close proximity to Nucor steel mills, processing approximately 5,000,000 tons of ferrous scrap annually and providing an abundant supply of scrap to the steel mills. An abundant and reliable supply of recycled scrap within close proximity gives Nucor's steel mills a logistics and economic advantage.

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

Limitations, Liability and Ownership

The environmental impact results of steel 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 steel 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. Environmental declarations from different programs (ISO 14025) may not be comparable.

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g., Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: Comparisons of the environmental performance of steel products using EPD information shall be based on the product's use and impacts at the construction works level, and therefore EPDs may not be used for comparability purposes when not considering the construction works energy use phase as instructed under this PCR. Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.

EPDs from different programs may not be comparable. Full conformance with a PCR for steel products allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category Part B PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment “Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report,” v4.0 (March 2022), in conformance with ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017). EPDs are only comparable if they comply with this document, use the same sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works.

This EPD's underlying LCA was conducted in conformance with the requirements outlined in the Product Category Rules (PCR) for Building-Related Products and Services in North America, Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL Environment, UL 10010, Version 4.0; and PCR Guidance for Building-Related Products and Services in North America, PCR Part B for Insulated Metal Panels, Metal Composite Panels, and Metal Cladding: Roof and Wall Panels - ULE 10010-5, 2nd edition. Note that the UL Environment PCRs do not contain a mechanism to include Renewable Energy Certificates (RECs) when reporting LCA inventory or impact assessment results in EPDs. This EPD acknowledges the conformance issue with the UL PCR requirements for publishing EPDs with the inclusion of RECs; however, the inclusion of RECs in this EPD was permitted by the program operator Smart EPD.

Reference Standards

Standard(s):	ISO 14025:2006 and ISO 21930:2017
Core PCR:	UL Part A PCR for Building-Related Products and Services v.4
	Date of issue: March 01, 2022
Sub-category PCR:	UL Part B: Insulated Metal Panels, Metal Composite Panels, and Metal Cladding v.2
	Date of issue: October 23, 2018
	Valid until: October 31, 2026
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:	🌐 Kathryn Connolly 🏢 Trinity Consultants, Inc. ✉ kconnolly@trinityconsultants.com	
EPD Program Operator:	🏢 Smart EPD ✉ info@smarteprd.com 🌐 www.smarteprd.com 📍 585 Grove St., Ste. 145, Herndon, VA 20170, USA	
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: 🌐 Brandie Sebastian ✉ brandie@bsebastianconsulting.com Independent external verification of EPD, according to ISO 14025 and reference PCR(s): 🌐 Brandie Sebastian ✉ brandie@bsebastianconsulting.com	External External

Product Information

Declared Unit:	100 m2
Mass:	1319 kg
Product Specificity:	✖ Product Average ✔ Product Specific

Nucor IPG facilities manufacture various thicknesses of panel product. The mass per declared unit of panel product varies with panel thickness and IPG facility. The mass per declared unit reported above is the largest mass of all thicknesses from all IPG facilities. A table showing the mass per declared unit by thickness by facility is presented later in this EPD in the "Impact Scaling Factors" section.

Product Description

CENTRIA insulated metal panels (IMPs) consist of polyisocyanurate (PIR) foam between two sheets of galvanized and/or stainless steel. Several configurations of IMPs exist depending on where and how they are used (e.g. building walls, roofs, cold storage, etc.) and the styling as desired by the architect. Additionally, IMPs can be manufactured either on a continuous or discontinuous manufacturing line. CENTRIA panels are comprised of an advanced PIR core that is injected between two pre-finished steel sheets, forming a single, all-in-one unit. The result is a highly thermal efficient insulated panel. Finished panels are mounted to the building's framework, outboard of the structural supports and provide continuous insulation with no thermal bridges for maximum thermal efficiency. CENTRIA panels meet or exceed code requirements for foam plastic insulation.

Information for CENTRIA Versawall panels was supplied by one (1) Nucor IPG facility located in Sheridan, AR, USA.

IMP are used for exterior wall and roof cladding systems as well as interior ceilings and wall partitions. They are installed in an array of industries including automotive, food production, EV battery plants, data centers, aviation, storage facilities, stadiums, healthcare, education, manufacturing, warehousing and more. IMPs are available in variety of configurations depending on the customer's requirements, including panel profile, thickness, module, paint system and color.

In addition, Nucor manufactures steel to various customer-specific standards. The IMP core thickness varies according to building site. Therefore, this EPD reports LCA results for each thickness separately.

CENTRIA's architectural insulated metal panels deliver the industry's best combination of aesthetics, performance, sustainability and value. These lightweight panels provide tremendous flexibility with long lengths, various finish options and superior weather resistance, as well as horizontal and vertical installation capability. These panels are the ideal product to create a modern aesthetic for buildings like healthcare, offices, industrial facilities, schools and shopping centers.

