GERDAU

ENVIRONMENTAL PRODUCT DECLARATION

Structural Steel

Cartersville, GA Steel Mill



EPD

Declaration Owner
Gerdau Long Steel North America
Cartersville, GA Steel Mill
384 Old Grassdale Rd NE, Cartersville, GA 30121
www.gerdau.com | GLNinfo@gerdau.com

Product:
Unfabricated Structural Steel

Declared Unit
The declared unit is one metric ton of unfabricated Structural Steel

EPD Number and Period of Validity
SCS-EPD-10690
EPD Valid October 21, 2026 through October 20, 2031

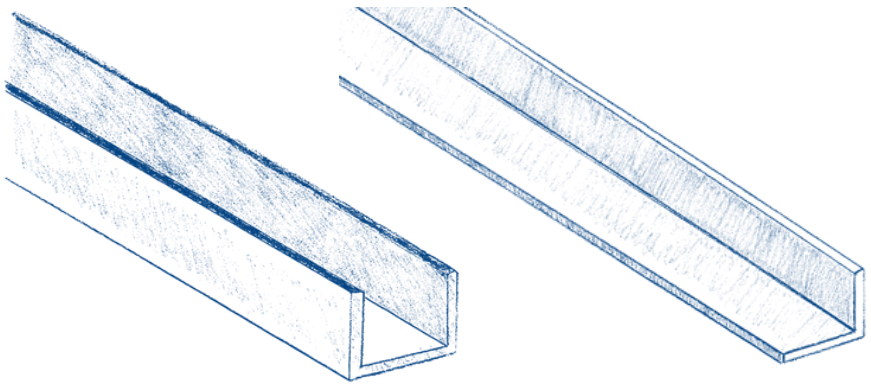
Product Category Rule
Smart EPD Part A Product Category Rules for Building and Construction Products and Services. Standard 1000, version 1.2. March 14, 2025

Smart EPD Part B Product Category Rules for Designated Steel Construction Products. Standard 1000-008, version 3. April 3, 2025

Program Operator
SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608
+1.510.452.8000 | www.SCSglobalServices.com

Product sketched by
Michael Vidal, Tampa FL
Customer Service Manager





Declaration owner:	Gerdau Long Steel North America
Address:	384 Old Grassdale Rd NE, Cartersville, GA 30121
Declaration Number:	SCS-EPD-10690
Declaration Validity Period:	EPD ValidOctober 21,2026 through October 20, 2031
Program Operator:	SCS Global Services
Program Operator General Program Instructions	SCS Type III Environmental Declaration Program: Program Operator Manual v12.0. December 2023. SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Riley Tesman
LCA Software and LCI database:	OpenLCA v2.5 software and the Ecoinvent v3.11 database, Allocation Cut-off System Model
Product's Intended Application:	Unfabricated Structural Steel
Product RSL:	n/a
Markets of Applicability:	Global
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Gate
LCIA Method and Version:	EF 3.1 and TRACI 2.2
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒ external
LCA Reviewer:	Lindita Bushi Lindita Bushi, PhD, Athena Sustainable Materials Institute
Product Category Rule:	Core Standard: ISO 21930:2017 PCR: Smart EPD Part A Product Category Rules for Building and Construction Products and Services, version 1.2. March 14, 2025. Sub-Category PCR: Smart EPD Part B Product Category Rules for Designated Steel Construction Products. Standard 1000-008, version 3. April 3, 2025
PCR Review conducted by:	Chair: Jack Geibig (chair); Organization: Ecoform; Contact: jgeibig@ecoform.com
Sub-Category PCR Review conducted by:	Chair: Dr. Thomas Gloria (chair); Organization: Industrial Ecology Consulting Contact: t.gloria@industrial-ecology.com
Independent Verification of the declaration and data, according to ISO 21930, ISO 14025:2006 and PCR	☐ internal ☒ external
EPD Verifier:	Lindita Bushi Lindita Bushi, PhD, Athena Sustainable Materials Institute
Declaration Contents:	1. Gerdau Long Steel North America....3 2. Products....3 3. LCA: Calculation Rules....8 4. LCA: Scenarios and Additional Technical Information....13 5. LCA: Results....14 6. LCA: Interpretation....16 7. Additional Environmental Information....18 8. References....22

Disclaimers: *This EPD conforms to ISO 14025, 14040, 14044, and ISO 21930.*

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

Scope of Results Reported: *The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.*

Accuracy of Results: *Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.*

Comparability: *The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.*

In accordance with ISO 21930:2017, EPDs are comparable only if they comply with the core PCR, 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.

The owner of the declaration shall be liable for the underlying information and evidence; SCS shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence supplied or made available to SCS.

1. Gerdau Long Steel North America

Jump to GWP results (Click Here!)

Gerdau Company Profile

Gerdau is a leading producer of long steel in the Americas and one of the largest suppliers of special steel in the world. It is the largest recycler in Latin America and one of the largest recyclers in North America, transforming millions of tons of scrap into steel each year and reinforcing its commitment to sustainable development in the regions where it operates.

Gerdau's North American business division focus on long steel and special steel products including beams and piling, merchant bar quality, rebar, and special bar quality products. The company serves the construction, automotive, agricultural, service center and energy markets through its vertically integrated network of steel mills and metals recycling facilities.

2. Products

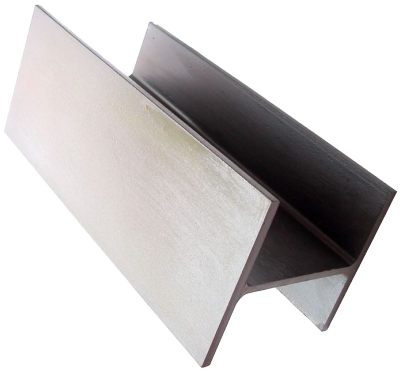
2.1 PRODUCT DESCRIPTION

Gerdau is a global leader in the production of hot-rolled structural products. Gerdau Structural steel is manufactured from recycled steel – both pre-consumer and post-consumer scrap, demonstrating the company's commitment to environmentally-responsible steel production. From hospitals in Montreal to schools in Texas, from data halls to fulfillment centers across North America, and from the Panama Canal to the bays of Alaska, Gerdau beams and piling products have proven the company's commitment to consistently high production standards.

Gerdau produces four distinct beam shapes in North America, providing a range of geometries to suit applications from construction to manufacturing. Gerdau also produces three primary categories of piling, typically used in deep foundation and geo-technical construction projects, such as foundations, marine, environmental and transportation.

The Cartersville Steel Mill in Georgia produces Wide Flange Beams, Standard I-Beams, Miscellaneous Beams, and other structural shapes.

This Environmental Product Declaration is for 1 metric ton of unfabricated Structural Steel produced by Gerdau in Cartersville, GA. Structural steel products are manufactured from steel scrap, melted in an Electric Arc Furnace (EAF), and hot rolled.





2.2 PRODUCT FLOW DIAGRAM

A flow diagram illustrating the production processes and life cycle phases included in the scope of the EPD is provided below.

