

# Steel Wire Rod

Date of Issue

**Aug 25, 2025**

Expiration date

**Aug 25, 2030**

Last updated

**Aug 25, 2025**

## General Information

### CMC

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Product Name:	Steel Wire Rod
Declared Unit:	1 metric ton
Declaration Number:	SmartEPD-2025-086-0607-01
Date of Issue:	August 25, 2025
Expiration:	August 25, 2030
Last updated:	August 25, 2025
EPD Scope:	Cradle to gate A1 - A3
Market(s) of Applicability:	North America

## General Organization Information

CMC is an innovative solutions provider helping build a stronger, safer, and more sustainable world. Through an extensive manufacturing network principally located in the United States and Central Europe, we offer products and technologies to meet the critical reinforcement needs of the global construction sector. CMC's solutions support construction across a wide variety of applications, including infrastructure, non-residential, residential, industrial, and energy generation and transmission.



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

## Limitations, Liability, and Ownership











Environmental declarations from different programs based upon differing PCRs 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 level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. Full conformance with the PCR for Designated Steel Construction 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. 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. The EPD owner has sole ownership, liability, and responsibility for the EPD.

## Reference Standards

Standard(s):	ISO 14025 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: Designated Steel Construction Products v.2 Date of issue: August 26, 2020 Valid until: August 26, 2025
Sub-category PCR review panel:	 Contact Smart EPD for more information.
General Program Instructions:	 Smart EPD General Program Instructions v.1.0, November 2022

## Verification Information

LCA Author/Creator:	 McKay Quinn    <a href="mailto:mquinn@trinityconsultants.com">mquinn@trinityconsultants.com</a>	
EPD Program Operator:	 Smart EPD    <a href="mailto:info@smarteprd.com">info@smarteprd.com</a>    <a href="http://www.smarteprd.com">www.smarteprd.com</a>    585 Grove St., Ste. 145 PMB 966, Herndon, VA 20170, USA	
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:  Brandie Sebastian    <a href="mailto:brandie@bsebastianconsulting.com">brandie@bsebastianconsulting.com</a>	<a href="#">External</a>
	Independent external verification of EPD, according to ISO 14025 and reference PCR(s):  Brandie Sebastian    <a href="mailto:brandie@bsebastianconsulting.com">brandie@bsebastianconsulting.com</a>	<a href="#">External</a>

## Product Information

Declared Unit:	1 metric ton
Mass:	1000 kg
Product Specificity:	 Product Average  Product Specific

## Product Description

Wire rod is a hot-rolled round produced in coil form that is approximately 2,600 lbs and is typically drawn into wire for use in a wide variety of construction and industrial applications, including tie wire, mesh, fencing, shelving, shopping carts, wire hangers, and nails. The approximate material content of carbon steel wire rod will vary slightly from batch to batch. In addition, wire drawn from rod can be galvanized, plated, and painted. Wire rod is packaged in coils, which average 1.5 tons. The coils are secured with steel banding that is wrapped around the coil. The length, weight, size, heat, and grade information are declared on a tag that is stud-welded or wire-tied to the coil. All CMC wire rod is manufactured from 100% recycled scrap steel sourced within the United States.

Further information can be found at: <https://www.cmc.com/en-us/what-we-do/america/mill-products/wire-rod>

## Product Specifications

Product Classification Codes:	EC3 - Steel Masterformat - 05 00 00 UNSPSC - 302644
Form Factor:	Steel
Steel Type:	Alloy
Options:	✓ Cold Finished

## Material Composition

Material/Component Category	Origin	% Mass
Recycled steel	GLO	>97%
Carbon	GLO	0% - 0.9%
Manganese	GLO	0% - 2%
Silicon	GLO	0% - 1.5%
Nickel	GLO	0% - 1.5%
Vanadium	GLO	0% - 1.5%
Copper	GLO	0% - 1.5%
Tin	GLO	0% - 1.5%
Sulfur	GLO	0% - 1.5%
Phosphorus	GLO	0% - 1.5%
Pig Iron	GLO	0% - 1%