This EPD is for Econiq™ RE CENTRIA Formawall Insulated Metal Panels, meaning that it accounts for Renewable Energy Credits (RECs) used to balance the impacts associated with grid electricity use for production of the IMP product. The data represented in this EPD is for a limited production volume (1,000 square meters) in 2025. Moving forward, Nucor will complete an annual end of year review with Smart EPD of actual RECs purchased and retired over the previous calendar year and update the EPD as needed. The RECs will be purchased and retired during the same period as represented by the EPD.

Product Specifications

Product Classification Codes:	UNSPSC - 56101905
	Masterformat - 07 40 00
	Masterformat - 07 41 00
	Masterformat - 07 42 00
	Masterformat - 07 44 00
	Masterformat - 07 46 00
	EC3 - Cladding -> InsulatedWallPanels

Material Composition

Material/Component Category	1.5"	2"	2.5"	2.75"	3"	4"	5"	6"	7"	8"	Unit
Steel Sheet	N/A	85%	81%	N/A	78%	N/A	N/A	N/A	N/A	N/A	% by mass
PIR Foam Insulation	N/A	15%	19%	N/A	22%	N/A	N/A	N/A	N/A	N/A	% by mass

Packaging Material	Origin	kg Mass
Interleaf	None	3.1
Foam Sheet	None	4.7
Oriented Strandboard	None	149
Cardboard	None	24.9
Plastic Wrap	None	3.6

Packaging Material	Origin	kg Mass
Foam Feet	None	2.9
Front/End Cap	None	0.2

Biogenic Carbon Content	kg C per 100 m2
Biogenic carbon content in product	0
Biogenic carbon content in accompanying packaging	0

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

EPD Data Specificity

Primary Data Year:	2023
Manufacturing Specificity:	✗ Industry Average ✗ Manufacturer Average ✓ Facility Specific

Averaging:
The 2023 calendar year production data used in this EPD considers IMP produced by Nucor IPG during the year (12 consecutive months of averaged data as required for manufacturer-specific datasets). The product is manufactured at the following location:

- 1811 N. Rock Street, Sheridan, Arkansas, 72150

LCA Results are reported by IMP thickness. Additionally, a summary table of global warming potential results by IMP thickness is provided in a separate table.

The Nucor panel products contain sheets of galvanized and/or stainless steel. A weighted average calculation methodology was used to calculate LCA results for the galvanized and/or stainless steel sheets. Specifically, the environmental impacts of the galvanized steel and the stainless steel used at the facility during the production year are first summed together, then the total environmental impacts are divided by the total area of panel product produced at the facility during the production year (in m2) to calculate the weighted average environmental impacts per m2 of panel. This result is then normalized to 100 m2 of panel. This is repeated for each thickness at each facility.

System Boundary

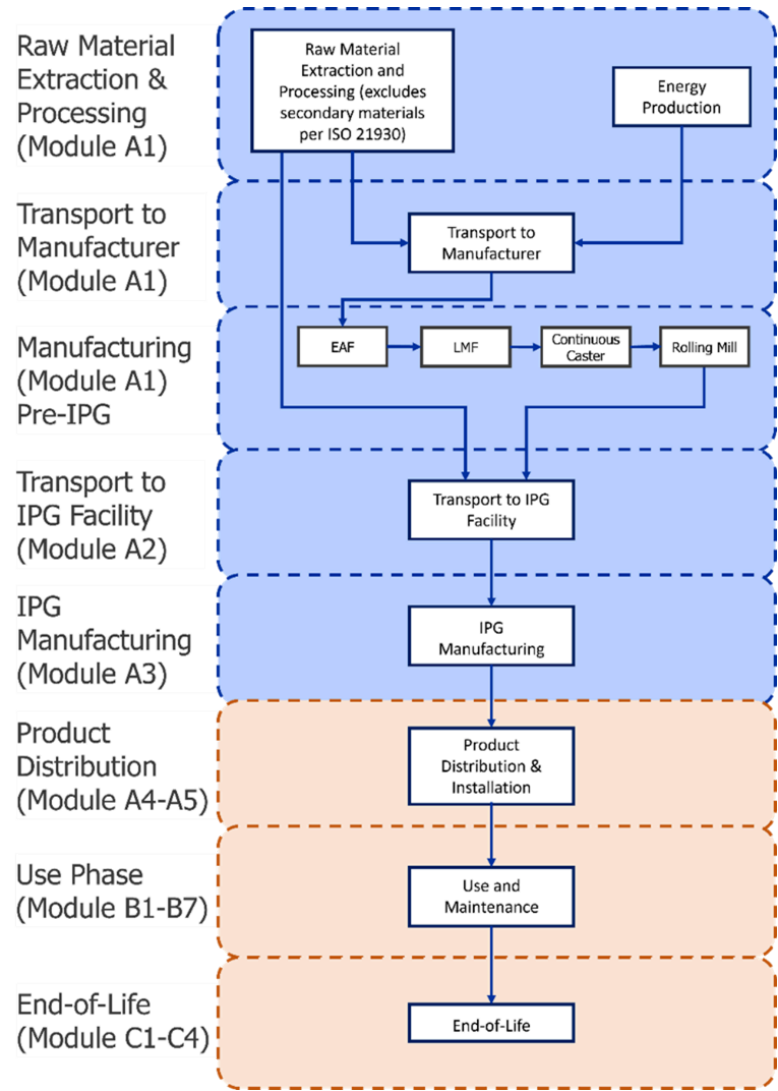
Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓

Construction	A4	Transport to site	ND
	A5	Assembly / Install	ND
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	ND
	C2	Transport	ND
	C3	Waste Processing	ND
	C4	Disposal	ND
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND

Note:

ND = Module not declared

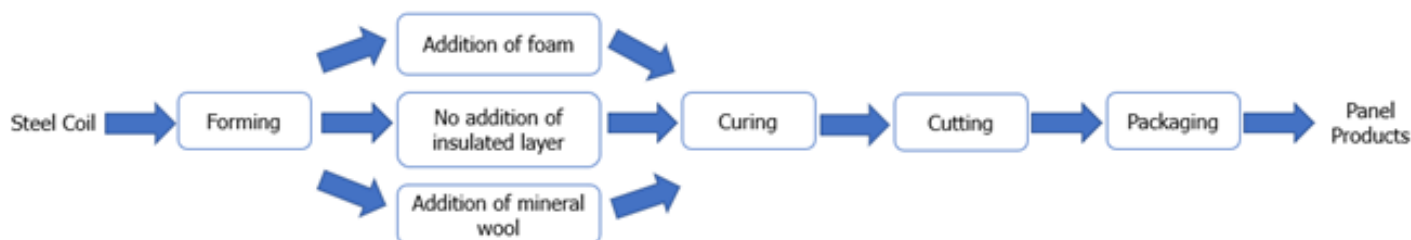
Product Composition Diagram



Plants

 Nucor Sheridan 1811 Rock Street, Sheridan, Arkansas 72150, USA

Product Flow Diagram



Nucor Sheridan IPG facility manufactures CENTRIA Formawall insulated metal panel product. Steel coils are received from other Nucor mills and external manufacturers, unraveled, and fed into the process. Then liquid isocyanate foam is injected between two (2) sheets of metal. The foam undergoes a chemical reaction which causes it to expand inside the cavity between the sheets, completely filling the space and bonding the PIR foam to the metal surfaces. A cyclopentane/isopentane blowing agent is used during the injection process to aid in the expansion of the foam. The life cycle assessment conducted for this EPD accounts for fugitive blowing agent emissions to atmosphere during manufacturing. Once the foam has been cured, panels are cut to length, packaged, and distributed to construction sites. This process allows the production of insulation panels in a wide range of sizes, styles, and colors to suit different applications.

Software And Database

LCA Software:

☰ Sphera LCA for Experts (formerly GaBi) v. 10.9

LCI Foreground Database(s):

☰ GaBi Professional Database v. 2024.2

LCI Background Database(s):

☰ GaBi Professional Database v. 2024.2

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

A variety of tests and checks were performed by the LCA practitioner throughout the project to ensure high quality of the completed LCA. Checks included an extensive review of project-specific LCA models as well as the background data used.

IMP production data has been collected by Nucor directly from the production sites and are average values for calendar year 2023 (12 consecutive months of averaged data as required for manufacturer-specific data sets). The data has been measured and verified internally. The data is assumed to be the most relevant according to current conditions and production practices. Based on availability of data, natural gas, and electricity usage for the operation of administrative offices was included in the system boundary.

Time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty have each been analyzed as part of this LCA. All inputs and data sources meet the requirements set forth in the PCR and there is no reason to believe that any of the employed material, data, or inputs are not representative of the product under study.

Per the ACLCA Guidance for Determining EPD Types and Calculating and Communicating Data Specificity Through the Supply Chain v1, this EPD is facility-specific and product-specific.

Life Cycle Module Description

The scope of the EPD is cradle-to-gate, including raw material extraction and processing, upstream transportation, and product manufacture (Modules A1, A2, and A3). The PCR considers installation, use, end-of-life, and recovery stages (Modules A4 through D) as optional. As such, this study excludes the optional stages.

Since this is a "cradle-to-gate" study, the products are not declared as fulfilling a building reference service life. This study also excludes construction of capital equipment, including tools used to produce, install and maintain the products; maintenance and operation of support equipment; human labor and commute; building energy consumption; and all other impacts associated with the use stage relative to energy use for the building in which the product is installed.

Per the PCR, this cradle-to-gate analysis provides information on the Product Stage of the steel product life cycle, including modules A1, A2, and A3. Product delivery, installation and use, and product disposal (modules A4 – A5, B1 – B7, C1 – C4, and D) have not been included, nor were the construction and maintenance of capital equipment (e.g., production equipment). Additionally, human labor and employee commute were not included in the analysis.