Figure 1. *Flow Diagram for the life cycle of the Gerdau Structural steel.*

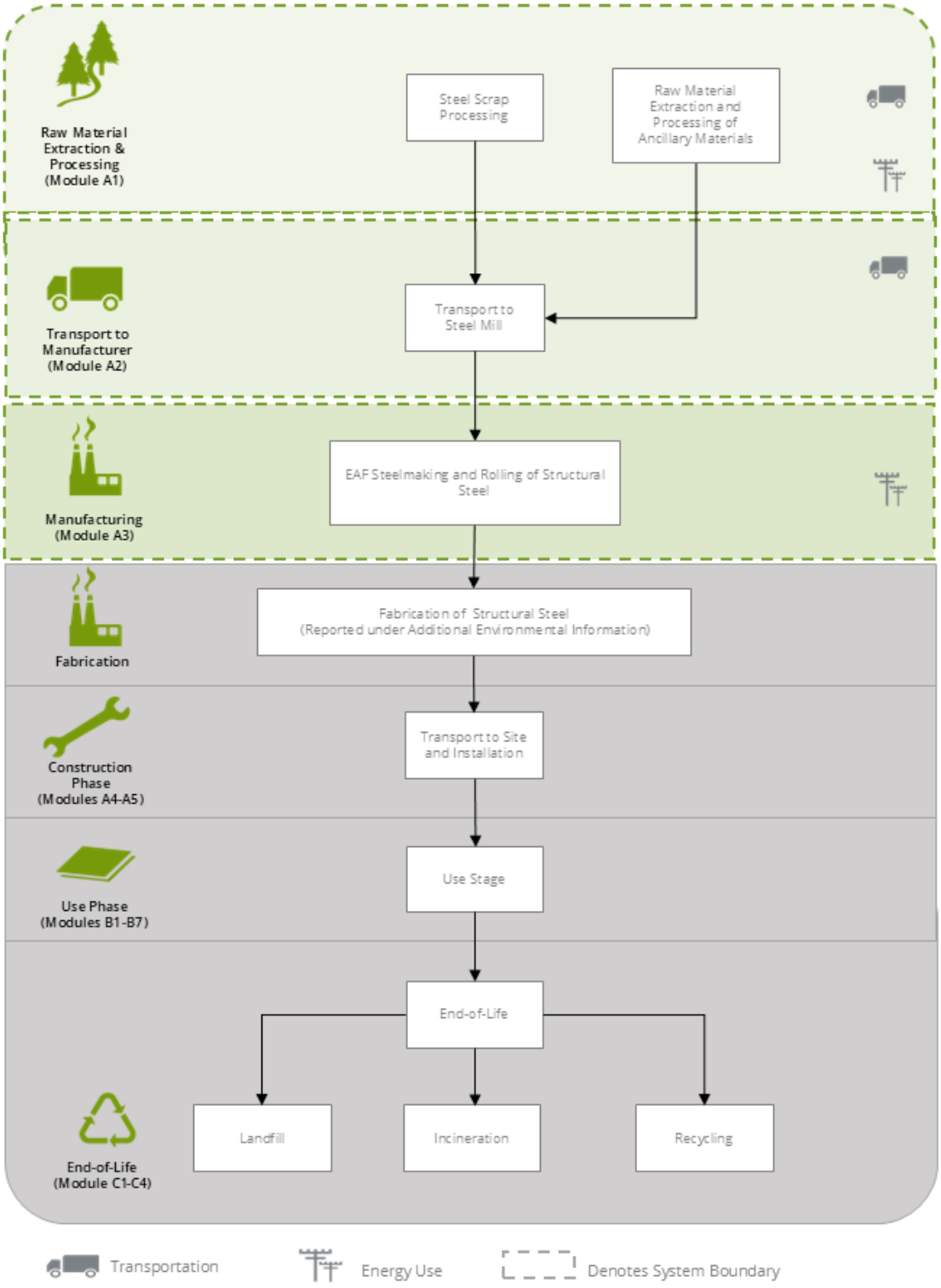
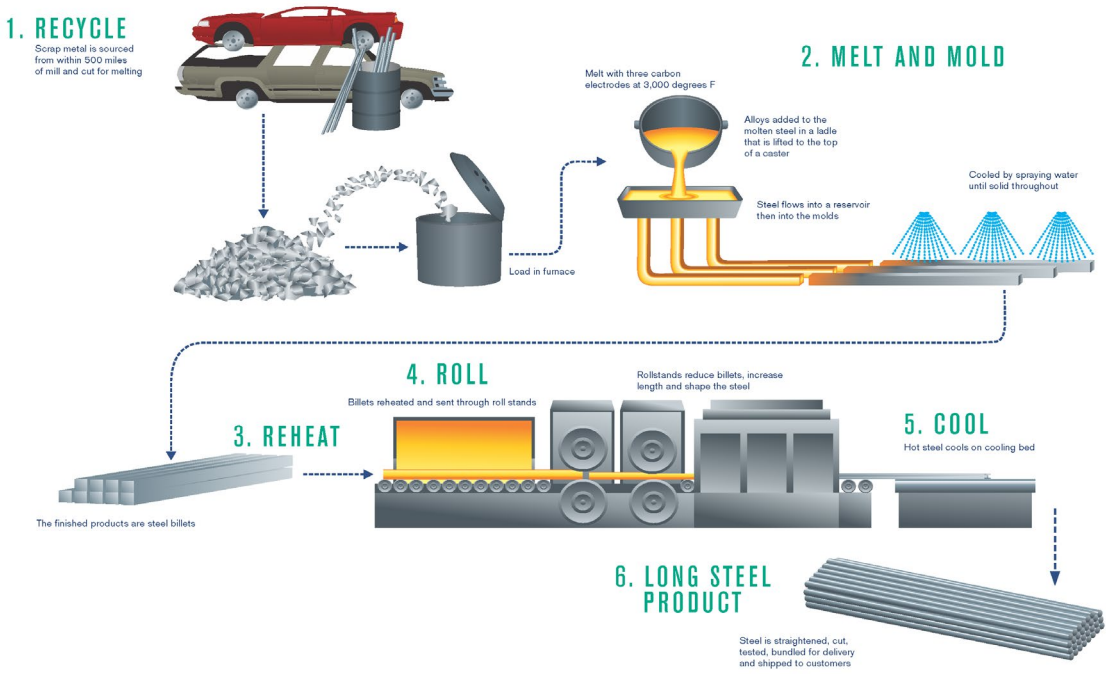


Figure 2. *Production of the Gerdau Structural Steel.*



2.3 DECLARATION OF METHODOLOGICAL FRAMEWORK

The scope of the EPD is cradle-to-gate, including raw material extraction and processing, transportation, steel manufacture and rolling of the Structural Steel. The life cycle phases included in the product system boundary are shown below.

Table 1. *Life cycle phases included in the Gerdau Structural Steel product system boundary.*

Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B1	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material extraction and processing	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X = Module Included | MND = Module Not Declared

Cut-off and allocation procedures are described below and conform to the PCR and ISO standards.

2.4 TECHNICAL DATA

Technical specifications for the Structural Steel in this study include applicable customer and industry standards such as ASTM A992.

