Environmental Product Declaration

In accordance with ISO 14025:2006 and ISO 21930:2017

IGLOO Cellulose Insulation

Produced in Agawam, MA

Igloo Cellulose Inc. is pleased to present this Environmental Product Declaration (EPD) for IGLOO Cellulose thermal insulation. This EPD was developed in compliance with ISO 14025[3] and has been verified by Charles Thibodeau.

The LCA and the EPD were prepared by WeLOOP. The EPD includes cradle-to-grave life cycle assessment (LCA) results.

For more information about IGLOO Cellulose insulation, visit www.cellulose.us.

For any explanatory material regarding this EPD, please contact the program operator.

ASTM – EPD 1152 Version 1.0 March 16, 2026

1. GENERAL INFORMATION

This environmental product declaration (EPD) is in accordance with ISO 14025:2006[3]and the PCRs noted below. ISO 21930:2017[4] serves as the core PCR along with the UL Environment PCR Part A[5] and Part B[6]. EPDs are comparable only if they comply with ISO 21930:2017[4], use the same sub-category PCR, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works. Comparison of the environmental performance of building and construction products using EPD information shall be based on the product's use and impacts at the building level. In general, EPDs may not be used for comparability purposes when not considered in a building 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. Full conformance with the PCR for insulation 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 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 in results for upstream or downstream of the life cycle stages declared.

Program Operator	**ASTM International** **100 Barr Harbor Drive,** **West Conshohocken, PA 19428** **United States of America (USA)** **www.astm.org**
General Program instructions	ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs) General Program Instructions Version 8.0, 29th April 2020
EPD Owner	Igloo Cellulose USA Inc. 700 Silver St, Agawam, MA 01001 USA www.cellulose.us
EPD registration number	EPD 1152
Product	IGLOO Cellulose insulation
Functional Unit	1 m^2 of installed cellulose insulation material with a thickness that gives an average thermal resistance RSI = 1 m^2K/W and with a building service life of 75 years (packaging included)
Reference PCR	PCR Part A: UL Environment Building Related Products and Services. Life cycle assessment calculation rules and report requirements, v4.0. March 2022. Standard 10010 PCR Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1, v4.0. November 2025. UL 10010-03

Application	This EPD provides results based on the functional unit defined for IGLOO Cellulose for each application: • Loose fill application (attics) • Dense-pack application (wall)
Reference service life	75 years
Market of applicability	USA
Date of issue	March 16, 2026
Period of validity	March 2026 – March 2031
Type of EPD	Product Specific
Range of dataset variability	None
EPD scope	Cradle-to-grave
Year of reported manufacturer primary data	2023
LCA Software	SimaPro v.9.5.0.0 (July 2023)[7]
LCA database	Ecoinvent 3.9.1 (December 2022) [8]
LCIA methodology	TRACI 2.1, IPCC (AR6, 2021) and CML baseline v4.7
This PCR review was conducted by:	Part A: Lindita Bushi, PhD, Chair Athena Sustainable Materials Institute lindita.bushi@athenasmi.org Hugues Imbeault-Tétreault, Eng., M.A.Sc. Groupe AGÉCO hugues.i-tetreault@groupeageco.ca Jack Geibig Ecoform jgeibig@ecoform.com Part B: Thomas Gloria, PhD (chair) Industrial Ecology Consultants t.gloria@industrial-ecology.com Cara Vought Sustainable Solutions cara@sustainablesolutions.com Andre Desjarlais Oak Ridge National Laboratory desjarlaisa@ornl.gov

This declaration was independently verified in accordance with ISO 14025: 2006. The UL Solutions "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," (February 2018), based on CEN Norm EN 15804 (2012) and ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Solutions Part A Enhancement (2017)	☐ Internal ☒ External Charles Thibodeau, CT Consultant
Additional information	Additional information is available at www.cellulose.us Or by contacting by email igloo@cellulose.us

LIMITATIONS

Environmental declarations from different programs (ISO 14025) may not be comparable.

Comparison of the environmental performance of building and construction products using EPD information shall be based on the product's use and impacts at the building level. In general, EPDs may not be used for comparability purposes when not considered in a building 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. **Caution must be used when comparing EPDs, as variations and deviations are possible from e.g. Different LCA software and background LCI datasets that may lead to differences in calculated and reported results.**

2. EPD Content

2.1 Introduction to Igloo Cellulose USA Inc.

Igloo Cellulose USA Inc. is an American cellulose insulation manufacturer, founded in 2021 by the Igloo Cellulose Inc company of Canada. The two companies are part of the French group ISO GREEN GROUP.

