Environmental Product Declaration

TIMBERLAB

Cradle-to-gate EPD for Timberlab Glulam products produced at Swisshome and Drain facilities.

ASTM INTERNATIONAL

According to
ISO 21930
ISO 14025

EPD Program and Program Operator	ASTM International 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 USA www.astm.org 
General Program Instructions and Version Number	ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs) - General Program Instructions, version: 6.0
Manufacturer	Timberlab Laminators, LLC 600 Applegate Ave Drain, OR 97435
Declaration Number	EPD 1055
Declared Product	Glued Laminated Timber (Glulam)
Declared Unit	1 m^3 of Glulam
Reference PCR and Version Number	ISO 21930:2017 Sustainability in Building Construction — Environmental Declaration of Building Products. [7] UL Environment: Product Category Rules for Building-Related Products and Services Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, v4 [11] Part B: Part B: Structural and Architectural Wood Products, EPD Requirements UL 10010-9 v.1.0.
Markets of Applicability	North America
Date of Issue	August 15, 2025
Period of Validity	5 years
EPD Type	Product Specific
EPD Scope	Cradle-to-Gate
Year of reported manufacturer primary data	2023
LCA Software	SimaPro v9.6
LCI Databases	USLCI, Ecoinvent 3.10
LCIA Methodology	TRACI 2.1, IPCC AR5
The UL Part A PCR review was conducted by:	Lindita Bushi, PhD, Chair Athena Sustainable Materials Institute Lindita.bushi@athenasmi.org
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This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Thomas Gloria, Ph.D., Industrial Ecology Consultants
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Thomas Gloria, Ph.D., Industrial Ecology Consultants

Foreword

This Type III environmental declaration is developed according to ISO 21930 and 14025 for Glued Laminated Timber (glulam). This EPD reports environmental impacts based on established life cycle impact assessment methods. The reported environmental impacts are estimates, and their level of accuracy may differ for a particular product line and reported impact. LCAs do not generally address site-specific environmental issues related to resource extraction or toxic effects of products on human health. Unreported environmental impacts include (but are not limited to) factors attributable to human health, land use change and habitat destruction. Forest certification systems and government regulations address some of these issues.

About Timberlab

Timberlab Laminator's mission is to advance the mainstream adoption of mass timber is rooted in the belief that sustainable building practices can transform the construction industry, benefiting both the planet and its people. By leveraging advanced manufacturing and fabrication technologies, Timberlab is driving innovation in the mass timber sector. From sustainable sourcing to manufacturing and finished installation, Timberlab is a full-service provider of mass timber.

Product System

An engineered alternative to traditional concrete and steel, glued laminated timber (glulam) enables the construction of taller, larger, and more structurally efficient timber buildings. Offering superior strength, versatility, and sustainability, glulam is ideal for modern mass timber projects that require both architectural flexibility and high-performance materials. Table 1 shows the technical data applicable to Glulam produced by Timberlab.

Table 1: Technical Data

Product overview		
Member Finished dimensions	Straight and Cambered Members	Length: up to 135'-0" Width: 31/8" to 30" Depth: 6" - 72". Depths noted are standard, depths up to 118" are possible.
	Curved Members	Max height (depth + camber): 16'-0" for lengths up to 60ft. 12'-0" for lengths over 60ft.
Lumber for Laminating	Species	Douglas fir-larch, Southern Pine, Alaska Cedar
	Moisture Content	Not exceeding 16% at time of manufacturing.
Adhesives	Face Bond Adhesive	Adhesive Clear MF standard. Brown PRF available when specified.
Finishing	Appearance Classifications	Framing, Industrial, Architectural, Premium in accordance with ANSI A190.1
	Special Surfacing	Rough sawn texture upon request.
	Standard Shop Sealer	Yes
	Coatings.	Available upon request.
Member Tolerances	Width	1/16" +/- (2mm)
	Depth	+1/8" +/- (3mm) per foot (305 mm) of depth. -3/16" (5 mm) or 1/16" (2 mm) per foot of depth, whichever is larger
	Length	Up to 20' (6.1 m), +/- 1/16" (2 mm). Over 20' (6.1 m), +/- 1/16" (2 mm) per 20' (6.1 m) of length or fraction thereof.
	Camber Or Straightness	Tolerances for camber are applicable at the time of manufacture without allowance for dead load deflection. Up to 20' (6.1 m), the tolerance is +/- 1/4" (6 mm). Over 20' (6.1 m), the tolerance shall increase 1/8" (3 mm) per additional 20' (6.1 m) or fraction thereof, but not to exceed 3/4" (19 mm). The tolerances are intended for use with straight or slightly cambered members and are not applicable to curved members such as arches.
	Squareness	The tolerance for squareness shall be within +/- 1/8" (3 mm) per foot (305 mm) of specified depth unless a specially shaped section is specified. Squareness shall be measured by placing one leg of a square across a top and/or bottom face and measuring the offset from the other leg of the square to the member at the opposite face of the beam.