The structural steel covered by this EPD may be classified under the following schemes. This list reflects common applications and is non-exhaustive, consistent with PCR Part A, Table A-7.

- **CSI MasterFormat:** 05 10 00 (Structural Metal Framing); 05 12 00 (Structural Steel Framing); 05 12 13 (Architecturally-Exposed Structural Steel Framing); 05 12 23 (Structural Steel for Buildings)
- **UNCPC:** 4112 (Crude steel); 421 (Structural metal products and parts thereof); 11101704 (Steel); 11171500 (Basic steels)
- **UNSPSC:** 30103618 (Steel framework); 30103614 (Steel plate joist)

2.5 INTENDED APPLICATION

The intended application of the structural steel is for use in providing structural support to buildings, foundations and other structures, and the products consists of a range of beam and piling products.

2.6 MATERIAL COMPOSITION

The approximate material content of carbon structural steel will vary slightly from batch to batch. In general, the steel will contain < 97% recycled iron, < 2% Manganese, <1.5% Copper, <0.9% Carbon, and a total of 1.5% or less of Nickel, Silicon, Sulfur, Tin, Phosphorus, and Vanadium. While it is not possible to precisely determine the pre and post consumer recycled content, the total recycled content for the steel used in Gerdau products are approximately 98-100%.

In conformance with the PCR, product materials were reviewed for the presence of any toxic, dangerous, or hazardous chemicals. Based on a review of the product components provided by the manufacturer, no regulated chemicals are expected to be released to the environment.

2.7 PROPERTIES OF DECLARED PRODUCT AS DELIVERED

The unfabricated Structural Steel are produced at the Cartersville mill in a range of shapes including Wide Flange Beams, Standard I-Beams and other structural size shapes.

2.8 MANUFACTURING

The structural steel covered in this study is manufactured in the electric arc furnace steel mill and hot rolled at the Cartersville facility, where primary data were collected from January 1st to December 31st, 2024.

Table 2. *Technical specifications for the Gerdau Structural Steel*

Product	System boundary option	Form factor	Production route representation			Steel type
			Route	Is represented	Percentage of representation	
Structural Steel	1. Mill product	Hot rolled sections,	BOF	False	-	Carbon/Alloy
			EAF	True	100%	
			OHF	False	-	
			Other	False	-	

In accordance with the PCR, EPDs shall calculate and report the percentage of data used that is supply-chain-specific per Section 9.3.4 of the ACLCA Open Standard: Data Specificity Addendum, the calculated supply chain specificity is estimated to be 61% for structural steel at the facility.

Electricity and resource use at the Gerdau facility is allocated based on the worldsteel allocation method, described in Section 3.10.

2.9 PACKAGING

Structural Steel requires minimal packaging, and none is modeled in the present study.

2.10 BIOGENIC CONTENT

Table 3 summarizes the biogenic carbon content associated with the product and its packaging materials, as required for disclosure in accordance with relevant EPD standards**.**

Table 3. *Biogenic carbon of Gerdau structural steel and packaging.*

Parameter	Parameter Description	Unit	Structural Steel
BCRP	Biogenic Carbon Removal from Product	kg CO_2	0.00
BCEP	Biogenic Carbon Emission from Product	kg CO_2	0.00
BCRK	Biogenic Carbon Removal from Packaging	kg CO_2	0.00
BCEK	Biogenic Carbon Emission from Packaging	kg CO_2	0.00
BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO_2	0.00
CCE	Calcination Carbon Emissions	kg CO_2	0.00
CCR	Carbonation Carbon Removals	kg CO_2	0.00

2.11 FURTHER INFORMATION

Further information on the product can be found on the manufacturers' website at www.gerdau.com.



3. LCA: Calculation Rules

3.1 DECLARED UNIT

The declared unit used in the study is defined as one (1) metric ton of unfabricated structural steel, consistent with the PCR.

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

3.2 SYSTEM BOUNDARY

The scope of the EPD is cradle-to-gate, including raw material extraction and processing, transportation, and product manufacture. The life cycle phases included in the EPD scope are described in Table 4.

Table 4. *The modules and unit processes included in the scope for the Gerdau Structural Steel.*

Module	Module Description	Unit Processes Included in Scope
A1	Extraction and processing of raw materials; any reuse of products or materials from previous product systems; processing of secondary materials; generation of electricity from primary energy resources; energy, or other, recovery processes from secondary fuels	All raw material extraction and processing (e.g., mining, crushing, sorting, handling, and transportation) as well as processing of secondary material inputs (e.g., recycling processes, including sorting, handling, transportation, and reprocessing) upstream of the Gerdau facility.
A2	Transport to the steel mill	Transportation from primary production facility to the Gerdau steel mill
A3	Product Manufacturing	EAF Steelmaking and hot rolling at the Cartersville mill. This module includes production of ancillary materials and waste disposal.
A4	Transport (to the building site)	Module Not Declared
A5	Construction-installation process	Module Not Declared
B1	Product use	Module Not Declared
B2	Product maintenance	Module Not Declared
B3	Product repair	Module Not Declared
B4	Product replacement	Module Not Declared
B5	Product refurbishment	Module Not Declared
B6	Operational energy use by technical building systems	Module Not Declared
B7	Operational water uses by technical building systems	Module Not Declared
C1	Deconstruction, demolition	Module Not Declared
C2	Transport (to waste processing)	Module Not Declared
C3	Waste processing for reuse, recovery and/or recycling	Module Not Declared
C4	Disposal	Module Not Declared
D	Reuse-recovery-recycling potential	Module Not Declared



3.3 UNITS

All data and results are presented using SI units.

3.4 ESTIMATES AND ASSUMPTIONS

The assessment relied on several assumptions. The major assumptions used in the assessment are described below.

- Representative inventory data were used to reflect the energy mix for electricity use. The Ecoinvent electricity grid was modified for the supply mix as obtained directly from the utility.
- Representative inventory data for raw materials and ancillary materials were modeled with unit process data taken from Ecoinvent.
- All steel scrap inputs were assumed to originate from 100% post-consumer sources. An Ecoinvent process representing the handling and processing of steel scrap was selected to estimate the environmental burden associated with preparing the recovered scrap for use as a raw material input. Home scrap (mill scrap generated and reused within the facility) is not counted as recycled content, in accordance with the PCR definition of recycled content.
- Supplier distances for all scrap providers could not be collected. Where scrap distances were missing, the average transport distance for scrap was calculated from available datapoints for the facility and used to estimate the missing distance.
- Transport distances for scrap were provided for Cartersville; however, the transportation distances for other raw materials were not provided. A distance of 200 miles was assumed for all raw materials.
- Disposal of manufacturing waste where unknown is modeled based for solid and hazardous waste generation and disposal in the United States, as specified in the PCR. Specifically, 80% of non-hazardous wastes are disposed in landfill and 20% incinerated. Transportation for end-of-life scenarios was modeled using the EPA WARM model assumption of 20 miles (~32 km), from the point of product use to a landfill, material recovery center, or waste incinerator. Ecoinvent datasets are used to model the impacts associated with incineration and landfilling, which does not include energy recovery from landfill gas.