With its almost 50 years background history, the company focuses on research and development and the optimization and refinement of its production processes, resulting in a high-end product that is efficient, safe, and in line with its environmental imperatives.

Igloo Cellulose USA Inc. is dedicated to enhancing the energy efficiency and comfort of residential housing while demonstrating environmental sensitivity. The company achieves this by transforming and recycling recovered paper and cardboard into high-quality cellulose insulation for homes and buildings.

2.2 Product Description

IGLOO Cellulose insulation is made from recovered sorted paper (newsprint, cardboard, paper products) and inorganic flame-retardant minerals. The fibers are designed for installation via blown application in attics, walls and ceilings. The product is used for building thermal and acoustic insulation. The product is produced in Agawam, Massachusetts.

2.3 PRODUCT IDENTIFICATION

The studied product is IGLOO Cellulose insulation produced in Agawam, Massachusetts. It is a cellulose thermal and acoustic insulator for buildings.

Figure 1: IGLOO Cellulose

2.4 PRODUCT SPECIFICATION

IGLOO Cellulose insulation is manufactured using recovered sorted paper. A mineral treatment is incorporated during the manufacturing process to reduce flame spread. IGLOO Cellulose is a thermal insulation cellulose product.

IGLOO Cellulose insulation complies with the standard ASTM C739 for all technical characteristics. The insulation meets rigorous criteria related to flame spread, corrosiveness, mold development, thermal resistance, settling, humidity absorption, and chemical separation. The thermal transmission properties have been determined according to ASTM C518. For more details, please refer to the technical data sheet at https://cellulose.com/wp-content/uploads/2025/11/Igloo-Cellulose-Spec-Sheet.pdf.

The functional unit considered for this EPD is 1 m^2 of installed insulation material with a thickness that gives an average thermal resistance RSI = 1 m^2K/W and with a building service life of 75 years (packaging included).

2.4.1 Technical Characteristics

IGLOO Cellulose insulation is composed primarily of recycled paper including paper, cardboard, and newspaper. In addition, cellulose may be recycled at the end of life. Table 1 provides a comprehensive overview of the key characteristics of the product.

Table 1: Technical characteristics of IGLOO Cellulose

Technical characteristics	Value	Units
Thermal conductivity at 24°C (75°F) (λ) – loose fill	0.03966	W/(m·K)
Thermal conductivity at 24°C (75°F) (λ) – Dense-pack	0.03966	W/(m·K)
Thermal resistivity (ASTM C518) (R) – loose fill	3.64	ft^2.°F.hr/BTU/in
Thermal resistivity (ASTM C518) (R) – Dense-pack	3.64	ft^2.°F.hr/BTU/in
Density – loose fill	25.5	kg/m^3
Density – dense-pack	56.06	kg/m^3
Corrosiveness (ASTM C739)	No holes or perforation	-
Critical radiant flux (ASTM C739 / ASTM E970)	≥ 0.12	W/cm^2
Fungi resistance (ASTM C739 / ASTM C1338)	Growth < Comparative	-
Moisture Vapour Sorption (ASTM C739)	≤ 15	%
Odor emissions (ASTM C739 / ASTM C1304)	≤ 2	-
Smoldering Combustion (ASTM C739)	≤ 15	%

The report "The Physical Property Testing According to ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation" can be requested by contacting igloo@cellulose.com.

For detailed property and performance data of IGLOO Cellulose, please refer to the following link: https://cellulose.com/wp-content/uploads/2025/11/Igloo-Cellulose-Spec-Sheet.pdf.

2.5 Flow Diagram

Figure 2 shows a production diagram of the production process for Igloo Cellulose. Figure 3 shows the system boundaries considered for this study, covering the whole life cycle of the product.

2.6 Application

Igloo cellulose can be used for different applications:

- Thermo-acoustic insulation - Blown-in insulation for wall cavities,
- Thermo-acoustic insulation - Blown-in insulation for attics

2.7 Declaration of Methodological Framework

This EPD is cradle-to-grave with modules A1-A3, A4, A5, B1-B7, and C1-C4 included. A Reference Service Life (RSL) of 75 years is considered, providing that the product is installed in accordance with the manufacturer's instructions.

