Declaration Owner

Telling Industries, LLC
4420 Sherwin Road, Willoughby, OH 44094
Phone: +1.440.974.3370
Email: sales.corp@tellingindustries.com
https://www.tellingindustries.com

Product:

Cold Formed Steel Framing and Accessories

Declared Unit

The declared unit is one metric ton of steel framing

EPD Number and Period of Validity

SCS-EPD-10287
EPD Valid November 8, 2024 through November 7, 2029

Product Category Rule

PCR Guidance for Version 4.0. UL Environment. March 2022.

PCR Guidance for Building-Related Products and Services. Part B: Designated Steel Construction Product EPD Requirements. UL Environment. August 2020.

Program Operator

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

Declaration owner:	Telling Industries, LLC
Address:	4420 Sherwin Road Willoughby, OH 44094
Declaration Number:	SCS-EPD-10287
Declaration Validity Period:	EPD Valid November 8, 2024 through November 7, 2029
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Tess Garvey, Ph.D., SCS Global Services
LCA Software and LCI database:	OpenLCA 2.2 software and the Ecoinvent v3.10 database
Product's Intended Application:	Cold formed steel framing is used in drywall and structural applications
Product RSL:	n/a
Markets of Applicability:	Global
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Gate
LCIA Method and Version:	IPCC AR5 and TRACI 2.1
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒ external
LCA Reviewer:	Lindita Bushi, PhD, Athena Sustainable Materials Institute
Part A Product Category Rule:	PCR Guidance for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 4.0. UL Environment. March 2022.
Part A PCR Review conducted by:	Lindita Bushi, PhD (Chair); Hugues Imbeault-Tétreault, ing., M.Sc.A.; Jack Geibig
Part B Product Category Rule:	PCR Guidance for Building-Related Products and Services. Part B: Designated Steel Construction Product EPD Requirements. UL Environment. August 2020.
Part B PCR Review conducted by:	Thomas Gloria, PhD; Brandie Sebastian, James Littlefield
Independent verification of the declaration and data, according to ISO 14025 and the PCR	☐ internal ☒ external
EPD Verifier:	Lindita Bushi, PhD, Athena Sustainable Materials Institute
Declaration Contents:	

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

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.

1. Telling Industries, LLC

Telling® Industries is an American owned, full line manufacturer of premium metal framing products and accessories. Telling boasts four manufacturing facilities located in Cambridge, OH, Osceola, AR, Windsor, CT and Plant City, FL. Each location is equipped with state-of-the-art roll forming machinery, large industrial slitters as well as metal brake & shear equipment. As an innovation leader, Telling is continually adding new and exciting products to better service its customers.

2. Products

2.1 PRODUCT DESCRIPTION

This EPD is for cold formed steel (CFS) framing manufactured by Telling Industries. The sizes produced are listed in Table 1. Galvanized steel coil is cold formed to serve as support in drywall and structural framing applications. The average density of the products is 7,850 kg/m^3.

Telling produces both drywall and structural framing track and studs, as well as framing accessories, in various shapes and sizes. Cold-formed steel framing is sheet steel that is formed into shapes and sizes described in Table 1.

Table 1. *Product sizes and technical specifications.*

Product	Sizes	Depth
Structural Stud	engineered C-shaped members, roll formed with the highest-grade galvanized steel available; 33mil to 118mil available; Standard G60 - G90 Available	2.5" to 16" Web 1.375" to 3.5" Flange
Structural Track	engineered C-shaped members, roll formed with the highest-grade galvanized steel available; 33mil to 118mil available; Standard G60 - G90 Available	2.5" to 16" Web 1.25" to 4" Leg
Structural Joists	engineered C-shaped members, roll formed with the highest-grade galvanized steel available; 33mil to 118mil available; Standard G60 - G90 Available	6" to 16" Web 1.625" to 3.5" Leg
Drywall Stud	It utilizes high strength 57 ksi yield strength metal framing with engineered design geometry that achieves equal or better performance of traditional full gauge products; 18mil to 33mil available; standard G40 - G60 & G90 Available	1.625" to 6" Web 1.25" to 1.4375" Flange
Drywall Track	It utilizes high strength 57 ksi yield strength metal framing with engineered design geometry that achieves equal or better performance of traditional full gauge products; 18mil to 33mil available; standard G40 - G60 & G90 Available	1.625" to 6" Web 1.25" to 3" Leg
Accessories	• DWFC DryWall Furring Channel: 7/8" and 1.5" sizes, 25ga through 12ga. • ASW Area Separation Wall: H Stud & C Track 25ga • Shaftwall C-T Stud & J Track & JL Corner 20ga, 33mil, 40mil with 2.5", 4", 6" web sizes • Titan Header: pre-assembled wide flange header & jamb system. 3-5/8", 4", 6", 8" web sizes, 2.5" & 3" flanges, 12ga, 14ga, 16ga. • T-Bead Corner Bead – Galvanized steel, available in 8', 9', 10' & 12' lengths. • CRC Cold Rolled Channel 16ga, with 1.5", 0.75", 2", & 2.5" web widths. • True-Brace Mechanical Stud Bridging Locks into the Stud without Clips or Welding saving time and money. 16ga, 1.5" web width. • Utility Angles/RA – 14ga through 20ga right angles. 1.5" x 1.5", 2.0" x 2.0", 3.0"x3.0" standard leg sizes with lengths available up to 24' length. Additional custom leg sizes and lengths available. • T-Strap (Flat Strap) – Length: 6' through 24' with additional custom lengths available. 12ga through 25ga. • Z Furring – Gauges: Standard 25 gauge, (available in 20, 18, and 16 gauge upon request) • RC-1 / RC2 – Resilient furring channel single and double leg. 25ga. 10' standard lengths. • Slotted Track – 2.5" & 3" leg lengths in 20S, 18ga, 16ga, & 14ga. • T-Block – Steel permanent anchor for mounted wall fixtures. 16ga and 20ga for 3-5/8" & 6" web widths, with additional custom sizes available. • VersaDry Track System – shelf that allows gypsum to sit 2" off the floor protecting walls from moisture damage, fire rating without caulk. 20EQ and 30mil with 3-5/8", 4", 5.5", 6" web widths. • TRC Rigid Right Angle Clips - 12ga, 14ga, 16ga.	See Description

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.

