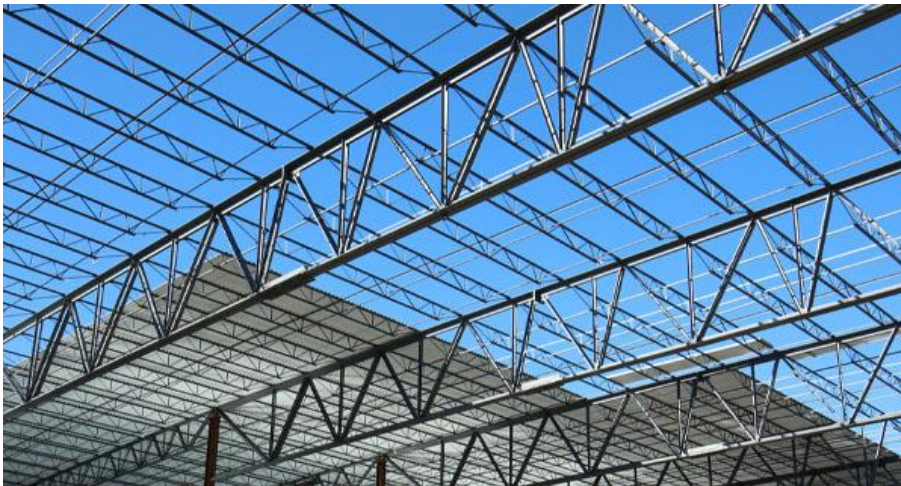


## ENVIRONMENTAL PRODUCT DECLARATION

# FABRICATED OPEN WEB STEEL JOIST AND JOIST GIRDERS

NUCOR CORPORATION



## NUCOR® VULCRAFT

Nucor Corporation's Vulcraft division is the nation's largest producer and leading innovator of open-web steel joists and joist girders, which are primarily used in nonresidential building construction. Steel joists and joist girders are produced and marketed throughout North America by seven domestic facilities. Vulcraft's annual joist production capacity is approximately 745,000 tons.

Vulcraft sources its material from Nucor steel mills. Nucor is North America's largest steel producer and recycler, turning approximately 20 million net tons of scrap steel in 2020 into new steel. Nucor uses Electric Arc Furnace (EAF) technology at each of its steel recycling facilities. EAFs use post-consumer scrap as its major feedstock, unlike traditional blast furnace steelmaking, which produces more than 70% of the world's steel using mined iron ore and metallurgical coal as feedstock. As a result, the recycled content of Vulcraft's joist and joist girders is 97.0%.

Through its use of EAFs, Nucor's steelmaking CO<sub>2</sub> emissions are less than one-third of the global average on a per ton basis, and Nucor's energy intensity is only about one-quarter the global average.



# ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products

According to ISO 14025,  
EN 15804 and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL ENVIRONMENT 333 PFINGSTEN ROAD NORTHBROOK, IL 60611
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v2.5 March 2020
MANUFACTURER NAME AND ADDRESS	Nucor Corporation, 1915 Rexford Road, Charlotte, North Carolina 28211
DECLARATION NUMBER	4789971341.102.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Fabricated open web steel joist and joist girders, 1 metric ton
REFERENCE PCR AND VERSION NUMBER	Part A: Calculation Rules for the LCA and Requirements Project Report, (IBU/UL Environment, V3.2, 12.12.2018) and Part B: Designated Steel Construction Product EPD Requirements (UL Environment, V2.0, 08.26.2020).
DESCRIPTION OF PRODUCT APPLICATION/USE	Steel joist used in construction
PRODUCT RSL DESCRIPTION (IF APPL.)	N/A
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	11/11/2021
PERIOD OF VALIDITY	5 years
EPD TYPE	Product specific
EPD SCOPE	Cradle to gate
YEAR(S) OF REPORTED PRIMARY DATA	2019-2020
LCA SOFTWARE & VERSION NUMBER	GaBi v10
LCI DATABASE(S) & VERSION NUMBER	GaBi CUP 2021.1
LCIA METHODOLOGY & VERSION NUMBER	IPCC AR5 + TRACI 2.1