No co-product allocation occurs in the product foreground system. Also, no multi-input allocation occurs in the product system. The allocations from the Ecoinvent cut-off background database are used. This is in compliance with ISO 21930[4].

The cut-off approach has been used. In the present study, no primary data (input material, energy consumption) were excluded from the system boundaries.

In this study, the model excluded data on the construction, maintenance or dismantling of capital assets, daily transport of employees, office work, business trips and other activities from Igloo Cellulose USA Inc. employees. The model exclusively considers the processes associated with infrastructures already included in the *Ecoinvent* unit processes.

No known flows are deliberately excluded from this EPD.

The biogenic carbon content of the product is included in the calculations for this EPD, following the PCR Part B[6].

2.8 Technical requirements - Standards

The service life of IGLOO Cellulose corresponds to the building service life

IGLOO Cellulose is in compliance with the following standards for each product type:

- ASTM C739: Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation[9]
- 16 CFR Part 1209 (Consumer Products Safety Commission Interim Safety Standard)[10]
- 16 CFR Part 1404 (Consumer Products Safety Commission Interim Safety Standard)[11]

For specific performance data on IGLOO Cellulose please refer to the following link: https://cellulose.com/wp-content/uploads/2025/11/Igloo-Cellulose-Spec-Sheet.pdf or contact Igloo Cellulose USA Inc. at igloo@cellulose.us.

2.9 Material composition

The table below details the raw materials used in the production of IGLOO Cellulose insulation.

Table 2: Composition of IGLOO Cellulose insulation

Material	Mass
Waste paper	85%-90%
Boric acid	10%-15%
Additives	0%-2%

The insulation product contains only the materials listed in Table 2, these are not on the US Environmental Protection Agency (EPA) list of Hazardous substances (40 CFR part 302.4).

2.10 Manufacturing

The production plant is located in Agawam, Massachusetts. The cellulose is produced in a continuous flow. The recycled paper (newsprint, cardboard, paper products) is sorted, mixed, and loaded onto a conveyor. It is then crushed in a shredder , and moved into a refiner. During this process, flame retardant and anti-dust additives are added to the fibers. The finished product is then packed, palletized, wrapped and ready for shipment. The figure below shows the flow diagram of IGLOO Cellulose's manufacturing process. The electricity mix for manufacturing is the NPCC grid mix from Ecoinvent 3.9.1.[8] During the process, material losses are reintroduced in the production process.