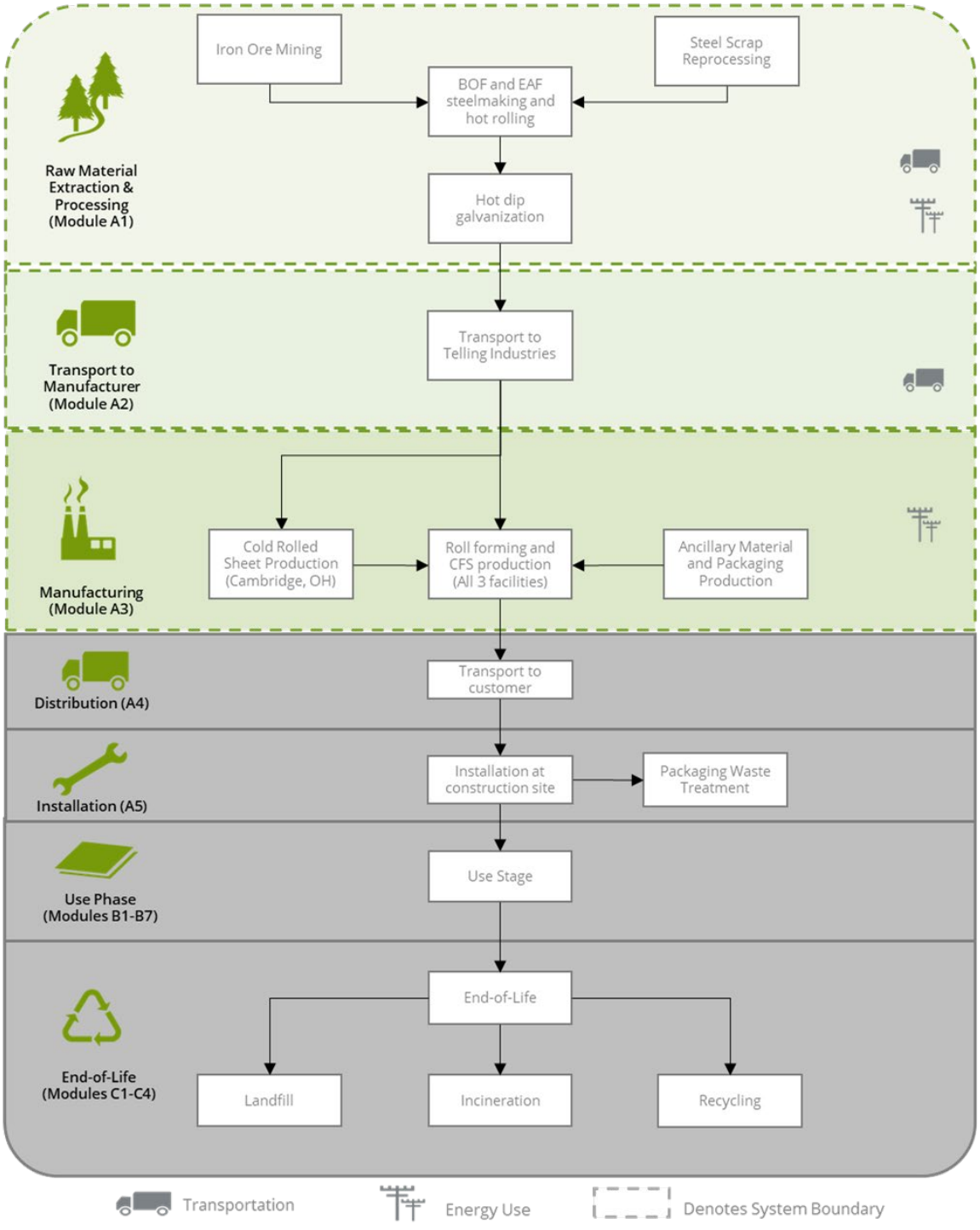

Figure 1. *Flow Diagram for the life cycle of the Telling Industries CFS products.*

2.3 DECLARATION OF METHODOLOGICAL FRAMEWORK

The scope of the EPD is cradle-to-gate, including raw material extraction and processing, steelmaking, finishing, coating, transportation to the Telling facilities, and final product manufacturing at facilities owned and operated by Telling. The life cycle phases included in the product system boundary are shown below.

Table 2. *Life cycle phases included in the Telling CFS 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

Telling is a member of the Steel Stud Manufacturers Association (SSMA), American Iron and Steel Institute's (AISI) former Committee on Framing Standards, and complies with all applicable American Society of Testing Materials (ASTM) standards. As a member of these organizations, which set and maintain standards for the International Building Code (IBC), Telling manufactures metal framing products that meet or exceed all applicable code requirements.

Load Bearing:

Telling Industries, LLC holds the International Code Compliance Evaluation Service Report (ICC-ESR 2281) verifying load bearing light gauge steel framing products are code compliant. This report and 3rd party quality audit validation provides evidence that both Telling products, and their *quality processes* meet or exceed International Building Code standards. Specifically, ICC-ESR 2281 covers:

- Section 2.0: outlines Telling's Coating compliance with AISI S220 for Drywall and Coating compliance with AISI S240 for Structural
- Section 3.2: outlines Telling's Material compliance with ASTM A1003
- Section 4.1: outlines Telling's Section Property (as listed on each Telling submittal sheet) compliance with AISI S100 including design thickness per gauge.
- Section 6.0: outlines Telling's compliance with ICC ESR Acceptance Criteria AC46
- Telling's load bearing metal framing complies with ASTM A1003, ASTM A653, and ASTM E119.