The PCR requires the results for several inventory flows related to construction products to be reported including energy and resource use and waste and outflows. These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted considering this limitation.

Purchased carbon offsets, renewable energy certificates (RECs), and other market-based instruments were not applied to modify the life cycle assessment results reported in this EPD. Environmental impacts are based on the underlying physical production system and associated life cycle inventory data.

3.5 CUT-OFF RULES

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.

3.6 DATA SOURCES

Primary data were provided by Gerdau for the manufacturing facility. The sources of secondary LCI data are the Ecoinvent database and summarized in Table 5.

Table 5. *Data sources for the Gerdau Structural Steel.*

Flow	Dataset	Data Source	Publication Date
Raw Materials and Consumables			
Calcium Carbide	market for calcium carbide, technical grade | calcium carbide, technical grade | Cutoff, U – RoW	Ecoinvent 3.11	2024
Calcium Silicide	market for calcium chloride | calcium chloride | Cutoff, U – RoW	Ecoinvent 3.11	2024
Ferrochrome	market for ferrochromium, high-carbon, 68% Cr | ferrochromium, high-carbon, 68% Cr | Cutoff, U – GLO	Ecoinvent 3.11	2024
Ferrovanadium	market for ferrochromium, high-carbon, 68% Cr | ferrochromium, high-carbon, 68% Cr | Cutoff, U – GLO	Ecoinvent 3.11	2024
Ferro Columbium	market for ferroniobium, 66% Nb | ferroniobium, 66% Nb | Cutoff, U – GLO	Ecoinvent 3.11	2024
Ferro Silicon	market for ferrosilicon | ferrosilicon | Cutoff, U – GLO	Ecoinvent 3.11	2024
Ferromanganese	ferromanganese production, high-coal, 74.5% Mn | ferromanganese, high-coal, 74.5% Mn | Cutoff, U – RoW	Ecoinvent 3.11	2024
Nickel	market for nickel, class 1 | nickel, class 1 | Cutoff, U – GLO	Ecoinvent 3.11	2024
Carbon Coke	market for coke | coke | Cutoff, U – RoW	Ecoinvent 3.11	2024
High Cal Lime	market for quicklime, milled, loose | quicklime, milled, loose | Cutoff, U - RoW	Ecoinvent 3.11	2024
Cored Wire	market for wire drawing, steel | wire drawing, steel | Cutoff, U - GLO	Ecoinvent 3.11	2024
Iron Scrap	sorting and pressing of iron scrap | iron scrap, sorted, pressed | Cutoff, U - RoW	Ecoinvent 3.11	2024
Ancillary			
Electrode	market for graphite | graphite | Cutoff, U - GLO	Ecoinvent 3.11	2024
Nitrogen	market for nitrogen, liquid | nitrogen, liquid | Cutoff, U - RoW	Ecoinvent 3.11	2024
Oxygen	market for oxygen, liquid | oxygen, liquid | Cutoff, U - RoW	Ecoinvent 3.11	2024
Refractory	market for refractory, basic, packed | refractory, basic, packed | Cutoff, U - GLO	Ecoinvent 3.11	2024
Coating Powder	market for coating powder | coating powder | Cutoff, U - RoW	Ecoinvent 3.11	2024
Resource Use			
Electricity	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - Custom – Cartersville – US-SERC	Ecoinvent 3.11, Custom to utility	2024
Natural gas	market for natural gas, high pressure | natural gas, high pressure | Cutoff, U - US	Ecoinvent 3.11	2024
Water	market for tap water | tap water | Cutoff, U - RoW	Ecoinvent 3.11	2024
Transportation			
Rail	market for transport, freight, train, fleet average | transport, freight, train, fleet average | Cutoff, U - US	Ecoinvent 3.11	2024
Road	market for transport, freight, lorry, 16-32 metric ton, diesel, EURO 4 | transport, freight, lorry, 16-32 metric ton, diesel, EURO 4 | Cutoff, U - RoW	Ecoinvent 3.11	2024

3.7 DATA QUALITY

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 6. *Data quality assessment for the Gerdau Structural Steel product system.*

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 10 years old (typically 2015 or more recent). All of the data used represented an average of at least one year's worth of data collection. Manufacturer-supplied data (primary data) are based on annual production for calendar year 2024.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Actual processes for upstream operations are primarily North American. Surrogate data used in the assessment are representative of North American operations. Data representative of European operations are considered sufficiently similar to actual processes. Data representing waste disposal are based on regional statistics.
Technology Coverage: Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations.
Precision: Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the steel products. In some instances, surrogate data used to represent upstream and downstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used with a bias towards Ecoinvent v3.11 data where available. Different portions of the product life cycle are equally considered; however, it must be noted that final disposition of the product is based on assumptions of current average practices in Europe and the United States.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data from the Gerdau manufacturing facilities represent an annual average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. The Ecoinvent database is used for secondary LCI datasets.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the steel products are moderate. Specifically, some alloys were not available in the secondary datasets were modeled with proxy datasets. Actual supplier data for upstream operations was not available for steel suppliers, and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<10 years) but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact

Data Quality Parameter	Data Quality Discussion
	assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

3.8 PERIOD UNDER REVIEW

The period of review is January 01, 2024 through December 31, 2024.

3.9 ALLOCATION

This study follows the allocation guidelines of ISO 14044 and allocation rules specified in the PCR and minimizes the use of allocation wherever possible. This LCA follows the attributional LCA approach.

For steel construction products, allocation approaches are commonly applied to co-products of steel production, as well as steel scrap entering the product system as an input to steelmaking and recycled from the product manufacturing, fabrication, and end-of-life stages. The production of steel generates several co-products that are beneficially used as inputs to other product systems including solid materials, such as slags, sludges, scales, and dust. Slags are generated by the blast furnace, basic oxygen furnace, and electric arc furnace and beneficially used in concrete, construction aggregate, and fertilizer applications.

Per ISO 21930, steel slag meets the definition of a co-product, and the production of steel slag is a joint co-production process. Therefore, the process inventory should be allocated between products and co-products based on underlying physical relationships. In accordance with the PCR, the physical partitioning approach developed by the World Steel Association and EUROFER [A methodology to determine the LCI of steel industry co-products[1]] shall be used for slag produced from the blast furnace and basic oxygen furnace (BOF). The method may also be applied to EAF slag using the same partitioning approach and allocation factors. With respect to the steel scrap, the 100-0 recycled content approach is used in which the recycled material bears only the burden of any processing from waste material.

The transportation from primary producer of material components (e.g., alloys, fluxes) to the steel mill is based on primary data provided by the manufacturer, including modes, distances, and amount of material transported from each supplier to the Gerdau facility. Transportation was allocated on the basis of the mass of material and distance transported.

3.10 COMPARABILITY

The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

In accordance with ISO 21930:2017, EPDs are comparable only if they comply with the core PCR, 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.

It is recognized that by following the typical ISO 21930:2017 definitions of modules A1, A2, and A3 for a specific production facility, inconsistencies may occur in classifying individual processes as either A1 or A3 based on the scope of the operations that take place at a given facility. Care must be taken not to compare A1, A2, or A3 on an individual basis for a given product from various mill producers, but instead on the aggregated total of A1, A2, and A3. Separate A1, A2, and A3 values are provided for a better understanding of the processes taking place at a given facility and a greater level of transparency.