The PCR review was conducted by:	UL Environment
	PCR Review
	epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025: 2006. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	James Mellentine, Thrive ESG
	Sphera
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	
	James Mellentine, Thrive ESG

## LIMITATIONS

**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:** EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible\*. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

## ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products



According to ISO 14025,  
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### 1. Product Definition and Information

#### Description of Organization

This environmental product declaration (EPD) represents steel joist products produced by Nucor Corporation's Vulcraft facilities located in Brigham City, UT, Chemung, NY, Florence, SC, Fort Payne, AL, Grapeland, TX, Norfolk, NE, and Saint Joe, IN. The overall recycled content of Vulcraft Steel Joist and Girders (% by Total Weight) is 97%. 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. Vulcraft joist is made from steel angles/channels, hollow structural sections, plate, and wire rod. All of the steel produced by Nucor is 100% recyclable at the end of its useful life.

For production of the raw steel used in Vulcraft's joist and joist girders, 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 our steel mills, processing approximately 5,000,000 tons of ferrous scrap annually and provide an abundant supply of scrap to our steel mills. Having an abundant and reliable supply of recycled scrap within close proximity not only gives Nucor's steel mills a logistical and economic advantage over their competitors, but also a carbon footprint that is a fraction of the average steel producer.

#### Product Description

Steel joists are welded steel products that are used to frame a building and support the deck (which, in turn, supports a building's roof and floors). They are custom engineered to suit the design of each building. Joists in this EPD represent product manufactured in North America from steel product produced in North America.

Open Web Steel Joists, which are secondary framing members, range from 0.254 to 0.51 meters deep, and up to 73 meters long.

Joist Girders, which are primary framing members, range from 0.51 to 3.1 meters deep and up to 37 meters long.

Composite Joists are open web product that are used in the construction of concrete roofs and floors allowing composite action between the joist and the concrete, range from 0.254 to 2.4 meters deep, and up to 37 meters long.

#### Product Specification

Steel joist products are defined by the following standards.

- ANSI/SJI-100 (for open web steel joist and joist girders)
- ANSI/SJI-200 (for composite steel joists)



# ENVIRONMENTAL PRODUCT DECLARATION

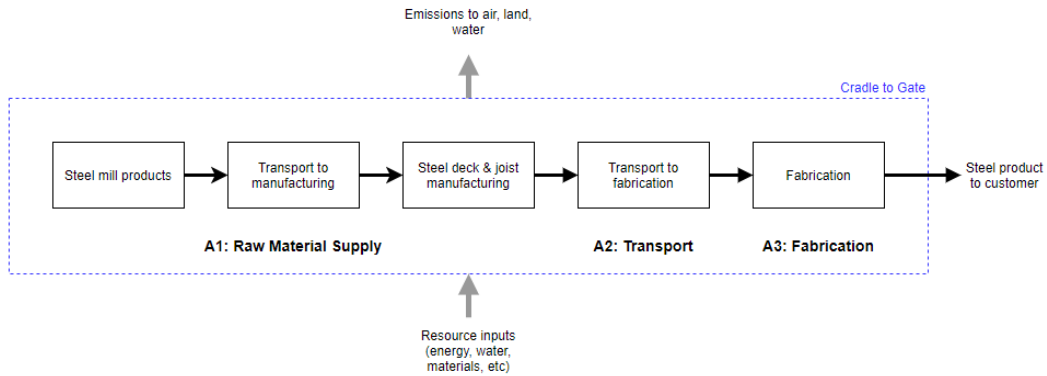


Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products



According to ISO 14025,  
EN 15804 and ISO 21930:2017

## Flow Diagram



## Product Average

The 2019 and 2020 production data used in this EPD considers steel joist produced by Nucor during the year. The products are manufactured at 7 locations in the US. Results are weighted according to production totals at all locations. Facility-specific global warming potential results are provided in a separate table.