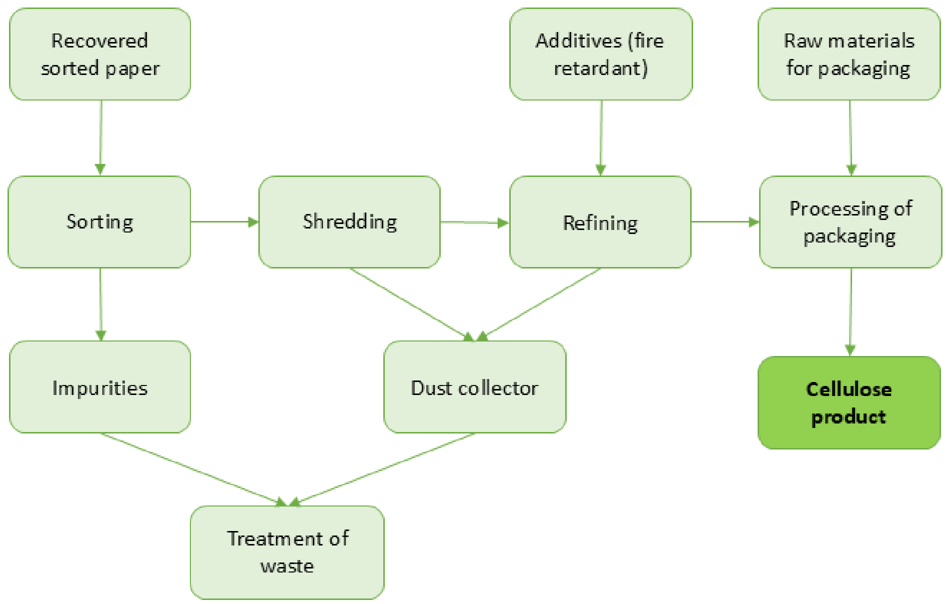

Figure 2: Manufacturing chart (A3) of IGLOO Cellulose

2.11 Packaging

The insulation product is delivered in polyethylene bags (63 g, 11.3 kg of product/bag), which are placed on a wood pallet (0.216 kg/bag) and wrapped with a polyethylene hood (23 g/bag). The EoL scenario for PE film follows the scenario from EPA (United States Environmental Protection Agency)[12], which is the source for the scenario in the PCR Part A[5]. The EoL scenario for pallets follows the communication of the thesis on the Investigation into the Landfilling and Recovery of Wood and Wooden Pallets at U.S. Landfills in 2021 by Yash Mansharamani from faculty of the Virginia Polytechnic Institute and State University[13]. The disposition scenario for packaging is:

- PE film: 9% recycling, 75% landfilling and 16% incineration
- Wooden pallet: 97% recycling, 3% landfilling.

2.12 Transportation

Following its production, IGLOO Cellulose is distributed in the US. The weighted average distance is 213 km. The product is transported by truck (seeTable 6 for more information).

2.13 Installation

This EPD provides results based on the functional unit as defined for IGLOO Cellulose for each application:

- Loose fill application (attics)
- Dense-pack application (wall)

IGLOO Cellulose insulation is installed in wall cavities, ceilings and attics using a blowing machine with pipes and through long flexible tubes. These tubes connect the blower to the area requiring insulation. Both applications follow the same installation scenario.

According to information provided by installers, the estimated installation waste is 0.01% of the product weight.

The manufacturer's installation instructions should be followed. During the installation process, personal protective equipment (dust masks or respirators, earplugs and safety glasses) should be worn to protect the installer's respiratory system, ears and eyes from excessive exposure to dust. In addition, the use of knee pads and rubber gloves is recommended.

2.14 Use

Once installed, the product requires no maintenance, repair, or replacement.

2.15 Reference service life

As cellulose insulation is expected to last as long as the building itself, the reference service life of IGLOO Cellulose is assumed to be equal to the estimated service life (ESL) of the building. According to the UL Environment PCR, Part A[5], the ESL is assumed to be 75 years. The product must be installed in accordance with the manufacturer's instructions.

2.16 End-of-Life

Although the insulation product can be fully recycled at the end of the life cycle, there is no current collection program to recover and recycle cellulose insulation when buildings are deconstructed. Therefore, when the building reaches the end of its life cycle, it is assumed that the product is treated with the other demolition waste and sent to the landfill site. This results in a 100% landfill scenario.

3. Methodology used for the life cycle assessment

3.1 Functional Unit

The LCA results indicate the life cycle environmental impacts associated with the mass of insulation product necessary to achieve the functional unit. The latter is based on the thermal resistance of the insulation product, as specified in the PCR Part B[6].

For the purpose of this study, the functional unit (FU) has been established as 1 m^2 of installed cellulose insulation material with a thickness that will provide an average thermal resistance RSI = 1 m^2K/W. The product's expected service life is 75 years. The packaging is included in the functional unit.

This EPD provides results based on the functional unit as defined for IGLOO Cellulose for each application:

- Loose fill application (attics)
- Dense-pack application (wall)

The functional Unit of each application is detailed in Table 3.

Table 3: Functional Unit of studied products, including mass per m² of cellulose insulation and average thicknesses

Items	Value		Unit
Functional Unit	1 m² of installed insulation material with a thickness that gives an average thermal resistance RSI = 1 m²K/W and with a building service life of 75 years (packaging included).		
Uses	Blow-in insulation in attics (loose fill)	Blow-in insulation in cavities (wall) (dense-pack)	Unit
Mass to achieve the FU	1.01[1]	2.22	kg
Thickness to achieve the FU	0.03966	0.03966	m
Thermal resistance (RSI)	1	1	m²K/W
Thermal conductivity	0.03966	0.03966	W/(m.K)
Density	25.5	56.06	kg/m³
Density	1.59	3.5	Lb/ft³

3.2 SYSTEM BOUNDARIES

The whole life cycle of the product is considered in the scope of this report (cradle-to-grave). The system boundaries correspond to the diagram in figure 3, aligning with the requirements of the PCR part B[6]. Within this standard, the life cycle stages and processes are structured in a modular system (module A-C4) as follows:

- Module A1-3 = Production stage with raw material supply (A1), transport of raw materials (A2) and manufacturing (A3),
- Module A4–5 = Construction stage with transport to the construction site (A4) and construction/installation processes (A5)
- Module B1-7 = Use stage with use (B1), maintenance (B2), repair (B3), replacement (B4), refurbishment (B5), operational energy use (B6) and operational water use (B7)
- Module C1-4 = End-of-Life (EOL) with de-construction/demolition (C1), transport (C2), waste processing (C3) and disposal (C4)

The system boundaries stop at the end of the disposal stage (module C4), defined as the end of the product life cycle.

[1] The value of mass per surface unit indicated in **Erreur ! Source du renvoi introuvable.** includes the settling percentage.

Table 4: System boundaries

Production stage			Construction stage		Use stage							End-of-life stage				Benefits and loads beyond the system boundaries
Extraction and upstream production	Transport	Manufacturing	Transport from gate to site	Assembly / Installation	Use	Maintenance	Repair	Replacement	Refurbishing	Operational energy use	Operational water use	Deconstruction	Transport	Waste treatment	Disposal	Reuse - recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	MND

MND = Module not declared

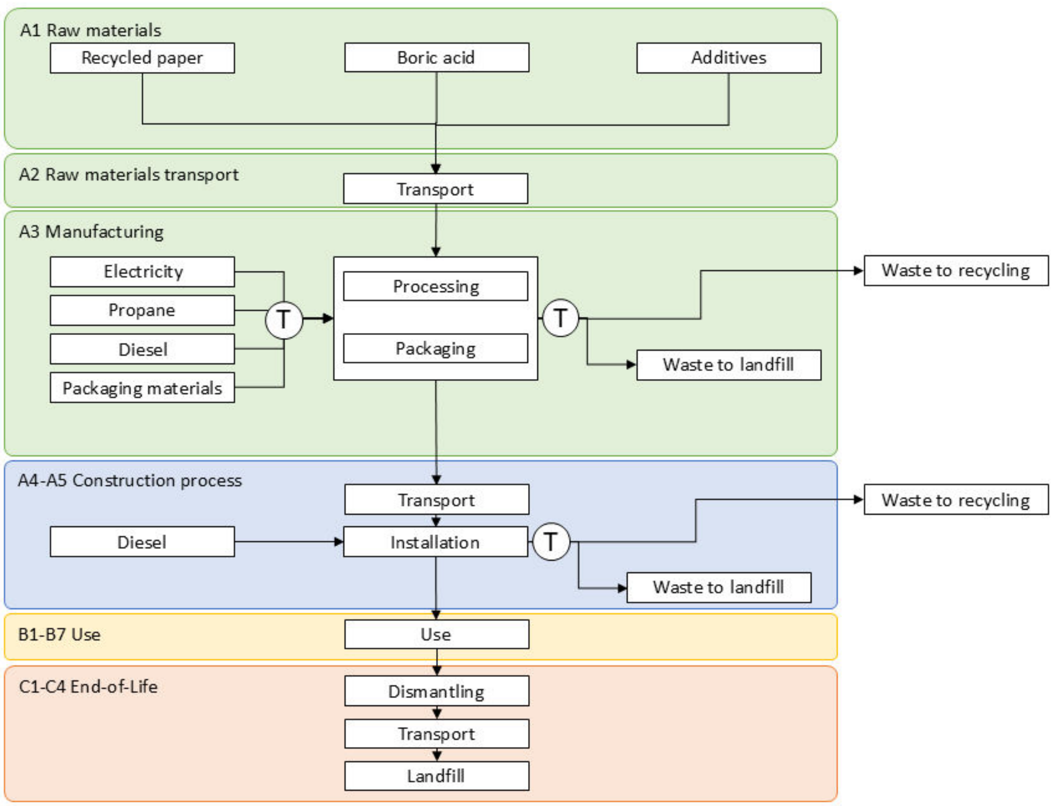

Figure 3: Flow Diagram of IGLOO Cellulose's life cycle

3.3 GEOGRAPHICAL SCOPE

The product assessed in this LCA study is manufactured in the state of Massachusetts (USA) and installed in the United States.