Telling's complete Load Bearing specification can be found in Arcat under spec 054000.

Non-Load Bearing:
Telling Industries Non-Load Bearing Traditional Metal Framing and Accessories are also found in ICC-ESR 2281 for 30mil and 33mil Stud & Track.

Telling Industries Supreme EQ Non-Loading Bearing system products meet or exceed the AISI and ASTM standards for non-load bearing metal framing. IAPMO UES Evaluation Report 0313 documents the Supreme product meets the 2018, 2015, & 2012 International Building Code standards. Telling's gauge equivalent non-structural framing meets the performance requirements of conventional non-structural framing as defined by the Steel Stud Manufacturers Association (SSMA).

Telling's complete Non-Load Bearing specification can be found in Arcat under spec 092216.

Shaftwall, Area Separation Wall, & Accessories:
Telling Industries CT Shaftwall Studs and J Runners meet or exceed ASTM C645 standards, and are manufactured utilizing steel which meets or exceeds ASTM A1003. Telling Industries shaftwall products meet or exceed International Building Code standards, and adhere to the requirements of the prescriptive UL fire ratings located directly in the building code and/ or referenced by the building code in the GA600 manual. Telling Industries CT Stud and J-runner products meet UL Design No. U417, U428, U429, U497, U498, V455 and V473. These UL ratings also have the referenced sound testing information in the ratings themselves (ASTM E90).

Telling Industries True Action Slotted Track (single deflection track) product meet or exceed International Building Code standards as well as ASTM A1003, C645, C754, C955, C1002, C1007, E119, E814 and E1966. The products have 111 head-of-wall UL approved fire rated systems.

Lastly, accessory products such as flat strapping and cold rolled channel are manufactured from steel meeting ASTM A1003, and ASTM A653 as well as meet International Building Code standards.

2.5 INTENDED APPLICATION

The framing is used in the drywall and structural framing applications.

2.6 MATERIAL COMPOSITION

The steel products modeled in this study are made from hot dipped galvanized steel. The products are manufactured from galvanized steel conformant to ASTM C653. This type of steel is generally made from low alloy steel with a coating of <2.1% zinc of product weight.

Steel construction products under normal conditions do not present inhalation, ingestion, or contact health hazards. These products are used inside the building envelope, or other structures, and do not include materials or substances which have potential route of exposure to humans or flora/fauna in the environment.

2.7 PROPERTIES OF DECLARED PRODUCT AS DELIVERED

The products are produced in various sizes, as described in Table 1.

2.8 MANUFACTURING

Each of the three facilities receive HDG coil from its suppliers. First, the coil is stress strain tested and slit on site. Two cold reduction mills operate at Cambridge for nonprime/secondary steel used in nonstructural products to increase

tensile strength. Cold reduced sheet is shipped to the other two Telling Industries in Windsor, CT and Osceola, AR. Last, all three facilities roll-form the steel into approximately one million unique product SKUs of Telling CFS product.

2.9 PACKAGING

Packaging for the CFS products includes wood-based dunnage, metal banding, and plastic banding. Each of the three facilities use metal channel packaging, PakChan, produced on-site.

2.10 FURTHER INFORMATION

Further information on the product can be found on the manufacturers' website at https://www.tellingindustries.com/

3. LCA: Calculation Rules

3.1 DECLARED UNIT

The declared unit used in the EPD is defined as one (1) metric ton of CFS framing, consistent with the PCR.

Table 2. *The modules and unit processes included in the scope for the Telling CFS framing products.*

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	Raw material extraction and processing, including but not limited to the recovery or extraction and processing of feedstock materials and including all activities necessary for steelmaking and coating
A2	Transport (to the manufacturer)	Transportation of raw materials (HDG master coil) to the Telling Industries facilities
A3	Manufacturing, including ancillary material production	Cold reduction at the Telling Cambridge, Ohio facility. Transportation of cold reduced steel from Cambridge to the other two Telling facilities. Roll forming of HDG and/or cold reduced steel at all three Telling facilities.
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

3.2 UNITS

All data and results are presented using SI units.

3.3 ESTIMATES AND ASSUMPTIONS

- Telling Industries purchases HDG steel from steel service centers and steel mills. Telling was able to retrieve the name and location of upstream steel mills from each of their suppliers and were able to identify the exact

steel mill for 82-87% of their supply for the CFS products. The steelmaking technology was also provided for the remaining 13-18% of suppliers.

- To the extent possible, EPDs or third party verified impact data representing the raw steel or HDG steel coil were used to represent steel from the appropriate supplier. In the absence of primary data from suppliers, Ecoinvent datasets were used to represent the appropriate steelmaking technology for the remaining steel supply.

- Rolling, finishing and coating processes (hot rolling, pickling and oiling, cold rolling and hot dip galvanization) were modeled using the LCIs, as taken from the AISI report on Life Cycle Inventories for Steel Product Manufacturing, using ecoinvent datasets in the openLCA software.

- The ecoinvent datasets for the appropriate regional electricity grids in which the Telling Industries operations are located were modified to reflect the US EPA eGRID subregion. Supply mixes were modeled based on U.S. EPA eGRID 2022 for the RFCW, SRMV, and NEWE subregions for the Cambridge, OH, Osceola, AR, and Windsor, CT, facilities respectively.

- For some of the hazardous waste generated at the Telling Industries facilities, specifically contaminated rags, data was only available in terms of 55 gallon drums. The mass of hazardous wastes is estimated using an average volume of textile per cubic yard and has no bearing on the results.
- Disposal of manufacturing waste is modeled based on statistics for solid and hazardous waste generation and disposal in the United States, as specified in the PCR. Specifically, where the disposal was done by a third party and the waste disposal method was not explicit, 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.