Processes considered for Modules A1-A3 are as follows:

- A1: Manufacture/Extraction of raw materials including Galvanized Steel Coil, Stainless Steel Coil, Polyester Polyols, Methylene Diphenyl Diisocyanate (MDI), Cyclopentane/Isopentane Blowing Agent, Catalysts, Sealants, and Adhesives.
- A2: Truck and Ship Transport of raw materials to manufacturing facility; Diesel and Electricity for Transport.
- A3: Production including: Generation of electricity used in manufacturing. Production of ancillary materials including Tap Water. Production of fuels including Propane. Waste generated in manufacturing and its transportation including Steel Scrap, Non-Hazardous Waste, Hazardous Waste, and Recycled Waste. Production of packaging. On-site fugitive emissions from blowing agent.

LCA Discussion

Allocation Procedure

No co-products are created during panel manufacturing and, therefore, no co-product allocation procedures are applied in this study.

Per ISO 21930 and the PCR, this is an attributional LCA and as such, no allocation using system expansion was performed. Allocation of background data (energy and materials) taken from the Managed LCA Content (formerly known as GaBi databases) is documented online at <https://sphera.com/life-cycle-assessment-lca-database/>. No allocation was conducted for recycling occurring at the facility, and there are no reuse or energy recovery operations occurring at Nucor IPG facilities.

Square meters of each thickness of Nucor panel produced is tracked at each facility. Metric tons of steel coil from each manufacturer is tracked by facility and by product thickness, therefore no allocation was required for the steel coil. For all other raw materials, fuel, electricity, water use, waste, etc. total usage was tracked by facility but not by product thickness. Therefore, usage was allocated based on the square meters of each Nucor panel thickness produced, except for the insulation chemicals for IMP. Thicker IMP requires more insulation chemicals, and therefore the insulation chemicals were allocated not only by square meters of each IMP thickness produced but also allocated by the IMP thickness itself, such that thicker IMP were allocated more insulation chemicals.

According to the 2022 ACLCA PCR Open Standard [1] the electricity is modeled with data that "most closely represents the renewable electricity generation from the REC". Thus, the CENTRIA Formawall Insulated Metal Panels product uses 100% wind electricity sourced from Electric Reliability Council of Texas, Inc. (ERCOT). Note that the same LCA model was used as for the traditional LCA, with the only change to methodology being that the data source and parameter input values for the power mix were updated to represent 100% electricity generated from wind in the most representative location.

[1] Available at <https://www.aclca.org/initiatives#PCR-Open-Standard>

Cut-off Procedure

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. In cases where no matching life cycle inventories were available to represent a flow, proxy data were applied based on conservative assumptions regarding environmental impacts. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No other known flows are deliberately excluded from this EPD.

The mass input of each omitted stream is less than 1% of the total mass input streams into the system and the cumulative mass input of all omitted streams is less than 5% of the total mass input streams. Therefore, no data gaps were allowed which were expected to significantly affect the outcome of the indicator results.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:	✓ Yes
Electricity Source:	Offsite
Renewable type(s):	Wind
Percent of EPD Owner's product-related electricity covered:	100 %
Commitment pledged for entire EPD validity period:	✓ Yes
Electricity accounting methodology:	Market-based

Results

Environmental Impact Assessment Results

IPCC AR5 GWP 100, TRACI 2.1, CML 2016 v4.7

per 100 m2 of product.

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

Sheridan 2-Inch Econiq™ RE CENTRIA Formawall Panels

Impact Category	Unit	Method	A1	A2	A3	A1 - A3
GWP-total	kg CO2 eq	IPCC AR5 GWP 100	3.14e+3	1.66e+2	3.50e+2	3.66e+3
ODP	kg CFC 11 eq	TRACI 2.1	2.14e-5	4.88e-13	2.36e-7	2.17e-5
AP	kg SO2 eq	TRACI 2.1	8.84e+0	7.96e-1	2.34e+0	1.20e+1
EP	kg N eq	TRACI 2.1	5.07e-1	6.89e-2	1.19e-1	6.95e-1
SFP	kg O3 eq	TRACI 2.1	1.28e+2	1.82e+1	1.77e+1	1.64e+2
ADP-fossil	MJ, LHV	CML 2016 v4.7	4.05e+4	2.17e+3	6.16e+3	4.88e+4
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.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Sheridan 2.5-Inch Econiq™ RE CENTRIA Formawall Panels

Impact Category	Unit	Method	A1	A2	A3	A1 - A3
GWP-total	kg CO2 eq	IPCC AR5 GWP 100	3.05e+3	1.57e+2	3.50e+2	3.55e+3
ODP	kg CFC 11 eq	TRACI 2.1	2.64e-5	4.63e-13	2.36e-7	2.66e-5
AP	kg SO2 eq	TRACI 2.1	8.73e+0	7.64e-1	2.34e+0	1.18e+1
EP	kg N eq	TRACI 2.1	5.09e-1	6.56e-2	1.19e-1	6.94e-1
SFP	kg O3 eq	TRACI 2.1	1.25e+2	1.74e+1	1.80e+1	1.60e+2
ADP-fossil	MJ, LHV	CML 2016 v4.7	4.13e+4	2.06e+3	6.16e+3	4.95e+4

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.