### Hazardous Materials

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

## EPD Data Specificity

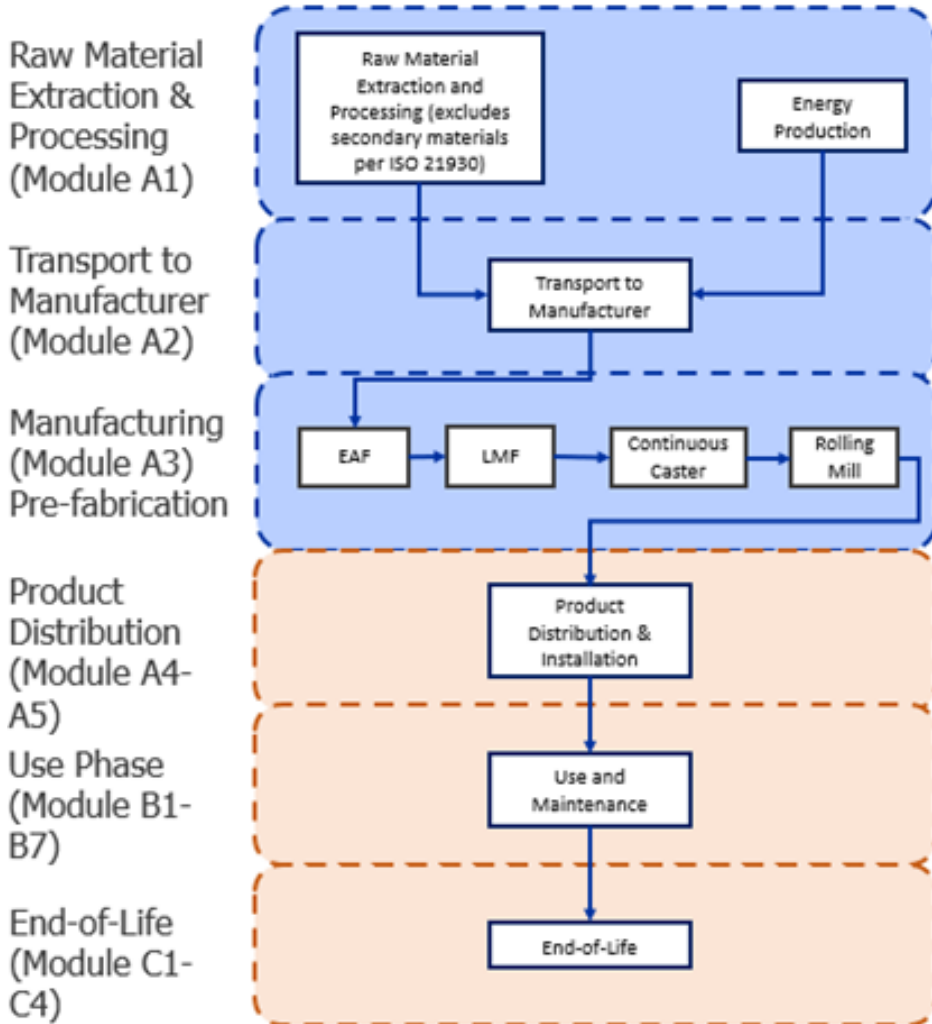
Primary Data Year:	FY2024
Manufacturing Specificity:	✗ Industry Average ✗ Manufacturer Average ✓ Facility Specific

### Averaging:

Averaging was not conducted for this EPD.