## Application

Steel joist products are used as structural supports for building applications.

## Technical Requirements

Technical data for the studied product can be found in the table below.

Table 1. Technical data for steel product

NAME	VALUE	UNIT
Density	7,800	kg/m <sup>3</sup>
Melting point	1425-1450	°C
Electrical conductivity at 20°C	NA	% of IAC <sup>8</sup>
Thermal conductivity	NA	W/(m-K)
Coefficient of thermal expansion	NA	m/m-°C
Modulus of elasticity	200,000	N/mm <sup>2</sup>
Shear modulus	NA	N/mm <sup>2</sup>
Specific heat capacity	NA	J/kg-°C
Hardness, Brinell Number	80-100	HB
Yield strength	250-550	N/mm <sup>2</sup>
Ultimate tensile strength	410-655	N/mm <sup>2</sup>
Breaking elongation	13-20	%
Chemical composition	Varies by ASTM Specification/Grade % by mass	



## ENVIRONMENTAL PRODUCT DECLARATION

# NUCOR®

Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products



According to ISO 14025,  
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### Properties of Declared Product as Delivered

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Steel joist products can be fabricated (i.e., cut or otherwise modified) by a fabricator or shipped directly to a job site or end user.

### Material Composition

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Steel joist products are manufactured entirely from carbon steel; with a small amount of galvanized coating or paint applied. They do not contain any materials or substances for which there exists a route to exposure that leads to humans or flora/fauna in the environment being exposed to said materials or substances at levels exceeding safe health thresholds. The products do not contain any hazardous substances according to the Resource Conservation and Recovery Act (RCRA), Subtitle 3. The products 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.

### Manufacturing

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Vulcraft manufactures steel joist from steel angles/channels, hollow structural sections, plate, and wire rod - the major inputs; with a small amount of paint applied as a coating. Some process materials are needed, such as lubricants, welding gases and electrodes. Energy is also needed to form the steel and to move the materials in the manufacturing facility. Metal scrap generated during manufacturing is recycled externally.

Fabrication results are taken from the American Institute of Steel Construction (AISC) industry average EPD (AISC, 2021).

### Transportation

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Transportation to the customer or construction site is outside the scope of this EPD.

### Product Installation

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Installation is outside the scope of this EPD.

### Use

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Product use is outside the scope of this EPD.

### Reuse, Recycling, and Energy Recovery

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Product reuse, recycling, and incineration for energy recovery is outside the scope of this EPD.

### Disposal

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Product disposal is outside the scope of this EPD.



# ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products

According to ISO 14025,  
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## 2. LCA Calculation Rules

### Declared Unit

The declared unit is 1 metric ton of fabricated steel product. An alternative declared unit of 1 short ton is also presented.

### System Boundary

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 STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

### Cut-off Rules

No cut-off criteria are defined for this study. The system boundary was defined based on relevance to the goals of the study. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

### Data Sources

The LCA model was created using the GaBi Software system for life cycle engineering, version 10, developed by Sphera (Sphera, 2021). Background life cycle inventory data for raw materials and processes were obtained from the GaBi 2021 databases. Primary manufacturing data were provided by Nucor.

### 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.



## ENVIRONMENTAL PRODUCT DECLARATION

# NUCOR®

Fabricated Open Web Steel Joist and Joist Girders  
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### Geographical Coverage

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Primary data represents production in the United States at the following Nucor facilities:

- Vulcraft – Brigham City, UT
- Vulcraft – Chemung, NY
- Vulcraft – Florence, SC
- Vulcraft – Fort Payne, AL
- Vulcraft – Grapeland, TX
- Vulcraft – Norfolk, NE
- Vulcraft – Saint Joe, IN

Regionally specific datasets, where available, were used to represent each 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 representativeness of the actual materials.