Specific installation guidelines exist for specific construction types and performance requirements. Glulam is installed from low-rise buildings to high-rise, high-performance commercial projects.

Scope of the Study

The underlying LCA investigates the lifecycle stages of glulam production at Timberlab's Swisshome, OR and Drain, OR facilities from cradle-to-gate with all modules included.

Declared Unit

The declared unit according to the PCR is 1 m^3 of product. Table 2 shows additional details related to the declared unit.

Table 2: Declared Unit Details

	Value	Unit
Declared unit	1	m^3
Mass per declared unit [kg]	5.25E+02	kg
Moisture Content	15	%

The product results developed in this LCA represent an average glulam product produced during the calendar year studied. This approach was selected because Timberlab only produces custom glulam products. Therefore, a specific product BOM would not encompass all the Glulam produced at each of the facilities studies. It is noted that the Glulam product is made of wood and resin and the resin is less than 2% of the product which is not expected to change across variations. Therefore, the average product is intended to be representative of a cubic meter of all Glulam designs produced by Timberlab. The material composition per declared unit is shown in Table 3.

Table 3: Material Composition per Declared Unit

	Drain Facility	Swisshome Facility
Wood	98.6%	98.2%
Resin	1.4%	1.8%

The product is packaged using plastic, steel strapping, V-boards, and woven materials made of plastic, steel and processed wood. No hazardous materials are contained in, or result from the production of, any of the products assessed in this study.

Information pertaining to the classification of the substances used to manufacture any of Timberlab's Glulam products including composition information, first aid measures, fire fighting measures, accidental release measures, handling and storage, exposure controls/PPE, physical and chemical properties, stability and reactivity, toxicological information, ecological information, disposal considerations, transport information, and regulatory information are contained in the product Safety Data Sheet which is available to download from the Timberlab website at https://timberlab.com/.

System Boundary

As shown in Table 4, the cradle-to-gate system boundary includes the extraction of raw materials and processing; the transportation of raw materials, secondary materials, and any fuels from the extraction site ot the manufacturing site; and the manufacturing of the wood construction product, including any necessary packaging. All other life cycle stages are excluded from the analysis, denoted by MND or "module not declared."

Table 4: Life cycle stages of wood products (those included are marked with an 'x')

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

Cut-off Rules

Cumulative excluded material inputs, energy inputs, and environmental impacts must not exceed 5% based on total weight, energy use, or environmental impact of the declared unit. No flows were intentionally omitted from the scope of the study.

The list of excluded inputs include:

- Items like labels, inks, stickers, adhesives, etc. may have been excluded from the ancillary data collection due to their small mass compared to the total product and packaging.
- Some material and energy inputs may have been excluded within the secondary datasets used for this project. All secondary datasets have been critically reviewed and conform to the exclusion requirements of the PCR.

Beyond this, no inputs or outputs were actively excluded.

Background Data

Background data for upstream data are sourced from ecoinvent 3.10, and USLCI.

Data Quality

Overall data quality is considered good. Improvements can be made through the modification of datasets to incorporate more regional specificity, both in terms of energy and technology. However, the data were considered appropriate in relation to the goal, scope, and budget of the project.

Primary data in the form of energy consumption and water consumption were normalized based on total mass of production during the same time frame. The resulting energy and water per unit were used for product manufactured at the facilities under study. Overall, primary energy and water data quality are considered good.

Primary data also includes the bills of materials used to formulate the products that are included in the study. Overall, this data is considered excellent. Upstream data quality can be increased through the use of supplier-specific secondary datasets.

Period under Review

This study is intended to represent production for the year 2023.

Region under Review

Glulam production occurs at Timberlab's Swisshome, OR, and Drain, OR, facilities.