## System Boundary

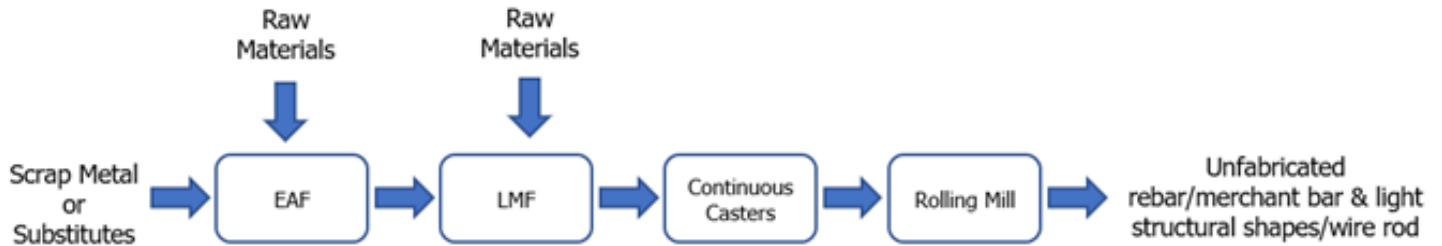
Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	ND
	A5	Assembly / Install	ND
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	ND
	C2	Transport	ND
	C3	Waste Processing	ND
	C4	Disposal	ND
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND



## Plants

 CMC - Jacksonville, FL  
16770 Rebar Road, Jacksonville, FL, USA

## Product Flow Diagram



CMC owns and operates steel micro-mills and mini mills that utilize Electric Arc Furnace (EAF) steel recycling technology. The EAF is charged with scrap, and an electric current is applied via large electrodes made of graphite or other high carbon material to melt the raw materials. Some mills are equipped with co-jet burners which introduce natural gas and oxygen for oxyfuel combustion. These burners even out energy imbalances, reduce furnace hot spots, and improve the overall energy efficiency of the process. Additives are introduced during the melting process to maintain the optimal steel melting conditions, to achieve the desired steel grade, and to remove impurities by migrating them to the slag. Once the desired composition is attained, the molten steel is then fed to a continuous casting process using water-cooled copper molds in which the steel cools and solidifies into billets.

At the rolling mill, the billets are reheated in a natural gas furnace and rolled into a variety of shapes, such as parallel flange sections, angles, channels, tees, and cylinders (rebar). Any steel scrap generated is recycled internally (i.e., put back into the EAF) or sent to other facilities to be recycled. The hot-rolled structural steel is cooled and then can either be transported off-site for distribution or be further processed.

## Software and Database

LCA Software:	 GaBi v. 10.9.1.10
LCI Foreground Database(s):	 GaBi Professional Database v. 2025.1    North America    cut-off
LCI Background Database(s):	 GaBi Professional Database v. 2025.1    North America    cut-off

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.

CMC production data has been collected by CMC directly from the production sites and are average values for fiscal year 2024 (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.

## Life Cycle Module Descriptions

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. As applicable, Module A1 includes raw material supply to CMC Steel Mill Facilities, including steel scrap. Module A2 includes transport to the steel mill. Module A3 includes manufacturing of mill products (unfabricated wire rod); including ancillary service operations.

## LCA Discussion

### Allocation Procedure

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 CMC facilities.

CMC steel mills EAFs produce steel billet and slag. All slag is sold as-is. Of the steel billet, a portion may be transported to another steel mill for further processing and a portion may remain at the same steel mill for further processing. The slag and steel billet are considered co-products of the product system resulting from a joint co-production process. Therefore, this study allocated the environmental burden of the EAF between the slag and steel products via physical partitioning for the unfabricated rebar products.

Additionally, in limited instances, CMC used operational data to allocate specific inputs between the designated products at the facility. In cases where such data was not available, the system inputs/outputs at a given facility were allocated to each product produced at the facility in proportion to manufacture of each product as a fraction of total facility production. (E.g., if a given facility produced 40% rebar and 60% merchant bar and light structural shapes, inputs/outputs were allocated 40% to rebar production and 60% to merchant bar and light structural shape production.)

### 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 of these omitted streams is less than 1% of the total mass input streams for their respective unit processes and the cumulative mass input of all of the 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:

✘ No

## Results

## Environmental Impact Assessment Results

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

per 1 metric ton of product .