### Period under Review

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Primary data collected represents production during the 2019 and 2020 calendar year. This analysis is intended to represent production in 2019.

### Allocation

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No multi-output allocation was required in the foreground system of the study. Allocation of background data (energy and materials) taken from the GaBi 2021 databases is documented online at <http://www.gabi-software.com/america/support/gabi/>

### Estimates and Assumptions

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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 steel joist products may extend beyond those defined in this document.

All of 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 of the reported material and energy flows have been accounted for.

Proxy data were applied to some materials where no matching life cycle inventories were available as documented in the background report.

## ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
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According to ISO 14025,  
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### 3. LCA Results

North American life cycle impact assessment (LCIA) results are declared using TRACI 2.1 methodology, with the exception of GWP which uses the IPCC AR5 methodology. LCIA results are relative expressions and do not predict actual impacts, the exceeding of thresholds, safety margins or risks.

Fabrication requires 1.08 metric tons of steel joist per 1 metric ton of fabricated product (AISC, 2021). A1 includes production of all 1.08 metric tons of steel deck.

Table 2. LCIA results, per 1 metric ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
GWP 100	kg CO <sub>2</sub> eq.	1.34E+03	4.46E+01	9.67E+01	<b>1.48E+03</b>
ODP	kg CFC 11 eq.	4.82E-10	8.67E-14	1.62E-09	<b>2.10E-09</b>
AP	kg SO <sub>2</sub> eq.	3.56E+00	1.83E-01	1.52E-01	<b>3.89E+00</b>
EP	kg N eq.	1.88E-01	1.64E-02	1.23E-02	<b>2.17E-01</b>
SFP	kg O <sub>3</sub> eq.	6.25E+01	4.44E+00	2.23E+00	<b>6.92E+01</b>
ADP <sub>fossil</sub>	MJ surplus	1.52E+03	7.16E+01	1.04E+02	<b>1.70E+03</b>

Table 3. LCIA results, per 1 short ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
GWP 100	kg CO <sub>2</sub> eq.	1.22E+03	4.05E+01	8.77E+01	<b>1.34E+03</b>
ODP	kg CFC 11 eq.	4.37E-10	7.87E-14	1.47E-09	<b>1.91E-09</b>
AP	kg SO <sub>2</sub> eq.	3.23E+00	1.66E-01	1.38E-01	<b>3.53E+00</b>
EP	kg N eq.	1.71E-01	1.49E-02	1.12E-02	<b>1.97E-01</b>
SFP	kg O <sub>3</sub> eq.	5.67E+01	4.02E+00	2.02E+00	<b>6.28E+01</b>
ADP <sub>fossil</sub>	MJ surplus	1.38E+03	6.50E+01	9.40E+01	<b>1.54E+03</b>

**Comparability:** 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. 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.





# ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products

According to ISO 14025,  
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Table 4. Resource use results, per 1 metric ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
RPR <sub>E</sub>	MJ LHV	8.70E+02	6.24E+01	2.16E+02	1.15E+03
RPR <sub>M</sub>	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPR <sub>E</sub>	MJ LHV	1.86E+04	6.91E+02	1.47E+03	2.07E+04
NRPR <sub>M</sub>	MJ LHV	1.16E-04	0.00E+00	1.26E+01	1.26E+01
SM	kg	7.50E+02	0.00E+00	7.52E-01	7.51E+02
RSF	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	6.23E+00	1.81E-01	6.82E-01	7.09E+00

Table 5. Resource use results, per 1 short ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
RPR <sub>E</sub>	MJ LHV	7.90E+02	5.66E+01	1.96E+02	1.04E+03
RPR <sub>M</sub>	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPR <sub>E</sub>	MJ LHV	1.68E+04	6.27E+02	1.33E+03	1.88E+04
NRPR <sub>M</sub>	MJ LHV	1.05E-04	0.00E+00	1.14E+01	1.14E+01
SM	kg	6.81E+02	0.00E+00	6.82E-01	6.81E+02
RSF	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	5.65E+00	1.64E-01	6.19E-01	6.43E+00