Treatment of Biogenic Carbon

The product system represented in this EPD includes the information modules A1, A2, and A3. According to ISO 21930 7.2.7, if a bio-based material containing biogenic carbon leaves the studied product system at the system boundary between product systems in information modules C1 to C4 (or any other information module), this export of bio-based material and associated flow of biogenic carbon is reported as an export of biogenic carbon expressed in CO2 in the LCI and characterized with +1 kg CO2e/kg CO2 of biogenic carbon in the calculation of the GWP in the respective information module C1 to C4 (or any other information module). The following results apply this methodology to the biogenic carbon present in the primary product as it leaves the manufacturer in module A3.

Allocation

General principles of allocation were based on ISO 14040/44. There are no co-products other than the product under study that are produced as part of the specific manufacturing processes under study. There are, however, other products produced at the manufacturing facility. To derive a per-unit value for manufacturing inputs such as electricity, thermal energy and water, allocation based on total production by mass was adopted. For the resins, data was collected as to which resins were specific to the glulam produces versus other wood product production. For the resins where data was unavailable on the application, mass allocation was used. As a default, secondary datasets use a physical basis for allocation.

Comparability

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.

Additional Statements

While this EPD does not address landscape level forest management impacts, potential impacts may be addressed through requirements put forth in regional regulatory frameworks, ASTM 7612-15 guidance, and ISO 21930 Section 7.2.11 including notes therein. These documents, combined with this EPD, may provide a more complete picture of environmental and social performance of wood products.

While this EPD does not address all forest management activities that influence forest carbon, wildlife habitat, endangered species, and soil and water quality, these potential impacts may be addressed through other mechanisms such as regulatory frameworks and/or forest certification systems which, combined with this EPD, will give a more complete picture of environmental and social performance of wood products.

EPDs can complement but cannot replace tools and certifications that are designed to address environmental impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, etc. National or regional life cycle averaged data for raw material extraction does not distinguish between extraction practices at specific sites and can greatly affect the resulting impacts.

EPDs can complement but cannot replace tools and certifications that are designed to address environmental impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact when averaging data. The was no method used to estimate variability in this EPD because no data averaging was used.

No substances required to be reported as hazardous are associated with the production of this product.

Life Cycle Assessment Results

The impact categories presented represent impact potentials, i.e., they are approximations of environmental impacts that could occur if the emissions would (a) actually follow the underlying impact pathway and (b) meet certain conditions in the receiving environment while doing so. In addition, the inventory only captures that fraction of the total environmental load that corresponds to the declared unit (relative approach). LCIA results are therefore relative expression only and do not predict actual impacts, exceeding thresholds, safety margins, or risks.

Table 5: Cradle-to-gate results for 1m³ of glulam produced at the Drain facility

Impact Category	Total	A1	A2	A3
LCIA Impact Indicators – TRACI 2.1 and IPCC AR5				
IPCC AR5 GWP incl. bio [kg CO_2 eq]	**-2.92E+02**	-4.01E+02	3.35E+01	7.61E+01
IPCC AR5 GWP excl. bio [kg CO_2 eq]	**2.09E+02**	1.03E+02	3.35E+01	7.24E+01
AP [kg SO_2 eq]	**1.70E-05**	1.52E-05	1.27E-09	1.77E-06
EP [kg N eq]	**1.53E+00**	1.01E+00	1.99E-01	3.21E-01
ODP [kg CFC 11 eq]	**3.54E-01**	7.38E-02	1.11E-02	2.70E-01
SFP [kg O3 eq]	**2.42E+01**	1.39E+01	5.45E+00	4.87E+00
ADPF [MJ]	**-2.92E+02**	-4.01E+02	3.35E+01	7.61E+01
Resource Use Parameters				
RPRE [MJ]	**3.77E+02**	0.00E+00	0.00E+00	3.77E+02
RPRM [MJ]	**9.73E+03**	9.72E+03	0.00E+00	2.09E+00
NRPRE [MJ]	**3.33E+03**	1.73E+03	4.59E+02	1.15E+03
NRPRM [MJ]	**3.37E+02**	2.66E+02	0.00E+00	7.08E+01
SM [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
RSF [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
RE [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
FW [m3]	**1.15E+03**	4.81E-04	0.00E+00	1.15E+03
Waste Parameters and Output Flows				
HWD [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	**4.98E-04**	0.00E+00	0.00E+00	4.98E-04
HLRW [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
ILLRW [kg]	**7.18E-07**	0.00E+00	0.00E+00	7.18E-07
CRU [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
MR [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
MER [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00