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

### Unfabricated Wire Rod Results

Impact Category	Method	Unit	A1	A2	A3	A1A2A3
GWP-total	IPCC AR5 GWP 100	kg CO2 eq	1.28e+2	2.30e+1	4.20e+2	5.70e+2
ODP	TRACI 2.1	kg CFC 11 eq	1.19e-10	1.41e-12	5.64e-11	1.77e-10
AP	TRACI 2.1	kg SO2 eq	2.99e-1	7.58e-2	3.91e-1	7.66e-1
EP	TRACI 2.1	kg N eq	1.20e-2	6.14e-3	3.58e-2	5.40e-2
POCP	TRACI 2.1	kg O3 eq	5.00e+0	1.79e+0	7.93e+0	1.47e+1
ADP-fossil	CML v4.7	MJ	2.34e+3	2.92e+2	3.34e+3	5.96e+3

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.

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, 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.

## Resource Use Indicators

per 1 metric ton of product .

### Unfabricated Wire Rod Results

Indicator	Unit	A1	A2	A3	A1A2A3
RPRE	MJ, LHV	1.23e+2	2.43e+1	6.90e+2	8.37e+2
RPRM	MJ, LHV	0	N/A	N/A	0
NRPRE	MJ, LHV	2.31e+3	3.07e+2	4.18e+3	6.80e+3
NRPRM	MJ, LHV	7.39e+1	N/A	N/A	7.39e+1
SM	kg	9.79e+2	N/A	0	9.79e+2
RSF	MJ, LHV	N/A	N/A	0	0
NRSF	MJ, LHV	N/A	N/A	0	0
RE	MJ, LHV	N/A	N/A	0	0
FW	m3	3.01e-1	2.70e-2	1.33e+0	1.66e+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, NRPRM or PENRM = 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 1 metric ton of product .

### Unfabricated Wire Rod Results

Indicator	Unit	A1	A2	A3	A1A2A3
HWD	kg	0	N/A	2.42e-1	2.42e-1
NHWD	kg	0	N/A	1.61e+1	1.61e+1
HLRW	kg	2.10e-5	6.30e-6	3.59e-4	3.86e-4
ILLRW	kg	1.84e-2	5.27e-3	3.01e-1	3.24e-1
CRU	kg	N/A	N/A	N/A	N/A
MFR	kg	0	N/A	3.18e+1	3.18e+1
MER	kg	N/A	N/A	0	0
EEE	MJ, LHV	N/A	N/A	0	0

Note:

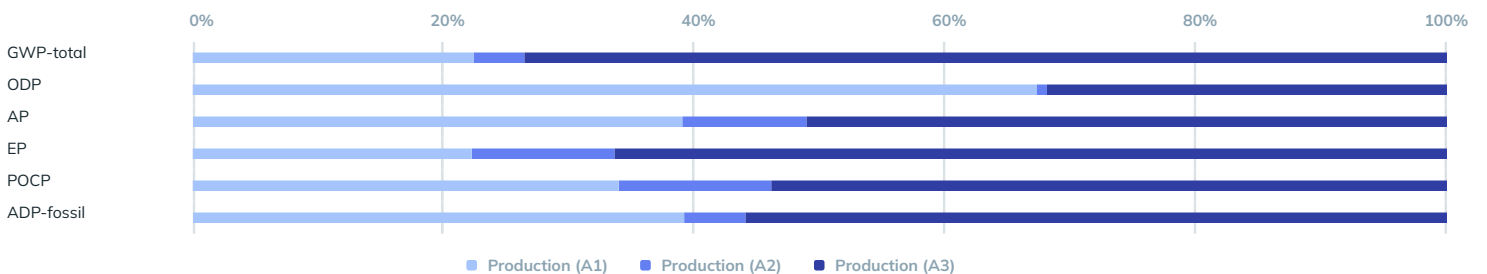
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

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.

## Interpretation

For unfabricated wire rod products, the impact assessment results indicate that Module A1, i.e. raw materials, is the key contributor to environmental impact categories for ozone depletion potential. Module A2, i.e. transport to the mill, is not the most significant contributor to any impact category. Module A3, i.e. manufacturing at the mill, is the key contributor to global warming potential, acidification potential, smog formation potential, eutrophication potential, and abiotic resource depletion potential of fossil energy resources.