Table 6. Output flows and waste categories results, per 1 metric ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
HWD	kg	1.19E-01	0.00E+00	3.32E-01	4.51E-01
NHWD	kg	7.19E-02	0.00E+00	9.66E+00	9.73E+00
HLRW	kg	1.04E-03	3.16E-05	1.18E-04	1.19E-03
ILLRW	kg	8.71E-01	2.64E-02	9.85E-02	9.96E-01
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	2.80E+01	0.00E+00	7.71E+01	1.05E+02
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00



# ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products

According to ISO 14025,  
EN 15804 and ISO 21930:2017

Table 7. Output flows and waste categories results, per 1 short ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
HWD	kg	1.08E-01	0.00E+00	3.01E-01	<b>4.09E-01</b>
NHWD	kg	6.52E-02	0.00E+00	8.76E+00	<b>8.83E+00</b>
HLRW	kg	9.44E-04	2.87E-05	1.07E-04	<b>1.08E-03</b>
ILLRW	kg	7.90E-01	2.40E-02	8.93E-02	<b>9.03E-01</b>
CRU	kg	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>
MR	kg	2.54E+01	0.00E+00	6.99E+01	<b>9.53E+01</b>
MER	kg	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>
EE	MJ LHV	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>

To align with the PCR, “product specific EPDs which include averaging shall report the range of results for all IPCC AR5 and TRACI indicators for products included in the average.” Averaging across manufacturing facilities was used in this EPD. Fabrication represents the US average; therefore, it does not change between sites.

Table 8. LCIA results, variation per 1 metric ton

PARAMETER	UNIT	A1 (MIN)	A1 (MAX)	A2	A3	TOTAL (MIN)	TOTAL (MAX)
GWP 100	kg CO <sub>2</sub> eq.	1.23E+03	1.48E+03	4.46E+01	9.67E+01	<b>1.37E+03</b>	<b>1.62E+03</b>
ODP	kg CFC 11 eq.	3.76E-10	6.65E-10	8.67E-14	1.62E-09	<b>2.00E-09</b>	<b>2.29E-09</b>
AP	kg SO <sub>2</sub> eq.	3.05E+00	4.26E+00	1.83E-01	1.52E-01	<b>3.38E+00</b>	<b>4.60E+00</b>
EP	kg N eq.	1.48E-01	2.56E-01	1.64E-02	1.23E-02	<b>1.76E-01</b>	<b>2.85E-01</b>
SFP	kg O <sub>3</sub> eq.	5.01E+01	8.60E+01	4.44E+00	2.23E+00	<b>5.67E+01</b>	<b>9.27E+01</b>
ADP <sub>fossil</sub>	MJ surplus	1.38E+03	1.82E+03	7.16E+01	1.04E+02	<b>1.55E+03</b>	<b>1.99E+03</b>

Table 9. LCIA results, variation per 1 short ton

PARAMETER	UNIT	A1 (MIN)	A1 (MAX)	A2	A3	TOTAL (MIN)	TOTAL (MAX)
GWP 100	kg CO <sub>2</sub> eq.	1.11E+03	1.34E+03	4.05E+01	8.77E+01	<b>1.24E+03</b>	<b>1.47E+03</b>
ODP	kg CFC 11 eq.	3.41E-10	6.04E-10	7.87E-14	1.47E-09	<b>1.81E-09</b>	<b>2.07E-09</b>
AP	kg SO <sub>2</sub> eq.	2.77E+00	3.87E+00	1.66E-01	1.38E-01	<b>3.07E+00</b>	<b>4.17E+00</b>
EP	kg N eq.	1.34E-01	2.32E-01	1.49E-02	1.12E-02	<b>1.60E-01</b>	<b>2.58E-01</b>
SFP	kg O <sub>3</sub> eq.	4.54E+01	7.81E+01	4.02E+00	2.02E+00	<b>5.15E+01</b>	<b>8.41E+01</b>
ADP <sub>fossil</sub>	MJ surplus	1.25E+03	1.65E+03	6.50E+01	9.40E+01	<b>1.41E+03</b>	<b>1.81E+03</b>