Impact Category	Total	A1	A2	A3
EE [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Carbon Emissions and Removals				
BCRP [kg CO2]	**-8.54E+02**	-8.54E+02	0.00E+00	0.00E+00
BCEP [kg CO2]	**9.19E+02**	0.00E+00	0.00E+00	9.19E+02
BCRK [kg CO2]	**-1.67E-01**	0.00E+00	0.00E+00	-1.67E-01
BCEK [kg CO2]	**1.67E-01**	0.00E+00	0.00E+00	1.67E-01
BCEW [kg CO2]	**1.31E+01**	0.00E+00	0.00E+00	1.31E+01
CCE [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00

Table 6: Cradle-to-gate results for 1m³ of glulam produced at the Swisshome facility

Impact Category	Total	A1	A2	A3
LCIA Impact Indicators – TRACI 2.1 and IPCC AR5				
IPCC AR5 GWP incl. bio [kg CO_2 eq]	**-6.87E+02**	-7.78E+02	2.00E+01	7.17E+01
IPCC AR5 GWP excl. bio [kg CO_2 eq]	**1.70E+02**	8.29E+01	2.00E+01	6.68E+01
AP [kg SO_2 eq]	**9.16E-06**	7.62E-06	7.58E-10	1.54E-06
EP [kg N eq]	**1.14E+00**	7.63E-01	1.19E-01	2.61E-01
ODP [kg CFC 11 eq]	**1.74E-01**	4.87E-02	6.62E-03	1.19E-01
SFP [kg O3 eq]	**2.03E+01**	1.22E+01	3.25E+00	4.89E+00
ADPF [MJ]	**-6.87E+02**	-7.78E+02	2.00E+01	7.17E+01
Resource Use Parameters				
RPRE [MJ]	**7.14E+02**	0.00E+00	3.57E+02	3.57E+02
RPRM [MJ]	**1.08E+04**	0.00E+00	-7.47E-02	1.08E+04
NRPRE [MJ]	**4.06E+03**	2.74E+02	1.08E+03	2.71E+03
NRPRM [MJ]	**5.46E+02**	0.00E+00	1.86E+01	5.27E+02
SM [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
RSF [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
RE [MJ]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
FW [m3]	**2.51E+03**	0.00E+00	1.25E+03	1.26E+03
Waste Parameters and Output Flows				
HWD [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	**5.80E-03**	0.00E+00	2.90E-03	2.90E-03
HLRW [kg]	**1.52E-06**	0.00E+00	7.62E-07	7.62E-07
ILLRW [kg]	**1.29E-04**	0.00E+00	6.46E-05	6.46E-05

Impact Category	Total	A1	A2	A3
CRU [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
MR [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
MER [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
EE [kg]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
Carbon Emissions and Removals				
BCRP [kg CO2]	**-9.02E+02**	-9.02E+02	0.00E+00	0.00E+00
BCEP [kg CO2]	**9.19E+02**	0.00E+00	0.00E+00	9.19E+02
BCRK [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO2]	**2.37E+01**	0.00E+00	0.00E+00	2.37E+01
CCE [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO2]	**0.00E+00**	0.00E+00	0.00E+00	0.00E+00

Interpretation

A dominance analysis was performed for both products in the LCA to show which of the life cycle modules contributes to the majority of the impacts.