3.4 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.

3.5 DATA SOURCES

Primary data were provided by Telling for the three manufacturing facilities. The sources of data are supplier-specific EPDs, where possible, representative LCI data and the Ecoinvent database.

Table 3. *Data sources for the Telling Industries CFS framing product system.*

Flow	Dataset	Data Source	Publication Date
Suppliers and Coating			
	Supplier EPDs – *Supplier names proprietary*		2023, 2024
Steel slab from US suppliers	steel production, electric, low-alloyed | steel, low-alloyed | Cutoff, U - Europe without Switzerland and Austria steel production, converter, low-alloyed | steel, low-alloyed | Cutoff, U – RER *modified for average US electricity grid	Ecoinvent 3.10	2023
Hot dip galvanization	LCI for hot rolling, pickling, cold rolling and hot dip galvanizing from AISI report, modeled in ecoinvent.	AISI report	2020
Ancillary Materials			
Water-based Lubricant	lubricating oil production | lubricating oil | Cutoff, U - RER	Ecoinvent 3.10	2023
Solvent-based Lubricant	lubricating oil production | lubricating oil | Cutoff, U - RER	Ecoinvent 3.10	2023
Hydraulic Oil	Modeled based on SDS: market for base oil | base oil | Cutoff, U - GLO	Ecoinvent 3.10	2023
Water	market for tap water | tap water | Cutoff, U - Europe without Switzerland	Ecoinvent 3.10	2023
Packaging			
Dunnage	market for sawnwood, board, softwood, raw, dried (u=20%) | sawnwood, board, softwood, raw, dried (u=20%) | Cutoff, U - Europe without Switzerland	Ecoinvent 3.10	2023
Metal Banding	metal working, average for steel product manufacturing | metal working, average for steel product manufacturing | Cutoff, U – RER steel production, low-alloyed, hot rolled | steel, low-alloyed, hot rolled | Cutoff, U – RER *modified for US production of steel	Ecoinvent 3.10	2023
Poly Banding	market for polyethylene, high density, granulate | polyethylene, high density, granulate | Cutoff, U - GLO	Ecoinvent 3.10	2023
Fuels (Across Operations)			
Electricity	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - US-RFC - Modified for RFCW	Ecoinvent 3.10 US EPA eGRID	2023 2022
	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - US-SERC - Modified for SRMV	Ecoinvent 3.10 US EPA eGRID	2023 2022
	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - US-NPCC - Modified for NEWE	Ecoinvent 3.10 US EPA eGRID	2023 2022
Natural gas	market for heat, central or small-scale, natural gas | heat, central or small-scale, natural gas | Cutoff, U - Europe without Switzerland	Ecoinvent 3.10	2023
Propane	propane, burned in building machine | propane, burned in building machine | Cutoff, U - GLO	Ecoinvent 3.10	2023
Transportation			
Road	transport, freight, lorry 16-32 metric ton, EURO4 | transport, freight, lorry 16-32 metric ton, EURO4 | Cutoff, U - RoW	Ecoinvent 3.10	2023
Waste treatment			
Wastewater	market for wastewater, average | wastewater, average | Cutoff, U - Europe without Switzerland	Ecoinvent 3.10	2023
Hazardous wastes	treatment of waste textile, soiled, municipal incineration | waste textile, soiled | Cutoff, U - RoW treatment of waste mineral oil, hazardous waste incineration | waste mineral oil | Cutoff, U - Europe without Switzerland	Ecoinvent 3.10	2023

3.6 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 4. *Data quality assessment for the underlying LCA of Telling framing 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. All the data used represents an average of at least one year's worth of data collection. Manufacturer-supplied data (primary data) are based on annual production for the calendar year 2023 for all Telling Industries facilities. All supplier data are less than 3 years old. HDG coating is based on an LCI report published in 2020 and could be improved with updated data.
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 representative of the country of origin. Surrogate data used in the assessment are representative of "European" operations and considered sufficiently similar. Data are considered sufficiently similar to actual processes.
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 CFS framing 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 within modules A2 and A3 is considered to be high. Data sources of similar quality and age are used with a bias towards Ecoinvent v3.10 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. Some results within modules in A1 are taken from supplier EPDs, and would be difficult to assess for consistency.
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 for each of the Telling Industries manufacturing facilities and EPDs used 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 CFS framing products is low. Actual supplier data for upstream operations was not available for all 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 assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

3.7 PERIOD UNDER REVIEW

The period of review for the CFS framing products produced at the three Telling facilities is January 1, 2023 through December 31, 2023.

3.8 ALLOCATION

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

Mass allocation was deemed the most accurate and reproducible way of calculating the energy and material requirements for the manufacture of the steel products within the Telling facilities. Primary data for resource use (e.g., electricity, natural gas, water), waste/byproducts, and emissions released, are allocated on a mass-basis as a fraction of total annual production.

Per ISO 21930, 2.8.4.1.2, the useable output flows such as steel scrap shall not be considered as co-products but shall be considered waste, and no allocation to secondary material, secondary fuels, or recovered energy shall be permitted. With respect to the steel scrap or recycled materials, 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 HDG steel to the Telling operations is based on primary data provided by Telling, including modes, distances, and amount of steel transported from each supplier to Telling. Transportation was allocated on the basis of the mass and distance that the material was transported.

3.9 COMPARABILITY

Full conformance with the PCR for steel products allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category Part B PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible.

4. LCA: Scenarios and Additional Technical Information

Manufacturing

At each of the three mills, the coil is stress strain tested and slit on-site.