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Sheridan 3-Inch Econiq™ RE CENTRIA Formawall Panels

Impact Category	Unit	Method	A1	A2	A3	A1 - A3
GWP-total	kg CO2 eq	IPCC AR5 GWP 100	3.12e+3	1.57e+2	3.50e+2	3.63e+3
ODP	kg CFC 11 eq	TRACI 2.1	3.14e-5	4.63e-13	2.36e-7	3.16e-5
AP	kg SO2 eq	TRACI 2.1	9.08e+0	7.71e-1	2.34e+0	1.22e+1
EP	kg N eq	TRACI 2.1	5.35e-1	6.58e-2	1.19e-1	7.20e-1
SFP	kg O3 eq	TRACI 2.1	1.29e+2	1.75e+1	1.83e+1	1.65e+2
ADP-fossil	MJ, LHV	CML 2016 v4.7	4.39e+4	2.06e+3	6.16e+3	5.21e+4

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 = Particulate 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.

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Resource Use Indicator

per 100 m2 of product.

Sheridan 2-Inch Econiq™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
RPRE	MJ	2.60e+3	9.63e+1	1.06e+4	1.33e+4
RPRM	MJ	0	ND	ND	0
NRPRE	MJ	4.48e+4	2.19e+3	6.35e+3	5.34e+4
NRPRM	MJ	3.01e+2	ND	ND	3.01e+2
SM	kg	6.11e+2	ND	0	6.11e+2
RSF	MJ	ND	ND	0	0
NRSF	MJ	ND	ND	0	0
FW	m3	1.28e+2	3.20e-1	1.16e+0	1.30e+2
RE	MJ	ND	ND	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, NRPT 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.

Sheridan 2.5-Inch Econiq™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
RPRE	MJ	2.48e+3	9.12e+1	1.06e+4	1.32e+4
RPRM	MJ	0	ND	ND	0
NRPRE	MJ	4.55e+4	2.08e+3	6.35e+3	5.39e+4
NRPRM	MJ	2.75e+2	ND	ND	2.75e+2
SM	kg	5.59e+2	ND	0	5.59e+2
RSF	MJ	ND	ND	0	0
NRSF	MJ	ND	ND	0	0
FW	m3	1.18e+2	3.03e-1	1.16e+0	1.20e+2
RE	MJ	ND	ND	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, NRPT 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.

Sheridan 3-Inch Econig™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
RPRE	MJ	2.51e+3	9.11e+1	1.06e+4	1.32e+4
RPRM	MJ	0	ND	ND	0
NRPRE	MJ	4.82e+4	2.08e+3	6.35e+3	5.66e+4
NRPRM	MJ	2.69e+2	ND	ND	2.69e+2
SM	kg	5.47e+2	ND	0	5.47e+2
RSF	MJ	ND	ND	0	0
NRSF	MJ	ND	ND	0	0
FW	m3	1.17e+2	3.02e-1	1.16e+0	1.18e+2
RE	MJ	ND	ND	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, NRPT 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.

Waste and Output Flow Indicators

per 100 m2 of product.

Sheridan 2-Inch Econiq™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
HWD	kg	1.74e+0	ND	2.09e+0	3.83e+0
NHWD	kg	2.28e+1	ND	3.65e+1	5.93e+1
HLRW	kg	1.15e-3	7.82e-6	3.37e-5	1.19e-3
ILLRW	kg	8.94e-1	6.59e-3	3.01e-2	9.30e-1
CRU	kg	ND	ND	ND	ND
MR	kg	3.53e+1	ND	1.64e+2	1.99e+2
MER	kg	ND	ND	0	0
EE	MJ, LHV	ND	ND	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.

Sheridan 2.5-Inch Econiq™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
HWD	kg	1.60e+0	ND	2.09e+0	3.68e+0
NHWD	kg	2.08e+1	ND	3.65e+1	5.74e+1
HLRW	kg	1.16e-3	7.41e-6	3.37e-5	1.20e-3
ILLRW	kg	8.85e-1	6.25e-3	3.01e-2	9.21e-1
CRU	kg	ND	ND	ND	ND
MR	kg	3.23e+1	ND	1.64e+2	1.96e+2
MER	kg	ND	ND	0	0
EE	MJ, LHV	ND	ND	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.