[1] https://worldsteel.org/wp-content/uploads/A-methodology-to-determine-the-LCI-of-steel-industry-co-products.pdf. Specific allocation factors are available in "Appendix 3: List of allocation rules applied to specific inputs and output flows in steelmaking processes."

Construction product environmental impact results provide a sufficient basis for comparison only when considered in the context of the construction works project. In all cases of comparing construction products, the principle that the basis for comparison of the assessment is the construction works level shall be maintained by ensuring that the same functional requirements are met and that the criteria in ISO 21930:2017 Section 5.5, *Comparability of EPDs for Construction Products*, are satisfied.

The EPD owner has sole ownership, liability, and responsibility for the EPD. Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building or construction works level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Examples of variations include the use of different LCA software and background LCI datasets, which may lead to differences in results upstream or downstream of the life cycle stages declared.

4. LCA: Scenarios and Additional Technical Information

Inputs for the Manufacture of Structural Steel

The primary material input for this unit process is steel scrap, ferroalloys, lime and carbonaceous materials. Energy inputs include electricity and fuel resources (natural gas, diesel). Electricity and resources (e.g., natural gas, diesel, process water) used at the manufacturing facilities are allocated to the products based on the worldsteel method for steel production at the Gerdau facility from January 01, 2024, to December 31, 2024.

Outputs from the Manufacture of Structural Steel

The primary intended outputs of the facility include structural steel, and steel slag. Byproducts produced in this facility include baghouse dust, shear crops, and mill scale. Air emissions result from onsite process emissions, the combustion of fossil fuels, and electricity used.

Transportation

Transportation impacts were modeled in accordance with Section 7.1.7.2.3 of the Smart EPD Part B PCR for Designated Steel Construction Products. For trips under 200 miles, short-haul transport was modeled as round-trip, consistent with PCR guidance that assumes local trucks return empty. The ecoinvent transportation datasets used in this study include return trip assumptions.

For long-haul transport (over 200 miles), calculations were adjusted to exclude the default return trip assumption. This aligns with PCR guidance that bulk carriers used for long distances typically do not return empty.

Transportation of waste materials at manufacturing assumes a 20 mile (~32 km) average distance to disposal, where unknown, consistent with assumptions used in the US EPA WARM model.

Waste Disposal

Assumed disposal rates for nonhazardous wastes are based on US EPA MSW statistics rate of 20% incineration and 80% landfilled. The overall majority of hazardous waste at Gerdau facilities are recycled with only a small amount going to landfills.

5. LCA: Results

Results of the Life Cycle Assessment are calculated using Life Cycle Impact Assessment (LCIA) methods. The following environmental impact category indicators are reported using characterization factors based on the TRACI 2.2 and EF 3.1 impact assessment methods. It is noted that LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The Global Warming Potential (GWP) indicators reported under the EF 3.1 method are calculated using the 100-year time horizon characterization factors from the IPCC Sixth Assessment Report (AR6, 2021), excluding carbon-climate feedbacks, as specified by the EF 3.1 reference package.

Table 7. *Impact categories and units*

EF 3.1 Impact Categories	Unit	TRACI 2.2 Impact Category	Unit
Global Warming Potential - total (GWP-total)	kg CO_2 eq.	Ozone Depletion Potential **(ODP)**	kg CFC 11 eq
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	Acidification Potential **(AP)**	kg SO_2 eq
Global Warming Potential - biogenic (GWP-biogenic)	kg CO_2 eq.	Eutrophication Potential - marine **(EP)**	kg N eq
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	Eutrophication Potential - freshwater **(EP)**	kg N eq
		Smog (Photochemical Oxidation Formation)	kg O_3 eq

These impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.
The following inventory parameters, specified by the PCR, are also reported.

Table 8. *Nomenclature and reporting units for resource use and waste flows.*

Resources	Unit	Waste and Outflows	Unit
RPR_E: Renewable primary resources used as energy carrier (fuel)	MJ, LHV	**HWD:** Hazardous waste disposed	kg
RPR_M: Renewable primary resources with energy content used as material	MJ, LHV	**NHWD:** Non-hazardous waste disposed	kg
RPR_T: Total renewable primary resources	MJ, LHV	**HLRW:** High-level radioactive waste, conditioned, to final repository	kg
$NRPR_E$: Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	**ILLRW:** Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
$NRPR_M$: Non-renewable primary resources with energy content used as material	MJ, LHV	**CRU:** Components for re-use	kg
$NRPR_T$: Total non-renewable primary resources	MJ, LHV	**MR:** Materials for recycling	kg
SM: Secondary materials	kg	**MER:** Materials for energy recovery	kg
RSF: Renewable secondary fuels	MJ, LHV	**EE:** Recovered energy exported from the product system	MJ, LHV
NRSF: Non-renewable secondary fuels	MJ, LHV	**ADPF:** Abiotic Depletion Potential for Fossil Fuels	MJ, LHV
RE: Recovered energy	MJ, LHV	-	-
FW: Use of net freshwater resources	m^3	-	-

Table 9. *Resource use and waste indicators per declared unit (metric ton) for unfabricated structural steel. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	Raw Materials (A1)	Upstream Transport (A2)	Manufacturing (A3)	Total (A1-A3)
RESOURCES				
Renewable primary resources used as energy carrier (RPR_E) (MJ)	202	18.0	101	321
	63%	6%	31%	100%
Renewable primary resources used as material (RPR_M) (MJ)	0.00	0.00	0.00	0.00
	n/a	n/a	n/a	n/a
Total renewable primary resources with energy content (RPR_T) (MJ)	202	18.0	101	321
	63%	6%	31%	100%
Non-renewable primary resources used as an energy carrier ($NRPR_E$) (MJ)	2,000	559	7,940	10,500
	19%	5%	76%	100%
Non-renewable primary resources used as material ($NRPR_M$) (MJ)	229	0.00	0.00	229
	100%	0%	0%	100%
Total non-renewable primary resources with energy content (RPR_T) (MJ)	2,220	559	7,940	10,700
	21%	5%	74%	100%
Secondary materials (SM) (kg)	987	0.00	0.00	987
	100%	0%	0%	100%
Renewable secondary fuels (RSF) (MJ)	0.00	0.00	0.00	0.00
Nonrenewable secondary fuels (NRSF) (MJ)	0.00	0.00	0.00	0.00
Recovered energy (MJ)	0.00	0.00	0.00	0.00
Abiotic Depletion Potential for Fossil Resources (ADP_{Fossil}) (MJ)	1,040	542	5,510	7,090
	15%	8%	78%	100%
Use of net freshwater resources (FW) (m^3)	0.304	0.116	2.57	2.99
	10%	4%	86%	100%
WASTES				
Hazardous waste disposed (HWD) (kg)	0.00	0.00	0.00	0.00
	n/a	n/a	n/a	n/a
Non-hazardous waste disposed (NHWD) (kg)	0.00	0.00	50.6	50.6
	0%	0%	100%	100%
High-level radioactive waste (HLRW) (kg)	$3.06x10^{-4}$	$7.61x10^{-5}$	$6.88x10^{-3}$	$7.26x10^{-3}$
	4%	1%	95%	100%
Low-level radioactive waste (ILLRW) (kg)	$7.65x10^{-4}$	$1.80x10^{-4}$	$2.83x10^{-2}$	$2.93x10^{-2}$
	3%	1%	97%	100%
Components for Reuse (CRU) (kg)	0.00	0.00	0.00	0.00
Materials for Recycling (MR) (kg)	0.00	0.00	11.5	11.5
	0%	0%	100%	100%
Materials for Energy Recovery (MER) (kg)	0.00	0.00	0.00	0.00
Exported Energy (EE) (MJ)	0.00	0.00	0.00	0.00