3.4 ASSUMPTIONS

In instances where data is incomplete or missing, assumptions must be made. In the LCA the following assumptions were applied:

- C2: The transport distance of the waste product to the landfill site is considered 50km based on expert judgement.
- Biogenic carbon content: Cellulose contains 44.4% of carbon[14]. For a humidity rate of 10%, 1 kg of paper (without additives) will store 1.48 kg of CO_2.
- Biogenic carbon emissions: At the End-of-Life (EoL) of cellulose insulation, the part of CO_2 re-emitted in air, following the degradation of cellulose, will depend on the EoL scenario. As required by the PCR Part B[6], the degradation of the biogenic carbon and gas capture scenario at landfill follow the EPA WARM method[15]:
    - According to the WARM method, 1 Short ton of newspaper stores 1.19 metric tCO_2eq in landfill (Containers, Packaging, and non-durable good materials chapters, exhibit 3-26)[16]. As no data are available for cellulose, newspaper is used as proxy. This corresponds to 88.6% of stored carbon. So 11.4% of the product is degraded
    - For landfilling, the emission of landfill gases into the atmosphere is mainly methane and carbon dioxide, assuming in the ratio 50:50 (Landfill Gas Monte Carlo Model Documentation, Table 10)[17].
    - The following scenario is considered for gas treatment, as the US average scenario (Landfill Gas Monte Carlo Model Documentation, Table 39)[17]:
        - 4.5% is flared (transformed into CO_2)
        - 59.3% is used for energy recovery (transformed into CO_2)
        - 9.6% is oxidized (transformed into CO_2)
        - 26.7% is emitted in air

3.5 CUT-OFF CRITERIA

According to the UL Environment PCR – Part A[5], if a mass flow or energy flow represents less than 1% of the system's cumulative mass or energy flow, it may be excluded from system boundaries. However, these flows should not have a relevant environmental impact. Also, at least 95% of the energy usage and mass flow shall be included.

In the present study, no primary data (input material, energy consumption) was excluded from the system boundaries.

In this study, the model excluded data on the construction, maintenance or dismantling of capital assets, daily transport of the employees, office work, business trips and other activities from Igloo Cellulose USA Inc. employees. The model exclusively considers the processes associated with infrastructures already included in the *Ecoinvent* unit processes.

No known flows are deliberately excluded from this EPD.

3.6 Allocation

No co-product allocation occurs in the product foreground system. Also, no multi-input allocation occurs in the product system. The allocations from the Ecoinvent cut-off background database are used. This is in compliance with ISO 21930[4].

3.7 Data sources and Quality

Inventory data was collected from the IGLOO Cellulose USA Inc. manufacturing plant located at 700 Silver St, Agawam, MA 01001 (USA), using a life cycle inventory questionnaire. All data collected at the Igloo plant (primary data) was used in the analysis. The secondary data were sourced from Ecoinvent 3.9.1 [8].

Table 5: Data quality assessment

Data Quality Parameter	Data Quality Discussion
Time-related Coverage: Age of data and the minimum length of time over which data is collected	Primary data were collected by Igloo Cellulose USA Inc. over the full year 2023. Secondary data comes from Ecoinvent 3.9.1 [8] released in December 2022. As none of the used datasets were categorized as "obsolete", so it is concluded that all the datasets used are representative for the release date (December 2022). It is considered that the age requirement for the datasets (10 years) is met.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The manufacturing site is located in Agawam, Massachusetts; therefore, electricity consumption is based on the NPCC grid mix. The geographical correlation of the material supply and the selected datasets are representative of each specific area or a larger area. For example, some chemicals, as Boric acid comes from Turkey.
Technology Coverage: Specific technology or technology mix	Primary data, obtained from the manufacturer, are representative of the current technologies and materials used by the company.
Precision: Measure of the variability of the data values for each data expressed	Primary data were based on measured and calculated data from Igloo Cellulose USA Inc., the manufacturing plant. The facility data were collected for the reference year 2023, and several sources were used to compare collected values and ensure precision. The data precision is considered to be of high quality for all measured and calculated data.
Completeness: Percentage of flow that is measured or estimated	All relevant process steps within the system boundary were considered. The primary data provided for cellulose insulation manufacturing was benchmarked with data from previous models which have undergone third party review.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	The data sets used in the underlying LCA study were selected based on the most appropriate temporal, geographical, and technological representation of the actual processes and technology. These datasets reflect average processes from multiple sources, and thus generally represent the actual technology utilized to produce the materials. However, the extent to which secondary datasets deviate from the specific system being studied is often unknown.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	In order to ensure consistency, only primary data of the same level of detail and equivalent time interval (i.e., one calendar year) were used, and allocation was conducted similarly for all data categories and life cycle stages. All background data were sourced from the Ecoinvent 3.9.1 [8] database, with selection of the most appropriate geography.