Two reduction mills operate at Cambridge for nonprime/secondary steel used in nonstructural products to increase tensile strength. Cold reduced sheet is shipped to the other two Telling Industries in Windsor, CT and Osceola, AR.

Last, all three facilities roll-form the steel into the framing products.

Transportation of waste materials at manufacturing assumes a 20 mile (~32 km) average distance to disposal, consistent with assumptions used in the US EPA WARM model. Hazardous wastes are disposed by incineration.

5. LCA: Results

Results of the Life Cycle Assessment are presented below. 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 following environmental impact category indicators are reported using characterization factors based on the U.S. EPA's Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts – TRACI 2.1 and IPCC AR5.

TRACI 2.1 Impact Category	Unit
Global Warming Potential (**GWP**)*	kg CO_2 eq
Ozone Depletion Potential (**ODP**)	kg CFC 11 eq
Acidification Potential (**AP**)	kg SO_2 eq
Eutrophication Potential (**EP**)	kg N eq
Smog Formation Potential (**SFP**)	kg O_3 eq
Fossil fuel depletion potential (**FFD**)	MJ Surplus, LHV
Abiotic depletion potential for fossil resources (**ADP FF**)**	MJ, LHV

*Results presented in this EPD are additionally included using IPCC AR5
**CML-IA v4 2018

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.

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
$NRPR_E$: Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	**HLRW:** High-level radioactive waste, conditioned, to final repository	kg
$NRPR_M$: Non-renewable primary resources with energy content used as material	MJ, LHV	**ILLRW:** Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
SM: Secondary materials	kg	**CRU:** Components for re-use	kg
RSF: Renewable secondary fuels	MJ, LHV	**MR:** Materials for recycling	kg
NRSF: Non-renewable secondary fuels	MJ, LHV	**MER:** Materials for energy recovery	kg
RE: Recovered energy	MJ, LHV	**EE:** Recovered energy exported from the product system	MJ, LHV
FW: Use of net freshwater resources	m^3	-	-

Table 5. *Life Cycle Impact Assessment (LCIA) results for the declared unit of CFS products manufactured by Telling at the Cambridge, Ohio facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
IPCC AR5				
GWP (kg CO_2 eq)	2,510	99.3	62.7	2,670
	94%	3.7%	2.35%	100%
TRACI 2.1				
GWP (kg CO_2 eq)	2,470	97.4	61.8	2,630
	94%	3.7%	2.35%	100%
AP (kg SO_2 eq)	7.79	0.354	0.173	8.32
	94%	4.3%	2.1%	100%
EP (kg N eq)	9.75	0.0918	0.205	10.0
	97%	0.91%	2.0%	100%
SFP (kg O_3 eq)	118	9.33	1.98	130
	91%	7.2%	1.5%	100%
ODP (kg CFC-11 eq)	$2.16x10^{-5}$	$2.12x10^{-6}$	$1.31x10^{-6}$	$2.51x10^{-5}$
	86%	8.4%	5.2%	100%
FFD (MJ surplus)	1,890	197	85.2	2,170
	87%	9.07%	3.92%	100%
CML-IA				
ADP, FF (MJ, LHV)	25,400	1,360	780	27,600
	92%	4.9%	2.8%	100%

Table 6. *Life Cycle Impact Assessment (LCIA) results for the declared unit of CFS products manufactured by Telling at the Windsor, CT facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
IPCC AR5				
GWP (kg CO_2 eq)	2,340	121	163	2,620
	89%	5%	6%	100%
TRACI 2.1				
GWP (kg CO_2 eq)	2,310	119	160	2,590
	89%	5%	6%	100%
AP (kg SO_2 eq)	8.66	0.432	0.366	9.46
	92%	5%	4%	100%
EP (kg N eq)	10.3	0.112	0.175	10.6
	97%	1%	2%	100%
SFP (kg O_3 eq)	118	11.4	8.26	138
	86%	8%	6%	100%
ODP (kg CFC-11 eq)	$3.76x10^{-5}$	$2.58x10^{-6}$	$4.25x10^{-6}$	$4.44x10^{-5}$
	85%	6%	10%	100%
FFD (MJ surplus)	1,680	241	351	2,270
	74%	11%	15%	100%
CML-IA				
ADP, FF (MJ, LHV)	21,300	1,660	2,340	25,300
	84%	7%	9%	100%

Table 7. *Life Cycle Impact Assessment (LCIA) results for the declared unit of CFS products manufactured by Telling at the Osceola, AR facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
IPCC AR5				
GWP (kg CO_2 eq)	2,250	152	127	2,530
	89%	6%	5%	100%
TRACI 2.1				
GWP (kg CO_2 eq)	2,230	149	124	2,500
	89%	6%	5%	100%
AP (kg SO_2 eq)	8.25	0.542	0.325	9.12
	90%	6%	4%	100%
EP (kg N eq)	9.23	0.141	0.216	9.58
	96%	1%	2%	100%
SFP (kg O_3 eq)	116	14.3	7.03	137
	84%	10%	5%	100%
ODP (kg CFC-11 eq)	$3.40x10^{-5}$	$3.24x10^{-6}$	$2.59x10^{-6}$	$3.99x10^{-5}$
	85%	8%	7%	100%
FFD (MJ surplus)	1,670	302	242	2,210
	75%	14%	11%	100%
CML-IA				
ADP, FF (MJ, LHV)	20,600	2,080	1,740	24,400
	84%	9%	7%	100%