Table 10. *Life Cycle Impact Assessment results by life cycle phase for the declared unit (metric ton) of unfabricated structural steel. All values are rounded to three significant digits. Values below indicator results show the percentage contribution of each life cycle module to the result for each impact category.*

Impact Category (Units)	A1	A2	A3	Total (A1-A3)
IPCC AR6				
Global Warming Potential - Total (kg CO_2 eq)	137	42.5	451	630
	22%	7%	72%	100%
Global Warming Potential - Fossil (kg CO_2 eq)	136	42.4	451	629
	22%	7%	72%	100%
Global Warming Potential - Biogenic (kg CO_2 eq)	0.197	$2.03x10^{-2}$	$6.29x10^{-2}$	0.280
	70%	7%	22%	100%
Global Warming Potential – Land Use and Land Use Change (kg CO_2 eq)	0.116	$3.22x10^{-2}$	$3.26x10^{-2}$	0.181
	64%	18%	18%	100%
TRACI 2.2				
Ozone Depletion Potential (kg CFC-11 eq)	$1.83x10^{-6}$	$5.52x10^{-7}$	$2.13x10^{-6}$	$4.51x10^{-6}$
	41%	12%	47%	100%
Acidification Potential (kg SO_2 eq)	0.883	0.253	0.787	1.92
	46%	13%	41%	100%
Eutrophication Potential: Freshwater (kg P eq)	$4.17x10^{-2}$	$6.28x10^{-3}$	0.158	0.206
	20%	3%	77%	100%
Eutrophication Potential: Marine (kg N eq)	0.660	0.275	0.443	1.38
	48%	20%	32%	100%
Smog Formation Potential (kg O_3 eq)	16.0	6.73	10.5	33.2
	48%	20%	32%	100%

The results are presented for the declared unit of 1 metric ton of unfabricated structural steel produced at the Cartersville, GA mill, per the requirements of the PCR under Option 1. *Note that results in the 2021Gerdau Structural Steel EPDs were presented for 1 metric ton of fabricated structural steel.* Additional results for the fabricated structural steel are presented in Section 7 – Additional Environmental Information.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building or construction works has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase only when product or construction works 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, are based on different product category rules or are missing relevant environmental impacts. Such comparisons can be inaccurate and could lead to erroneous selection of materials or products that are higher-impact, at least in some impact categories.

6. LCA: Interpretation

LCIA results were assessed relative to the production of 1 metric ton of unfabricated structural steel, and the impact category indicator results are presented in Section 5. Generally speaking, for the product systems and indicators included

in this study, the contribution to impacts from the production of unfabricated structural steel (A3) are the largest, followed largely by extraction and processing of raw materials (A1).

Limitations

As a result of the choice of study scope and LCIA methodologies used, there are several important study limitations which should be understood to ensure an appropriate interpretation of results, as described below.

Limitations in the Study Scope

Primary data of material components was not available for some raw materials upstream of the Gerdau facility. Secondary data consists of Ecoinvent datasets.

Comparison of the environmental performance of construction products should be based on the product's use in a building, considering the complete life cycle. Results that do not consider the complete building context are inappropriate for comparing construction products. Comparability of EPDs is limited to those applying a functional unit.

Limitations in the Life Cycle Impact Assessment Phase

There are several important limitations in the LCIA methodologies used, which are based upon the requirements of the PCR. These limitations are described below.

There may be additional impacts relevant to the manufacture of the final products. Some of these omitted impact categories are listed in Table 11. This list is not exhaustive; there may be other impact categories which are not included.

Table 11. *Impact categories omitted from the LCIA of the final products.*

Impact Categories	Impact Categories
Terrestrial Biome Disturbance	Hazardous Environmental Contaminant Exposure Risks
Freshwater Biome Disturbance	$PM^{2}_{.5}$ Exposures
Loss of Key Species	Hazardous Ambient Air Contaminant Exposure Risks
Arctic Climate Change	Hazardous Food and Water Contaminant Exposure Risks
Ocean Acidification	Risks from Radioactive Wastes

It should also be noted that LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Limitations in Results for Other Parameters

The PCR requires that results for several inventory flows related to construction products are to be reported as "other parameters". These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted taking into account this limitation.

7. Additional Environmental Information

7.1 Sustainability at the Forefront

Climate change is an important topic for Gerdau within its business and sustainability strategy. For over 125 years, our company has operated sustainably by utilizing a production matrix based primarily on recycled scrap and charcoal, which has always placed it among the lowest greenhouse gas emitters in the global steel industry. Since 2015, the company has been publishing its audited carbon data and working on further reducing its emissions.

Within North America, Gerdau's steel products are among those with the lowest embodied carbon and Global Warming Potential (GWP). This is driven by our highly efficient Electric Arc Furnace (EAF) operations, which rely exclusively on scrap as the primary feedstock. Unlike many EAF-based producers in the region, our process does not depend on Direct Reduced Iron (DRI) or Hot Briquetted Iron (HBI)—inputs that are often used to supplement scrap but typically carry a higher carbon footprint due to their upstream processing requirements.

In 2019, Gerdau established its Strategy and Sustainability Committee that works closely with the Board of Directors to incorporate ESG factors when determining capital allocation and defining investment plans - not just the production and return on capital aspects. Additionally, in 2021, the performance targets for ESG indicators, such as CO2e emissions, were included in the Long-Term Incentive Plans (ILP) of the company's senior executives.

Gerdau has adopted the MACC (Marginal Abatement Cost Curve) and MEAC (Marginal Energy Abatement Cost Curve) methodologies to establish the short-,medium- and long-term emission reduction targets. These studies aim at exploring both available and evolving technologies that are relevant to Gerdau's steelmaking process, prioritize and plan investments.

Our Commitment

Gerdau is committed to a low-carbon economy and has drawn up a medium and long-term strategy to be part of the solutions in this regard. Our ambition is to be carbon neutral by 2050.