Sheridan 3-Inch Econiq™ RE CENTRIA Formawall Panels

Indicator	Unit	A1	A2	A3	A1 - A3
HWD	kg	1.56e+0	ND	2.09e+0	3.65e+0
NHWD	kg	2.04e+1	ND	3.65e+1	5.69e+1
HLRW	kg	1.22e-3	7.42e-6	3.37e-5	1.26e-3
ILLRW	kg	9.21e-1	6.25e-3	3.01e-2	9.57e-1
CRU	kg	ND	ND	ND	ND
MR	kg	3.16e+1	ND	1.64e+2	1.95e+2
MER	kg	ND	ND	0	0
EE	MJ, LHV	ND	ND	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.

Scaling Factors

Declared Unit for IMP Product - Sheridan

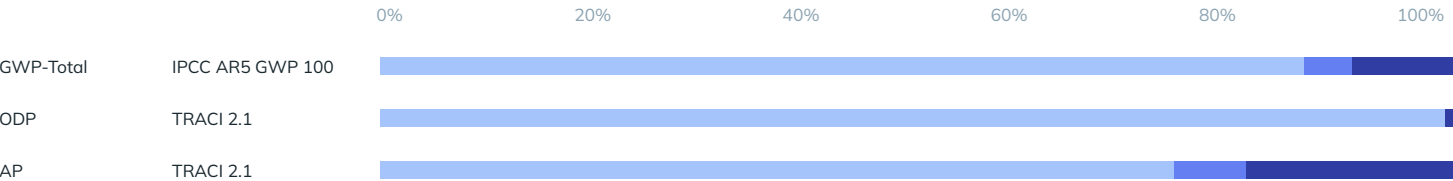
NAME	2"	2.5"	3"	UNIT
Declared Unit	100	100	100	m2
Mass per 100 m2	1319	1261	1289	kg
Conversion Factor to 1 kg	7.58E-04	7.93E-04	7.76E-04	-

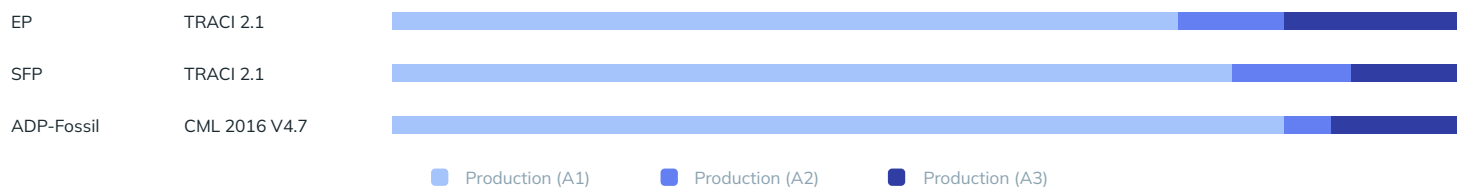
Interpretation

In order to facilitate a more detailed understanding of the contributions from different processes, an analysis is included in this section which details the contribution from Modules A1, A2, and A3.

The impact assessment results indicate that Module A1, i.e. Raw Materials, is the largest contributor to potential environmental impact categories for global warming potential, ozone depletion potential, acidification potential, eutrophication potential, smog formation potential, and abiotic resource depletion potential of fossil energy resources. Module A2, i.e. transport to IPG, and Module A3, i.e. manufacturing at the IPG facility, are not the most significant contributor to any impact category.

The use of renewable energy through EACs resulted in a 10.0-10.3% reduction in the A1-A3 GWP impacts.





Additional Environmental Information

Sustainability: Nucor is dedicated to engineering a wide range of steel product lines, prioritizing safety, and sustainability throughout the manufacturing process. For more than 50 years, Nucor has been making steel using an electric arc furnace (EAF) that melts recycled scrap and turns it into new steel. EAFs are far less energy intensive and more energy efficient than traditional blast furnace steel making.

Currently, Nucor accounts for more than 25% of the United States' steel production, but only accounts for 8% of the domestic steel industry's greenhouse gas emissions. Nucor is also committing to a 35% combined reduction in its steel mill Scope 1 and Scope 2 greenhouse gas intensity by 2030, measured against a 2015 baseline.

In November 2022, Nucor, along with five other international steel manufacturers, formed a new coalition to establish and promote a global steel standard that leads toward a cleaner, lower GHG future. This coalition, named the Global Steel Climate Council (GSCC), is a nonprofit association dedicated to sharing best practices, establishing standards, and advocating for carbon emissions reductions by members of the steel industry.

The specific purposes of the GSCC include supporting technology-agnostic reduction methods that reduce greenhouse gas emissions from the global steel industry; creating a system boundary that includes Scope 1, 2, and 3 emissions; and adopting a science-based glidepath to achieve a 1.5 degrees Celsius (1.5°C) scenario by 2050.

In alignment with the Global Steel Climate Council's (GSCC) "Steel Climate Standard" and the International Energy Agency's Net Zero by 2050: A Roadmap for the Global Energy Sector, Nucor is steadfast in its commitment to achieving a net-zero greenhouse gas (GHG) target by 2050. This ambitious target, defined by science-based criteria, aligns with the Paris Agreement's efforts to limit global temperature rise to less than 1.5 degrees Celsius (1.5°C) above pre-industrial levels.