Table 8. *Life Cycle Impact Assessment (LCIA) results, calculated as a production-weighted average, for the declared unit of CFS products manufactured by Telling. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
IPCC AR5				
GWP (kg CO_2 eq)	2,400	119	97.8	2,620
	92%	4.5%	3.7%	100%
TRACI 2.1				
GWP (kg CO_2 eq)	2,370	117	96.2	2,580
	92%	4.51%	3.7%	100%
AP (kg SO_2 eq)	8.06	0.424	0.250	8.74
	92%	4.8%	2.9%	100%
EP (kg N eq)	9.68	0.110	0.204	10.0
	97%	1.1%	2.0%	100%
SFP (kg O_3 eq)	118	11.2	4.50	133
	88%	8.4%	3.4%	100%
ODP (kg CFC-11 eq)	$2.79x10^{-5}$	$2.53x10^{-6}$	$2.16x10^{-6}$	$3.26x10^{-5}$
	86%	7.8%	6.6%	100%
FFD (MJ surplus)	1,791	236	174	2,200
	81%	11%	7.9%	100%
CML-IA				
ADP, FF (MJ, LHV)	23,300	1,630	1,310	26,300
	89%	6.2%	5.0%	100%

Environmental declarations from different programs based upon differing PCRs may not be comparable.

Comparison of the environmental performance of construction works and construction products using EPD information shall be based on the product's use and impacts at the construction works level. In general, EPDs may not be used for comparability purposes when not considered in a construction works context. Given this PCR ensures products meet the same functional requirements, comparability is permissible provided the information given for such comparison is transparent and the limitations of comparability explained.

When comparing EPDs created using this PCR, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to different results for upstream or downstream of the life cycle stages declared.

Table 9. *Resource use and waste flows for the declared unit of CFS products manufactured by Telling at the Cambridge, OH facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
Resources				
RPR_E (MJ, LHV)	2,460	23.7	185	2,670
	92.2%	0.9%	6.9%	100%
RPR_M (MJ, LHV)	0	0.00	327	327
	0.0%	0.0%	100%	100%
$NRPR_E$ (MJ, LHV)	27,200	1,390	1,090	29,700
	91.6%	4.7%	3.7%	100%
$NRPR_M$ (MJ, LHV)	908	0.00	0.00	908
	100%	0%	0%	100%
SM (kg)	35.9	0.00	0.00	35.9
	100%	0%	0%	100%
RSF/NRSF (MJ, LHV)	0.00	0.00	0.00	0.00
RE (MJ, LHV)	0.00	0.00	0.00	0.00
FW (m^3)	24.9	0.192	0.269	25.4
	98%	1%	1%	100%
Wastes				
HWD (kg)	0.00	0.00	0.0470	0.0470
	0.00%	0.00%	100%	100%
NHWD (kg)	0.00	0.00	1.12	1.12
	0.00%	0.00%	100%	100%
HLRW (kg)	0.00	0.00	0.00	0.00
	n/a	n/a	n/a	n/a
ILLRW (kg)	0.00	0.00	0.00	0.00
	n/a	n/a	n/a	n/a
CRU (kg)	0.00	0.00	0.00	0.00
MR (kg)	0.00	0.00	72.5	72.5
	0.00%	0.00%	100%	100%
MER (kg)	0.00	0.00	0.00	0.00
EE (MJ)	0.00	0.00	0.00	0.00

Table 10. *Resource use and waste flows for the declared unit of CFS products manufactured by Telling at the Windsor, CT facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
Resources				
RPR_E (MJ, LHV)	2,090	29.0	307	2,430
	86%	1.2%	13%	100%
RPR_M (MJ, LHV)	0.00	0.00	342	342
	0.0%	0.0%	100%	100%
$NRPR_E$ (MJ, LHV)	26,000	1,700	2,790	30,500
	85 %	5.6%	9.2%	100%
$NRPR_M$ (MJ, LHV)	74.3	0.00	25.7	100
	74.3%	0.0%	26%	100%
SM (kg)	508	0.00	0.00	508
	100%	0.00%	0.00%	100%
RSF/NRSF (MJ, LHV)	0.00	0.00	0.00	0.00
RE (MJ, LHV)	0.00	0.00	0.00	0.00
FW (m^3)	26.0	0.234	0.475	26.7
	97.3%	0.88%	1.8%	100%
Wastes				
HWD (kg)	0.0	0.00	0.122	0.122
	0%	0.00%	100%	100%
NHWD (kg)	0.0	0.0	0.0	0.0
	n/a	n/a	n/a	n/a
HLRW (kg)	0.0	0.0	0.0	0.0
	n/a	n/a	n/a	n/a
ILLRW (kg)	0.0	0.0	0.0	0.0
	n/a	n/a	n/a	n/a
CRU (kg)	0.0	0.0	0.0	0.0
MR (kg)	0.00	0.00	76.6	76.6
	0%	0.00%	100%	100%
MER (kg)	0.0	0.0	0.0	0.0
EE (MJ)	0.0	0.0	0.0	0.0

Table 11. *Resource use and waste flows for the declared unit of CFS products manufactured by Telling at the Osceola, AR facility. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
Resources				
RPR_E (MJ, LHV)	1,970	36.3	176	2,180
	90%	2%	8%	100%
RPR_M (MJ, LHV)	0.00	0.00	283	283
	0%	0%	100%	100%
$NRPR_E$ (MJ, LHV)	26,000	2,130	2,030	30,200
	86%	7%	7%	100%
$NRPR_M$ (MJ, LHV)	0.00	0.00	19.1	19.1
	0%	0%	100%	100%
SM (kg)	511	0.00	0.00	511
	100%	0%	0%	100%
RSF/NRSF (MJ, LHV)	0.00	0.00	0.00	0.00
RE (MJ, LHV)	0.00	0.00	0.00	0.00
FW (m^3)	25.5	0.293	0.384	26.2
	97%	1%	1%	100%
Wastes				
HWD (kg)	0.0	0.00	0.719	0.719
	0%	0%	100%	100%
NHWD (kg)	0.0	0.00	0.00	0.00
	N/A	N/A	N/A	N/A
HLRW (kg)	0.0	0.0	0.0	0.00
	N/A	N/A	N/A	N/A
ILLRW (kg)	0.0	0.0	0.0	0.0
	N/A	N/A	N/A	N/A
CRU (kg)	0.0	0.0	0.0	0.0
MR (kg)	0.00	0.00	75.5	75.5
	0%	0%	100%	100%
MER (kg)	0.0	0.0	0.0	0.0
EE (MJ)	0.0	0.0	0.0	0.0