We'll reach our goals by:

- Actively collaborating with industry organizations, universities and research centers in the pursuit of disruptive steelmaking technologies.
- Streamlining our production processes and investing in clean and renewable energy matrices, such as our 80-megawatt solar farm in Texas.
- Dialoguing and collaborating with diverse segments of society to implement public policies, new technologies and improve industrial processes.
- Pursuing certifications that are best-in-class and relevant to our clients and industry stakeholders. For instance, Gerdau utilizes ISO 14001, which is an international standard for Environmental Management Systems (EMS) and defines how a company should manage, monitor, and improve its environmental performance. Gerdau also takes an active role in supporting a greener built environment through the implementation of the Leadership in Energy and Environmental Design (LEED) and Green Globes Certification Programs. Please check more on our certifications in our portal.

Gerdau NewEco Steel

NewEco is Gerdau's low-emission steel product line, produced using recycled materials and renewable energy. It is designed to support decarbonization goals in construction while maintaining high performance and quality.

NewEco is produced using 98-100% scrap-based steel, with 100% renewable electricity (via RECs - Renewable Energy Certificate). A Renewable Energy Certificate (REC) represents proof that 1 megawatt-hour (MWh) of electricity was generated from a renewable source like, wind, solar, hydro or biomass. Following World Steel's definitions, the product maintains a verified greenhouse gas threshold of 400 kgCO2e/t.

NewEco supports a variety of sustainability credentials such as Leadership in Energy and Environmental Design (LEED), Embodied carbon reporting (EPD-based), Scope 3 emissions reduction and ESG disclosures.

Training: Empowering Our People for a Low-Carbon Future

Sustainability is no longer a standalone initiative—it is a core business priority embedded across every function, decision, and interaction. Achieving meaningful progress requires more than commitments or targets; it demands a workforce that is informed, engaged, and equipped to act.

This is where training becomes critical. Through the Gerdau Learning platform, employees are provided with the tools and resources needed to deepen their understanding of sustainability practices, decarbonization strategies, and environmental compliance requirements. By making learning accessible and continuous, the platform enables teams to translate knowledge into action across both operational and commercial functions.

As a result, Gerdau's workforce is better prepared to support the company's carbon neutrality ambitions while meeting increasingly stringent environmental and regulatory expectations.

7.2 Results With Fabrication

The environmental impact results presented in this Environmental Product Declaration represent unfabricated structural steel produced at the Gerdau Cartersville, GA facility, with a cradle-to-gate system boundary (modules A1–A3). Fabrication activities such as cutting, drilling, welding, surface preparation, and handling are not included within the declared product system boundary and are therefore not reflected in the LCA results reported in Sections 5 and 6.

Additional results for fabrication were modeled separately using the approach specified in the PCR in which the A1 impacts of the fabricated product are reported as 1.0771 x the A1-A3 impacts of the mill-level product, and modules A2 and A3 are taken directly from the 2025 industry-average American Institute of Steel Construction (AISC) EPD for Structural Steel. The AISC fabrication model represents typical North American steel fabrication operations and includes energy use, auxiliary materials, and process emissions associated with common fabrication activities. The modeling approach, assumptions, and data sources for fabrication are consistent with published AISC LCA guidance and are separate from the manufacturer-specific primary data used to model steel production at the Gerdau Cartersville facility.

Results for fabricated structural steel are presented in Tables 12 and 13. For the fabrication-inclusive results, modules A2 and A3 report marine eutrophication, per TRACI 2.2 as reported in the industry-wide EPD. Note that the industry-wide EPD does not report freshwater eutrophication and therefore these results are reported as INA herein.

The reported fabricated product results are based on industry-average fabrication impacts. Actual impacts for fabricated products vary depending on the particular project and its fabrication demands. EPDs published using this PCR do not include post-fabrication processes, including, but not limited to, epoxy coating, painting, and galvanization.

Table 12. *Resource use and waste indicators per declared unit (metric ton) for fabricated structural steel. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	Raw Materials (A1)	Upstream Transport (A2)	Manufacturing (A3)	Total (A1-A3)
RESOURCES				
Renewable primary resources used as energy carrier (RPR_E) (MJ)	345	1.11	150	496
	70%	0%	30%	100%
Renewable primary resources used as material (RPR_M) (MJ)	0.00	0.00	0.00	0.00
	n/a	n/a	n/a	n/a
Total renewable primary resources with energy content (RPR_T) (MJ)	345	1.11	150	496
	70%	0%	30%	100%
Non-renewable primary resources used as an energy carrier ($NRPR_E$) (MJ)	11,300	503	1,460	13,300
	85%	4%	11%	100%
Non-renewable primary resources used as material ($NRPR_M$) (MJ)	247	0.00	0.00	247
	100%	0%	0%	100%
Total non-renewable primary resources with energy content (RPR_T) (MJ)	11,500	503	1,460	13,500
	85%	4%	11%	100%
Secondary materials (SM) (kg)	1,060	0.00	0.00	1,060
	100%	0%	0%	100%
Renewable secondary fuels (RSF) (MJ)	0.00	0.00	0.00	0.00
Nonrenewable secondary fuels (NRSF) (MJ)	0.00	0.00	0.00	0.00
Recovered energy (MJ)	0.00	0.00	0.00	0.00
Abiotic Depletion Potential for Fossil Resources (ADP_{Fossil}) (MJ)	7,640	506	1,130	9,270
	82%	5%	12%	100%
Use of net freshwater resources (FW) (m^3)	3.23	$5.51x10^{-3}$	0.372	3.60
	90%	0%	10%	100%
WASTES				0
Hazardous waste disposed (HWD) (kg)	0.00	$3.53x10^{-3}$	$4.08x10^{-3}$	$7.61x10^{-3}$
	0%	46%	54%	100%
Non-hazardous waste disposed (NHWD) (kg)	54.5	$7.05x10^{-2}$	12.3	66.9
	82%	0%	18%	100%
High-level radioactive waste (HLRW) (kg)	$7.82x10^{-3}$	0.00	0.00	$7.82x10^{-3}$
	100%	0%	0%	100%
Low-level radioactive waste (ILLRW) (kg)	$3.15x10^{-2}$	0.00	0.00	$3.15x10^{-2}$
	100%	0%	0%	100%
Components for Reuse (CRU) (kg)	0.00	0.00	0.00	0.00
Materials for Recycling (MR) (kg)	12.3	0.00	77.1	89.4
	14%	0%	86%	100%
Materials for Energy Recovery (MER) (kg)	0.00	0.00	0.00	0.00
Exported Energy (EE) (MJ)	0.00	0.00	0.00	0.00