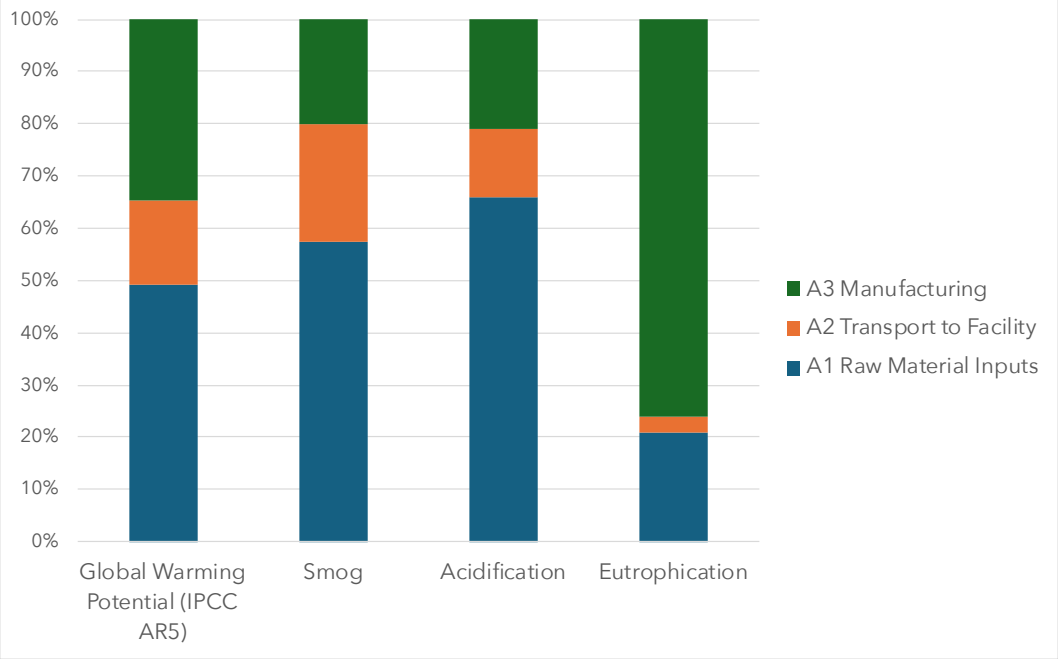

Figure 1. Contribution by life cycle stage to LCIA Results for the Drain facility

As illustrated in Figure 1, over the product life cycle the greatest contributors for Drain Glulam is raw materials (A1)and manufacturing (A3). The raw materials accounts for 21%-68% of impacts, while manufacturing accounts for 20%-76% of impacts across impact categories. The indicators trend similarly other than eutrophication impacts. The higher manufacturing impacts for the eutrophication indicator is driven primarily by the purchased electricity.

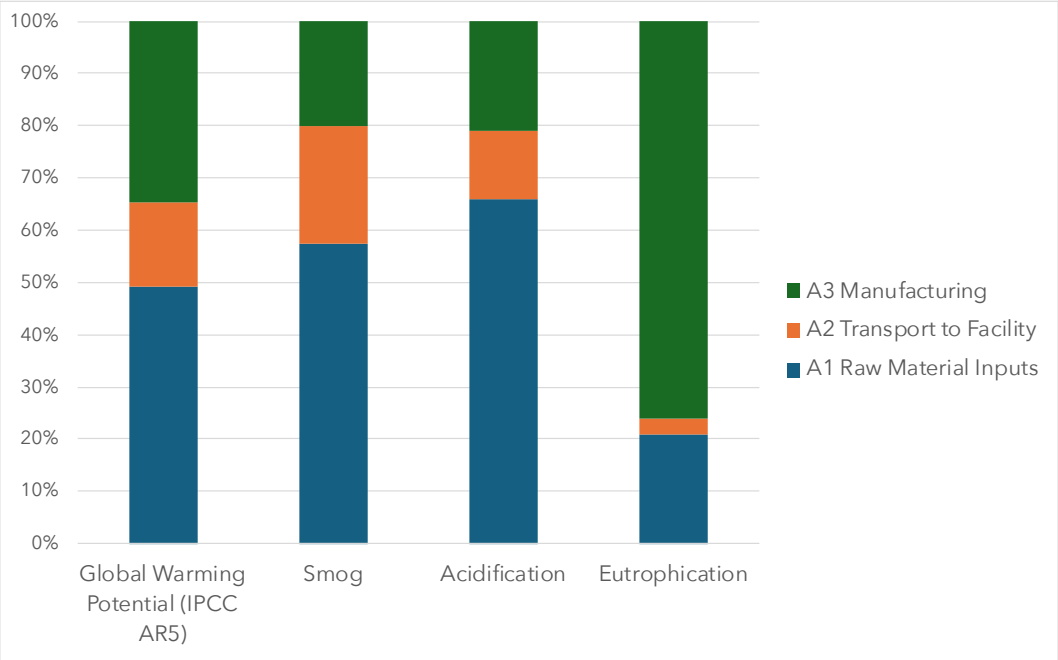

Figure 2. Contribution by life cycle stage to LCIA Results for the Swisshome facility

As illustrated in Figure 2, over the product life cycle the greatest contributors for Swisshome Glulam is raw materials (A1) and manufacturing (A3). The raw materials accounts for 28%-67% of impacts, while manufacturing accounts for 24%-68% of impacts across key impact categories. The indicators trend similarly other than eutrophication impacts. The higher manufacturing impacts for the eutrophication indicator is driven primarily by the purchased electricity. Figure 1

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