## Additional Environmental Information

### Health and Safety

CMC implements Occupational Health and safety procedures including job-specific training, Safety Perception Surveys, the Proactive Safety Program and our global incident management system. Refer to the specific CMC's Occupational Health and Safety Policy.<sup>[1]</sup>

### Safety

CMC integrates a comprehensive, industry-leading health and safety program across all its global facilities. This includes full alignment with Occupational Health and Safety (OH&S) management systems and principles that promote a zero-incident culture. Key elements include compliance with legal and internal safety standards, proactive risk reduction, employee engagement, and the use of data analytics for performance monitoring. All incidents are investigated to drive continual improvement. CMC's safety culture applies to employees, contractors, visitors, and suppliers, with expectations outlined in its supplier code of conduct and OH&S policies.

### Environmental Activities and Certifications

Certain additional environmental activities and certifications are discussed in the following subsections. More information on CMC's certifications and environmental initiatives can be found at <https://esg.cmc.com/about/esg-at-cmc/> and <https://www.cmc.com/en-us/>.

### ISO 14001:2015 Environmental Management System

The environmental performance of CMC steel mills focuses on continuous improvement through internal and external training, application of new technologies and how data and results are communicated. To provide a framework for CMC teammates to follow, CMC utilizes ISO 14001, which is the international standard that establishes specific requirements for an effective environmental management system (EMS). CMC Steel New Jersey is certified to ISO 14001. In addition, six of CMC's mills in the United States are certified to the ISO 9001 standard for an effective Quality Management System (QMS), which covers certain environmental conditions, and three mills have QMSs that are modeled after the ISO 9001 standard.

### Sustainability

CMC has been making steel using an electric arc furnace (EAF) that melts recycled scrap and turns it into new steel. CMC strives to purchase a greater percentage of energy produced from renewable resources.

CMC's environmental initiatives incorporate the climate-related risks and opportunities for our global operations that were identified in a climate risk assessment (CRA) completed in 2023. The CRA process was led by a third party and aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to assess both physical and transition risks over short-, medium- and long-term timeframes. The CRA also helped identify stakeholder expectations regarding climate risk disclosure, including evolving sustainability reporting requirements by the U.S. Securities and Exchange Commission (SEC) and the EU's Corporate Sustainability Reporting Directive (CSRD).

### Recycled Materials Content

CMC's steel mills utilize state-of-the-art EAF technology to make steel. This technology uses pre- and post-consumer recycled scrap as the primary raw material for the steelmaking process and averages 98.0% recycled content. With a significantly high percentage of recycled materials, all of CMC's products play a major role in green construction and are a positive contributor to the LEED rating system.

As a result of our processes, CMC saves approximately 17 billion pounds of scrap metal from being landfilled annually. By using recycled steel as a key raw material, we also minimize the mining and extraction of virgin raw materials, which reduces potential negative impacts on biodiversity.

### Waste and Water Recycling

CMC recognizes water as a vital resource and recycles it multiple times throughout operations. Over 91% of water used is recycled, and 5 of CMC's 10 steel mills are zero water discharge facilities. CMC's water withdrawal intensity is just 4% of the steel industry average. All water use and discharges comply with applicable laws and regulations, including the U.S. Clean Water Act.

CMC reduces landfill waste by recycling metals as raw materials for new products across various industries. In shredding and scrap recycling, CMC separates ferrous and non-ferrous metals like copper, brass, and aluminum for reuse in construction, automotive, and aviation. CMC also recycles coproducts and byproducts from manufacturing, including steel slag for highway and asphalt use. Additionally, CMC captures and recycles 99% of baghouse dust from EAF furnaces, recovering zinc and other valuable metals for use in paints, rubber, and fertilizers.

## Environmental Activities and Certifications

Certification
ISO 14001:2015
None

## References

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