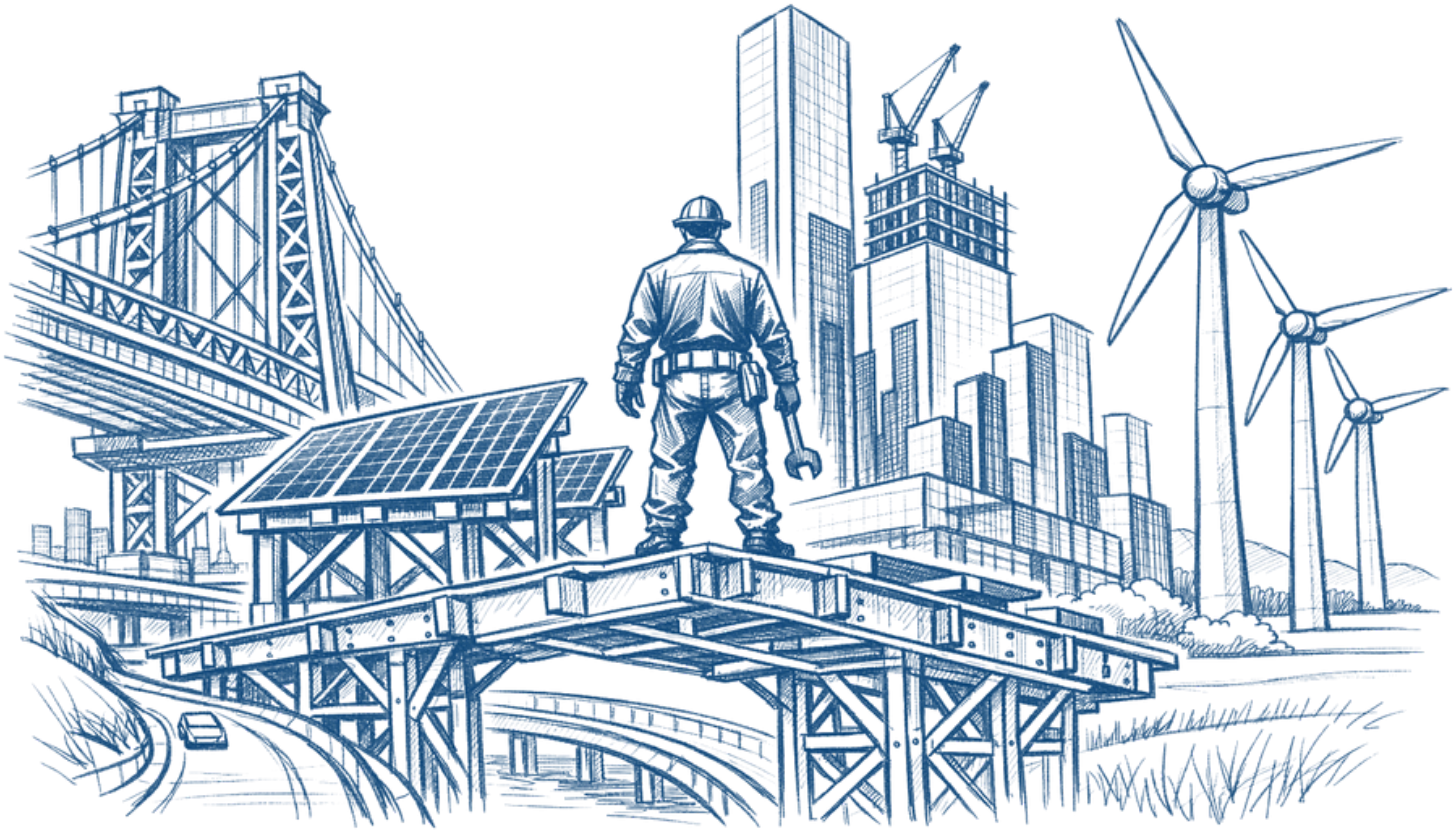
Table 13. *Life Cycle Impact Assessment results by life cycle phase for the declared unit (metric ton) of fabricated structural steel. All values are rounded to three significant digits. Values below indicator results show the percentage contribution of each life cycle module to the result for each impact category.*

Impact Category (Units)	A1	A2	A3	Total (A1-A3)
IPCC AR6				
Global Warming Potential - Total (kg CO_2 eq)	678	26.2	82.4	787
	86%	3%	10%	100%
Global Warming Potential - Fossil (kg CO_2 eq)	678	26.2	82.3	786
	86%	3%	10%	100%
Global Warming Potential - Biogenic (kg CO_2 eq)	0.302	$1.85x10^{-3}$	$4.27x10^{-2}$	0.346
	87%	1%	12%	100%
Global Warming Potential – Land Use and Land Use Change (kg CO_2 eq)	0.194	$1.71x10^{-3}$	$5.48x10^{-2}$	0.251
	77%	1%	22%	100%
TRACI 2.2				
Ozone Depletion Potential (kg CFC-11 eq)	$4.86x10^{-6}$	$5.41x10^{-7}$	$7.72x10^{-7}$	$6.18x10^{-6}$
	79%	9%	13%	100%
Acidification Potential (kg SO_2 eq)	2.07	$9.89x10^{-2}$	0.215	2.38
	87%	4%	9%	100%
Eutrophication Potential: Freshwater (kg P eq)	0.222	0.113	0.108	0.443
	50%	26%	24%	100%
Eutrophication Potential: Marine (kg N eq)	1.49	0.113	0.108	1.71
	87%	7%	6%	100%
Smog Formation Potential (kg O_3 eq)	35.7	2.77	2.70	41.2
	87%	7%	7%	100%

8. References

- American Center for Life Cycle Assessment (ACLCA) (May 2019). ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017.
- American Institute of Steel Construction (AISC). Fabrication Process for Structural Steel. Smart EPD®, Declaration No. SmartEPD-2025-092-0615-01.2. October 15, 2025; last updated October 30, 2025. https://www.aisc.org/media/wqamfioo/fabrication-process-for-structural-steel-10-30-2025.pdf
- Ecoinvent Centre (2023) Ecoinvent data from v3.11 Swiss Center for Life Cycle Inventories, Dübendorf, 2023, http://www.ecoinvent.org
- ISO 14025: 2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures
- ISO 14040: 2006/Amd 1: 2020 Environmental Management – Life cycle assessment – Principles and framework
- ISO 14044: 2006/AMD 1:2017/ AMD 2:2020 Environmental Management – Life cycle assessment – Requirements and Guidelines.
- ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services
- Intergovernmental Panel on Climate Change. Climate Change 2021: Mitigation of Climate Change: Volume 3: Emission Factors. Cambridge University Press, 2021. www.ipcc.ch/report/ar6/wg3/
- SCS Consulting Services. Life Cycle Assessment of Four Steel Products. October 2026. Prepared for Gerdau.
- SCS Type III Environmental Declaration Program: Program Operator Manual v12.0. December 2023. SCS Global Services
- Smart EPD®. *Smart EPD® Part A Product Category Rules for Building and Construction Products and Services.* 1000, v1.2 Smart EPD, 14 Mar, 2025 smartepd.com/pcr-library.
- Smart EPD®. *Smart EPD® Part B Product Category Rules for Designated Steel Construction Products.* 1000-008, v3.0, Smart EPD, 3 Apr. 2025, smartepd.com/pcr-library.
- Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) v 2.2. Dr. Bare, J., https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci
- "*WARM Model Transportation Research - Draft*." Memorandum from ICF Consulting to United States Environmental Protection Agency. September 7, 2004. http://epa.gov/epawaste/conserve/tools/warm/SWMGHGreport.html#background.
- US EPA. Advancing Sustainable Materials Management: 2018 Fact Sheet. Assessing Trends in Material Generation, Recycling and Disposal in the United States. December 2020. https://www.epa.gov/sites/default/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf

GERDAU



Illustrated using AI by Dustan Cantrell, Category Buyer US & CA, Gerdau Cartersville