Table 12. *Resource use and waste flows for the declared unit, calculated by a production-weighted average, of CFS products manufactured by Telling. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
Resources				
RPR_E (MJ, LHV)	2,250	28.4	201	2,480
	90.8%	1.1%	8.1%	100%
RPR_M (MJ, LHV)	0.00	0.00	316	316
	0.0%	0.0%	100%	100%
$NRPR_E$ (MJ, LHV)	26,700	1,660	1,640	30,000
	89.0%	5.5%	5.5%	100%
$NRPR_M$ (MJ, LHV)	501	0.00	9.82	511
	98.1%	0.0%	1.9%	100%
SM (kg)	254	0.0	0.0	254
	100%	0.0%	0.0%	100%
RSF/NRSF (MJ, LHV)	0.00	0.00	0.00	0.00
RE (MJ, LHV)	0.00	0.00	0.00	0.00
FW (m^3)	25.2	0.229	0.336	25.8
	97.8%	0.9%	1.3%	100.0%
Wastes				
HWD (kg)	0.0	0.0	0.266	0.266
	0%	0%	100%	100%
NHWD (kg)	0.0	0.0	0.604	0.604
	0.0%	0.0%	100%	100%
HLRW (kg)	0.0	0.0	0.0	0.0
	N/A	N/A	N/A	N/A
ILLRW (kg)	0.0	0.0	0.0	0.0
	N/A	N/A	N/A	N/A
CRU (kg)	0.0	0.0	0.0	0.0
MR (kg)	0.0	0.0	74.1	74.1
	0%	0%	100%	100%
MER (kg)	0.00	0.00	0.00	0.00
EE (MJ)	0.00	0.00	0.00	0.00

The PCR requires the calculation of biogenic carbon emissions and removals. No biogenic carbon is associated with the product. However, wood-based dunnage material is used in packaging. The biogenic carbon removal associated with the packaging is listed in Table 11. Emissions are not included as packaging end of life is outside the scope.

Table 11. *Biogenic carbon indicators*

	Module		
Additional Inventory Parameters	**A1**	**A2**	**A3**
Biogenic Carbon Removal from Product	0.0	0.0	0.0
Biogenic Carbon Emission from Product	0.0	0.0	0.0
Biogenic Carbon Removal from Packaging	0.0	0.0	Cambridge: 40.4 kg CO_2/metric ton Windsor, CT: 56.0 kg CO_2/metric ton Osceola: 45.9 kg CO_2/metric ton Average: 44.5 kg CO_2/metric ton
Biogenic Carbon Emission from Packaging	0.0	0.0	0.0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production	0.0	0.0	Neg.

6. LCA: Interpretation

The main contributing life cycle stage to indicator results for many of the impact category indicators assessed are the upstream steelmaking and coating occurring in module A1, while the second-greatest contributing module being either the upstream transportation of HDG to the Telling facilities (A2) or manufacturing at the Telling facilities and interfacility transportation (A3), depending on the indicator and location.

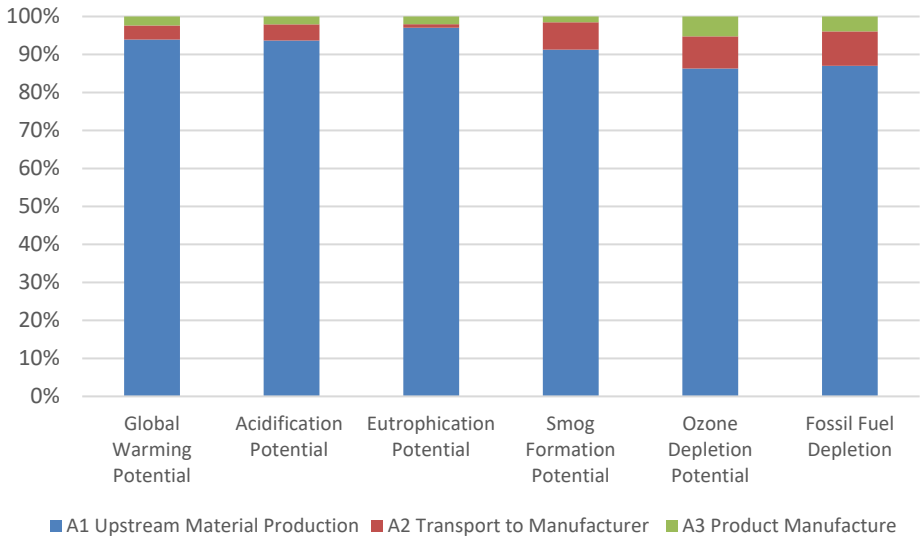

Figure 2. *Contribution analysis for the declared unit of the Telling CFS products (TRACI 2.1) at the Cambridge, Ohio facility.*