Recycled Materials Content: Nucor proudly uses recycled scrap to make high-quality steel with low emissions, using one of the cleanest and most energy efficient steel-making processes available. Steel is unique in its ability to be repeatedly recycled and reused without loss of quality. Nationwide, in 2023 Nucor steel products were made from an average of 77.0% recycled content, with some products containing almost 100% recycled content.

Globally, only 26.3% of the more than 2 billion net tons of steel produced in 2020 was made by recycling scrap in EAFs. Scrap inputs for the total crude steel production globally have remained at around 35% since 2013.

Waste and Water Recycling: Nucor's EAFs emit small amounts of particulate matter and Nucor recycles 99% of the EAF dust it collects in its baghouses. Nucor also recognizes that water is a critical natural resource and is essential to Nucor and the communities in which it operates. Nucor has worked extensively to improve water use efficiency in its processes.

Nucor also participates in the Network for Business Innovation and Sustainability (NBIS) By-Product Synergy Group. This NBIS group brings together environmental experts from a wide variety of industries to allow them to compare waste streams and find ways to divert materials from landfills.

Clean Energy: Nucor is increasing its utilization of renewable energy and supporting the continued growth of clean power generation in the United States. In addition, in November 2020 and March 2021, Nucor entered two Virtual Power Purchase Agreements (VPPAs) which support the development of more than 350 megawatts of new clean energy infrastructure.

The VPPAs enable the construction of 250MW of new solar energy and 100MW of new wind energy in Texas. Together, these two projects are equal to the electricity usage of nearly 70,000 Texas homes and have the potential to supply renewable power to the regional electric grid 24-hours a day.

Environmental Training: In 2015, Nucor established Nucor Environmental University (NEU), an online training platform for Nucor teammates with environmental responsibilities and others looking to expand their involvement with the environmental team. From the beginning, Nucor designed this program to help teammates develop a thorough and meaningful understanding of environmental compliance.

NEU has had over 1,000 active users since its inception and Nucor teammates have completed at least 10,000 environmental training courses, passed over 6,600 training exams, and helped develop dozens of courses. Because of NEU, Nucor’s teammates are better prepared to meet the demands of environmental compliance and achieve Nucor’s goal of being a sustainable organization.

Additional Information: Refer to Nucor’s website for additional information: <https://nucor.com/company>.

Further Information

GWP100 results by thickness, per 100 square meters of IMP (kg CO2 eq.)

Facility	2"	2.5"	3"
Sheridan	3656	3553	3631

Estimates and Assumptions

The underlying study was conducted in accordance with the PCR. While this EPD has been developed by industry experts to best represent the product system, real life environmental impacts of fabricated steel products may extend beyond those defined in this document.

All the raw materials and energy inputs have been modeled using processes and flows that closely follow actual production data on raw materials and processes. All the reported material and energy flows have been accounted for.

Raw material procurement and upstream transport to Nucor IPG Facilities is included for all raw materials above the cut-off thresholds. For each raw material, a representative dataset was selected to represent the geographic region of origin. Distances by truck and rail were estimated using Google Maps. Distances by ship were estimated using ports.com [1]. In some cases, Nucor IPG facilities sourced a single raw material from multiple distributors, in which case the transport from every distributor was modeled. Only travel to the facility is accounted for (i.e., return truck and rail trips are considered out of scope).

This study assumes that 5% of cyclopentane/isopentane blowing agent used in the IMP production process are emitted during manufacturing. However, actual blowing agent releases may vary and additional releases may take place during subsequent life cycle stages.

Regionally specific datasets, where available, were used to represent the manufacturing location’s energy consumption. Proxy datasets were used as needed for raw material inputs to address lack of data for a specific material or for a specific geographical region. These proxy datasets were chosen for their technological representation of the actual materials.

[1] <http://ports.com/sea-route/>

Biogenic Carbon and Land-Use Change

The production of IMP products at Nucor IPG facilities do not include significant sources of biogenic carbon or GHG emissions occurring as a result of land-use change. The biogenic carbon emissions and removals were determined to be negligible for both products; therefore, the biogenic carbon emissions are considered zero in this analysis. Similarly, GHG emissions occurring as a result of land-use change were determined to be negligible and land-use change

emissions considered zero in this analysis. The characterization method for GWP100 excludes both biogenic carbon and land-use change. Additional indicators on the uptake and emissions of CO₂ are not included or published in this EPD as they are not considered relevant.

Carbonation, Calcination, and Combustion of Waste

There is no carbonation, calcination or combustion of waste from renewable or non-renewable sources used in the production processes of IMP products and the scope of this analysis did not include use and end-of-life stages. Accordingly, the environmental impacts do not account for any environmental benefits attributed to carbonation, calcination or combustion of waste from renewable or non-renewable sources.