ENVIRONMENTAL PRODUCT DECLARATION



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Designated Steel Construction Products



According to ISO 14025,  
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## 4. LCA Interpretation

Figure 1 presents the relative contribution of the A1, A2, and A3 modules to the total.

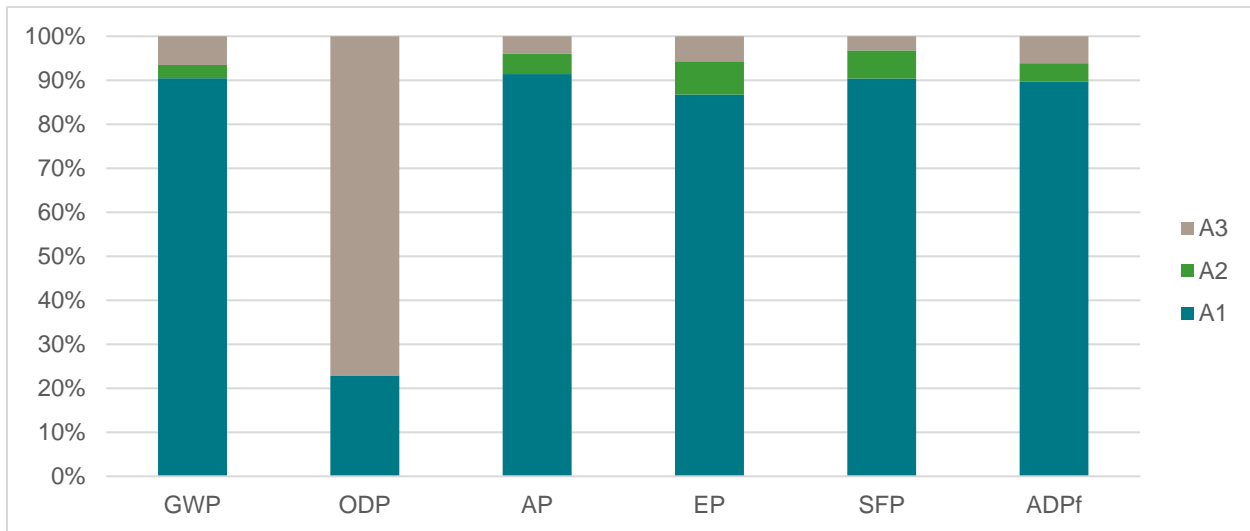


Figure 1: Relative contribution by life cycle stage for fabricated product

The vast majority of potential environmental impacts is driven by the upstream burdens of steelmaking, therefore A1 is the dominant contributor across LCIA indicators. ODP is also driven by use of electricity in fabrication, due to the background datasets used for electricity generation.