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	The study can be fully reproduced using the information provided in the underlying LCA report. However, due to the confidentiality of the data values, specific details were omitted from this public EPD, which may limit reproducibility by the public.
Sources of the Data: Description of all primary and secondary data sources	Manufacturing data was collected from IGLOO Cellulose manufacturing site located at 700 Silver St, Agawam, MA 01001 (USA), for the 2023 production year. The data included the following: total production mass of produced product at the manufacturing plant and relevant flows; raw materials entering the production process; material losses; transport mode and distance of materials; energy consumption, water consumption, emissions to the environment at the manufacturing plant, waste treatment, packaging material, product distribution. Secondary data come from Ecoinvent 3.9.1 [8]
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Because the quality of secondary data is not as good as primary data, the use of secondary data becomes an inherent limitation of the study. Secondary data may cover various technologies, time periods, and geographical locations. Because hundreds of datasets are linked together and it is often unknown how much the secondary data used deviates from the specific system being studied, quantifying data uncertainty for the complete system becomes very challenging. As a result, it is not possible to provide a reliable quantified assessment of overall data uncertainty.

3.8 Reference period

Primary data were collected to be representative of the full year 2023.

3.9 Software

SimaPro version 9.5.0.0[7] (July 2023) was used when calculating the environmental impact categories, and environmental data released in December 2022 from the Ecoinvent database, version 3.9.1, was used.

4. LCA SCENARIOS

4.1 TRANSPORT TO THE CONSTRUCTION SITE (A4)

Table 6: Distribution scenario

Parameter	Value	Unit
Transport type: Truck		
Fuel type	Diesel	-
Fuel quantity	18.4	L/100 km
Vehicle type	Transport truck 16-32t	-
Weighted average transport distance	213	km
Average payload	5.79	t
Gross density of transported product (in packaging)	147	kg/m^3
Capacity utilization volume factor (factor: =1 or <1 or ≥1for compressed or nested packaging products)	≥1	-

4.2 INSTALLATION (A5)

Table 7: Installation scenario

Parameter	Value	Unit
Electricity consumption per kg of installed product	0	kWh/kg
Ancillary materials per kg of installed product	0	kg/kg
Water consumption per kg of installed product	0	L/kg
Petrol consumption per kg of installed product	0.00283	L/kg
Product loss	0.01	%
Packaging waste per kg of installed product	0.027	kg/kg
Emissions to air, soil and water per kg of installed product	0	kg/kg
VOC emissions	NA	-

Table 8: Packaging and installation losses EoL scenario

Parameter	Loose fill application	Dense-pack application	Unit
Transport			
Transport to landfill	50		km
Transport to incineration	100		km
Transport to recycling	150		km
Vehicle type	Truck 16-32 metric ton, EURO5		-
Wooden pallet			
Landfill	3		%
Incineration	0		%
Recycling	97		%
Biogenic carbon content	-3.03E-02	-6.67E-02	kg CO_2 eq/FU
PE film (bags and hood)			
Landfill	75		%
Incineration	16		%
Recycling	9		%
Installation losses			
Landfill	100		%
Incineration	0		%
Recycling	0		%

4.3 Reference Service Life

Table 9: Reference service life scenario

Parameter	Value
Reference service life	75 years
Declared product properties	-
Design application parameters	Installation as per manufacturer's recommendations
An assumed quality of work, when installed in accordance with the manufacturer's instructions	The insulation product meets the specified R-value.
Outdoor environment	Not applicable
Indoor environment	Normal building operating conditions
Use conditions	Not applicable
Maintenance	No maintenance required

4.4 Use (B)

Once installed, the insulation product requires no maintenance, repair, or replacement. During its service life, it does not release any emissions to the air. Therefore, no impacts are considered in this module.