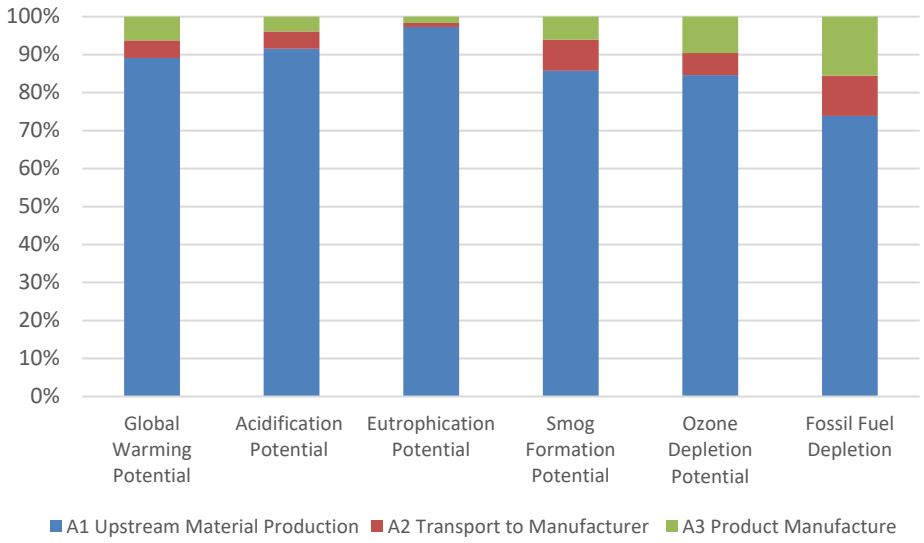

Figure 3. *Contribution analysis for the declared unit of the Telling CFS products (TRACI 2.1) at the Windsor, CT facility.*

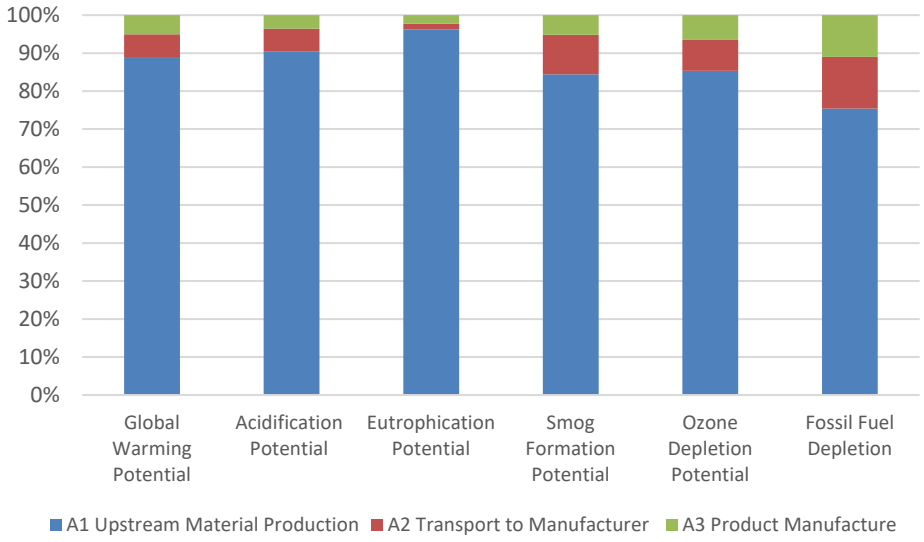

Figure 4. *Contribution analysis for the declared unit of the Telling CFS products (TRACI 2.1) at the Osceola, AR facility.*

Limitations

Primary data of material components (e.g., alloys, refractory materials) could not be modeled with actual process information in every case. To the extent possible, EPDs representing the raw steel or HDG sheet were used to represent the appropriate supplier. In the absence of primary data, Ecoinvent datasets were used to represent the appropriate steelmaking technology and HDG coating.

The Telling Cambridge facility produces both cold rolled steel, which is used as an input to CFS, and CFS framing products. The facility was unable to provide a breakdown in electricity and other energy use between these two different products. The electricity and fuel use were compared to secondary datasets for cold rolling and for CFS production and found to be reasonable for both products.

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. See Section 3.8 of the Part B Designated Steel Construction Product PCR for additional EPD comparability guidelines.

7. Additional Environmental Information

Telling Industries seeks out ways to minimize their manufacturing effects on the environment.

This is demonstrated by Telling Industries' patented PakChan dunnage manufactured from their slit coil waste, used within their packaging. Additional information can be found at https://tellingindustries.com/products/patented-pakchan-packaging-channel/

In order to reduce the impacts related to the Osceola facility, Telling Industries is in the process of installing a cold reduction mill on-site at that facility which would eliminate the need for transporting cold rolled steel from the Cambridge to the Osceola facilities.

8. References

- Life Cycle Assessment of Cold-formed steel framing products for Telling. SCS Global Services Report. Prepared for Telling Industries. August 2024.
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures.
- ISO 14040: 2006/Amd1 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 building and civil engineering works – Core rules for environmental product declarations of construction products and services.
- Life Cycle Inventories of North American Steel Products. sphera on behalf of AISI. 2020.
- PCR Guidance for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 4.0. UL Environment. March 2022.
- PCR Guidance for Building-Related Products and Services Part B: Designated Steel Construction Product EPD Requirements. UL Environment. August 2020.
- SCS Type III Environmental Declaration Program: Program Operator Manual. V12.0 December 2023. SCS Global Services.
- Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Dr. Bare, J., https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci
- United States Environmental Protection Agency (EPA). (2023). Emissions & Generation Resource Integrated Database (eGRID), 2021. Washington DC: Office of Atmospheric Protection, Clean Air Markets Division. https://www.epa.gov/egrid.
- Ecoinvent Centre (2023) ecoinvent data from v3.10. Swiss Center for Life Cycle Inventories, Dübendorf, 2023, http://www.ecoinvent.org
- European Joint Research Commission. International Reference Life Cycle Data System handbook. *General guide for Life Cycle Assessment – Detailed Guidance.* © European Union, 2010.
- "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.

For more information, contact:

Telling Industries, LLC
4420 Sherwin Road Willoughby, OH 44094
Phone: (440) 974-3370
Email: sales.corp@tellingindustries.com
https://www.tellingindustries.com

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA
Main +1.510.452.8000 | fax +1.510.452.8001