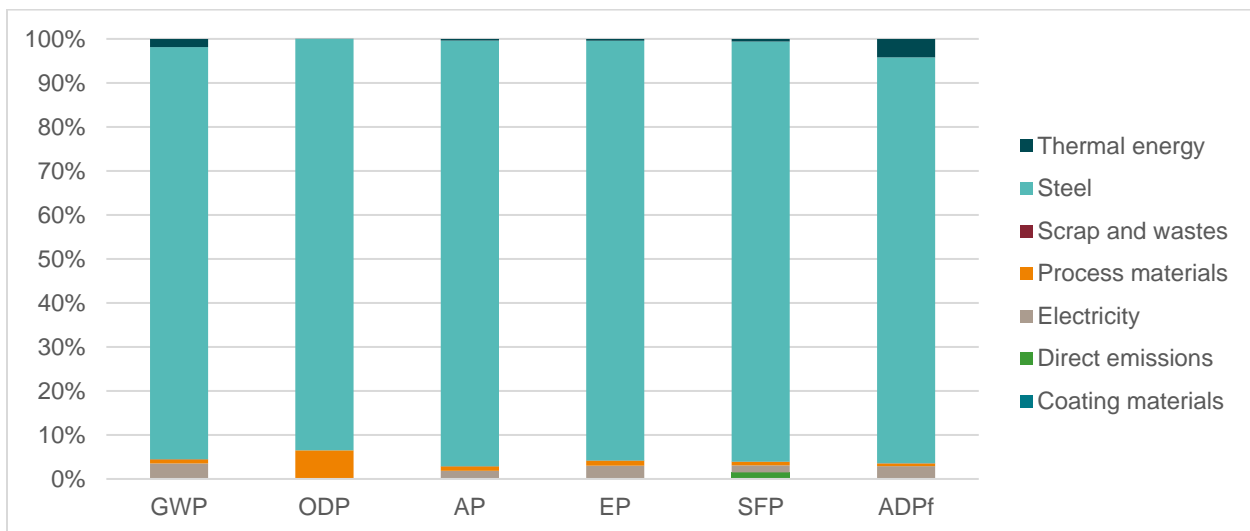


Figure 2: Relative contribution of manufacturing components for unfabricated product



## ENVIRONMENTAL PRODUCT DECLARATION



Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products

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To better understand sources of potential environmental impacts in Nucor's manufacturing process, Figure 2 presents relative results for steel joist manufacturing (A1 only). Potential environmental impacts for steel joist manufacturing are dominated by upstream burdens of steelmaking.

### Facility-Specific GWP100 Results

Vulcraft steel joist products are manufactured at 7 different facilities. The results presented in the LCA Results section above represent a production-weighted average of these facilities. To understand how the GWP may vary between sites, facility-specific GWP100 results are presented below, per metric ton and per short ton.

**Table 10: Facility-specific GWP100 results, per 1 metric ton fabricated product and 1 metric ton unfabricated product**

GWP [KG CO2 EQ.]	A1	A2	A3	TOTAL	CRADLE-TO-GATE, UNFABRICATED*
Brigham City, UT	1.23E+03	4.46E+01	9.67E+01	1.37E+03	1.14E+03
Chemung, NY	1.30E+03	4.46E+01	9.67E+01	1.44E+03	1.20E+03
Florence, SC	1.37E+03	4.46E+01	9.67E+01	1.51E+03	1.27E+03
Fort Payne, AL	1.44E+03	4.46E+01	9.67E+01	1.58E+03	1.33E+03
Grapeland, TX	1.23E+03	4.46E+01	9.67E+01	1.37E+03	1.14E+03
Norfolk, NE	1.33E+03	4.46E+01	9.67E+01	1.47E+03	1.23E+03
Saint Joe, IN	1.48E+03	4.46E+01	9.67E+01	1.62E+03	1.37E+03

\* Per 1 metric ton unfabricated steel joist

**Table 11: Facility-specific GWP100 results, per 1 short ton fabricated product and 1 short ton unfabricated product**

GWP [KG CO2 EQ.]	A1	A2	A3	TOTAL	CRADLE-TO-GATE, UNFABRICATED*
Brigham City, UT	1.11E+03	4.05E+01	8.77E+01	1.24E+03	1.03E+03
Chemung, NY	1.18E+03	4.05E+01	8.77E+01	1.30E+03	1.09E+03
Florence, SC	1.24E+03	4.05E+01	8.77E+01	1.37E+03	1.15E+03
Fort Payne, AL	1.30E+03	4.05E+01	8.77E+01	1.43E+03	1.21E+03
Grapeland, TX	1.12E+03	4.05E+01	8.77E+01	1.25E+03	1.04E+03
Norfolk, NE	1.21E+03	4.05E+01	8.77E+01	1.33E+03	1.12E+03
Saint Joe, IN	1.34E+03	4.05E+01	8.77E+01	1.47E+03	1.24E+03