Material Composition

The two (2) exterior sheets of the IMP are comprised of 20, 22, 24, or 26 gauge hot-dipped galvanized and/or stainless steel. The insulated layer interior to the steel sheets is polyisocyanurate (PIR) foam that is manufactured from methylene diphenyl diisocyanate (MDI), polyester polyols, catalysts, sealants, adhesives, and a blowing agent comprised of a mixture of cyclopentane and isopentane.

Ancillary materials do not constitute any part of the final product. Exact specifications may be found by calling the division and asking for a specifications sheet. No substances required to be reported as hazardous are associated with the production of this product.

Steel is an alloy of iron containing small amounts of manganese, silicon, chromium, nickel, aluminum, copper, and trace alloys. These alloying elements improve the chemical and physical properties of steel, such as strength, ductility, durability, and corrosion resistance. There are many different grades of steel with many different physical, chemical, and environmental properties.

Composition data for galvanized steel¹

NAME	VALUE	UNIT
Aluminum	< 3.0	% by mass
Boron	< 1.1	% by mass
Chromium	0.01 - 12.5	% by mass
Copper	< 3.5	% by mass
Manganese	< 16	% by mass
Molybdenum	< 1.1	% by mass
Nickel	0.01 - 3.0	% by mass
Silicon	< 5.0	% by mass
Hydrochloric Acid	< 3.0	% by mass
Zinc	< 15.0	% by mass
Iron	Balance	% by mass

Composition data for stainless steel²

NAME	VALUE	UNIT
Carbon	< 0.07	% by mass
Chromium	17.5 - 19.5	% by mass
Nickel	8.0 - 10.5	% by mass
Manganese	< 2.0	% by mass
Silicon	< 0.75	% by mass
Nitrogen	< 0.1	% by mass
Phosphorus	< 0.045	% by mass
Sulfur	< 0.03	% by mass
Iron	Balance	% by mass

[1] Galvanized steel chemical composition from Nucor Sheet SDS.

[2] 304 stainless steel from ASTM A240 is presented in Table 4 as a representative grade.

The product does not include materials or substances which may have any potential route of exposure to humans or flora/fauna in the environment. The product does not contain any hazardous substances according to the Resource Conservation and Recovery Act (RCRA), Subtitle 3. The products as manufactured do not release dangerous substances to the environment, including indoor air emissions, gamma or ionizing radiation, or chemicals released to air or leached to water and soil.

Properties of Declared Product as Delivered

IMP products can be provided in a variety of specifications including insulating capacity, thickness, and styling based on customer requirements and final applications. These products are then shipped directly to a job site or end user. No fabrication is performed by Nucor – however, additional fabrication may be performed by third-party entities before final installation. Impacts from downstream third-party fabrication are not included in this EPD.

IMPs come in a variety of sizes and configurations customized to each project's requirements. Variations in panel configuration are as follows:

Panel Sizes

PARAMETER	VALUE	UNIT
Panel Thickness	2, 2.5, 3	Inches
Panel Width	10 to 40	Inches
Panel Length	4 to 37	Feet

Technical Data

Parameter	Value	Units
Tensile Strength (Core)	Min. 0.11	MPa
Modulus of Elasticity (Core)	NA	MPa
Tensile Strength (Steel)	Min. 228	MPa
Modulus of Elasticity (Steel)	203395	MPa
U-value of assembly including interruptions to insulation	0.255 (3" Panel) to 0.392 (2" Panel)	W/m²K
R-value of typical materials where continuous	2.82 (2" Panel) to 4.24 (3" Panel)	m²K/W

Parameter	Value	Units
Water vapor permeance	0.003 (31"-40" Module) to 0.009 (10" Module)	metric perm (g/m ² ·day-mmHg)
Airborne sound reduction	~23 (2" Panel)	dB
Sound absorption coefficient	NA	%
Density	Min. 41	kg/m ³

Technical Data

Formawall IMP produced by Nucor are defined by the following standards:

Substrate Performance:

- AISI S100
- ASTM A653
- ASTM A792
- ASTM A924

Metal Wall Performance:

- ASTM C518
- ASTM C271
- ASTM C272
- ASTM C273
- ASTM C1363
- ASTM D1621
- ASTM D1622
- ASTM 1623
- ASTM E72
- ASTM E90
- ASTM E283
- ASTM E330
- ASTM E331
- FM 4881

Fire Performance:

- ASTM E84
- ASTM E119
- FM 4880
- NFPA 259
- NFPA 268
- NFPA 285
- NFPA 286
- CAN/ULC S134
- CAN/ULC S101
- CAN/ULC S102
- UL 263

Model Codes or Standards:

- ASCE/SEI 7
- FS HH-I-1972

- ANSI B18.6.4
- SAE J78
- AAMA 501

Paint Finish Performance:

- ASTM B117
- ASTM D523
- ASTM D968
- ASTM D2244
- ASTM D2247
- ASTM D2794
- ASTM D4214

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