\* Per 1 short ton unfabricated steel joist



## ENVIRONMENTAL PRODUCT DECLARATION

# NUCOR®

Fabricated Open Web Steel Joist and Joist Girders  
Designated Steel Construction Products



According to ISO 14025,  
EN 15804 and ISO 21930:2017

## 5. Additional Environmental Information

### Environment and Health During Manufacturing

Refer to the Vulcraft Steel Joist SDS<sup>1</sup> for additional environmental and health protection during the product manufacturing process. Be sure to follow all recommended handling and product manufacturing guidance.

### Environmental Activities and Certifications

**ISO 14001:** Vulcraft facilities operate aggressive and sustainable environmental programs that incorporate the concept of individual employee, as well as management responsibility for environmental performance. All of Vulcraft's operations are ISO 14001 certified. Achieving ISO 14001 certification means that each plant has put an environmental management system in place with measurable targets and objectives, such as minimizing electricity use and implementing recycling programs. Many of our facilities have incorporated energy efficiency targets to reduce both cost and environmental impacts into their environmental management systems. These environmental management systems help facilitate compliance with our environmental commitment, which is every Nucor teammate's responsibility. Nucor's environmental program maintains a high level of ongoing training, commitment, outreach and visibility.

**Waste and Water Recycling:** Vulcraft facilities are either Large Quantity, Small Quantity or Very Small Quantity hazardous waste generators. Most of the waste generated by the plants are recycled (scrap metal) or reused. By recycling this material, Vulcraft is not only acting in a sustainable, responsible manner but is also substantially limiting its potential for future liability under both CERCLA and RCRA.

Because Vulcraft long ago implemented environmental practices that have resulted in the responsible disposal of waste materials, Vulcraft is also not presently considered a major contributor to any major cleanups under CERCLA for which Vulcraft has been named a potentially responsible party.

Vulcraft also recognizes that water is a critical natural resource and is essential to our business and the communities in which we operate. Water used in process is either recirculated (closed loop) for cooling or continuously recirculated in the mill process. Currently there are no Vulcraft facilities located in a High or Extremely High Water Stress Area.

In addition to its routine compliance costs, Nucor budgets over \$10 million in capital spending related to environmental improvement projects every year.

**Safety:** The top priority for Nucor, Vulcraft's parent company, is to become the world's safest steel company. This is accomplished through the empowerment of each and every teammate to hold one another accountable to work safely. In 2020, Nucor had its best safety performance in company history. Four Vulcraft facilities – Alabama, Indiana, Nebraska and Texas – have achieved OSHA Voluntary Protection Program (VPP) Star status, which recognizes companies that voluntarily exceed the safety standards required by law. Vulcraft South Carolina and Utah have received the Nucor President's Safety Award, which is awarded to Nucor Divisions with an IIR and DART rate 2/3 below the national average for comparable facilities. At Vulcraft, nothing is more important than our teammates returning home safely to their families after each and every shift.

<sup>1</sup> <https://vulcraft.com/files/SDS/SDS-joists%2012.21.15.pdf>

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**Clean Energy Investments:** As America's cleanest and most efficient steel company, Nucor is extending beyond its fence line to lower its carbon footprint by investing in the development of new clean wind and solar power generation capacity. Nucor is currently supporting the development of more than 350MW, of new clean energy infrastructure, making us the 7th largest corporate buyer of renewable energy in America. Since November 2019, Nucor has entered two Virtual Power Purchase Agreements, which will 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 in 2015, and Nucor teammates have completed nearly 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.



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## 6. References

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## 7. Contact Information

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### Study Commissioner

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