4.5 END-OF-LIFE (C1-C4)

Table 10: End-of-Life scenario

Parameter		Loose fill application	Dense-pack application	Unit
Dismantling scenario		0 kWh		
Transport distance		50		km
Vehicle type		Truck 16-32 metric ton, EURO5		-
Collection process	Collected separately	0	0	kg/FU
	Collected with mixed construction waste	1.01	2.22	kg/FU
Recovery	Reuse	0	0	kg/FU
	Recycling	0	0	kg/FU
	Incineration	0	0	kg/FU
	Incineration with energy recovery	0	0	kg/FU
Disposal	Landfill	1.01	2.22	kg/FU
Biogenic carbon emissions (excluding packaging)		2.74E-01	6.03E-01	kg CO_2 eq/FU

Note: No impacts are attributed to the building dismantling machines in this EPD, as they are considered at building level.

5. ENVIRONMENTAL IMPACTS

5.1 LCA RESULTS

The system boundaries for this EPD are presented in the table below.

Table 11: System boundaries

Production stage			Construction stage		Use stage							End-of-life stage				Benefits and loads beyond the system boundaries
Extraction and upstream production	Transport	Manufacturing	Transport from gate to site	Assembly / Installation	Use	Maintenance	Repair	Replacement	Refurbishing	Operational energy use	Operational water use	Deconstruction	Transport	Waste treatment	Disposal	Reuse - recycling
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	MND

The life cycle impact assessment results are reported for 1 m^2 of insulation product, giving an average thermal resistance of RSI = 1 m^2K/W. The results were calculated using IPCC (2021) V1.03[18] methodology for GWP indicators, CML Baseline V4.7[19] for ADP Fossil and TRACI 2.1[20] methods for the other indicators. They are reported for each declared life cycle module.

It shall be reiterated at this point that the reported impact categories represent potential impacts, i.e., they are approximations of environmental impacts that could occur if the emissions would (a) 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 corresponding to the chosen functional unit (relative approach).

Therefore, LCIA results are only relative expressions and do not predict actual impacts, the exceeding of thresholds, safety margins, or risks. The impact assessment and the interpretation of this study are performed according to the PCR part A[5]. The inventory analysis results are linked to specific environmental damage categories (e.g., global warming, acidification, etc.). The overall impact assessment results were calculated excluding long-term emissions (emissions occurring after 100 years).

These six impact categories are considered mature enough to be included in Type III environmental declarations. Other categories are being developed and defined, and LCA should continue advancing their development. However, the EPD users shall not use additional measures for comparative purposes. Table 12: Life Cycle Impact Assessment Results for IGLOO Cellulose in loose fill application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
ODP	kg CFC-11 eq	4,10E-09	6,52E-10	5,66E-10	6,99E-10	1,56E-10	0	0	0	0	0	0	0	0	1,60E-10	0	4,05E-10	6,74E-09
GWP total	kg CO2 eq	-1,13E+00	3,64E-02	2,99E-02	3,98E-02	2,34E-02	0	0	0	0	0	0	0	0	9,10E-03	0	2,99E-01	-6,88E-01
GWP fossil	kg CO2 eq	1,63E-01	3,64E-02	6,00E-02	3,98E-02	1,30E-02	0	0	0	0	0	0	0	0	9,10E-03	0	2,45E-02	3,45E-01
GWP biogenic	kg CO2 eq	-1,29E+00	0,00E+00	-3,03E-02	0,00E+00	1,05E-02	0	0	0	0	0	0	0	0	0,00E+00	0	2,74E-01	-1,03E+00
GWP luluc	kg CO2 eq	2,52E-04	2,34E-05	1,82E-04	2,18E-05	1,16E-06	0	0	0	0	0	0	0	0	4,98E-06	0	2,56E-05	5,11E-04
SFP	kg O3 eq	1,85E-02	9,17E-03	2,77E-03	3,01E-03	1,28E-03	0	0	0	0	0	0	0	0	6,89E-04	0	2,85E-03	3,82E-02
AP	kg SO2 eq	2,56E-03	4,76E-04	1,59E-04	1,33E-04	4,45E-05	0	0	0	0	0	0	0	0	3,04E-05	0	2,58E-04	3,66E-03
EP	kg N eq	1,05E-04	2,29E-05	2,99E-05	1,32E-05	4,02E-06	0	0	0	0	0	0	0	0	3,01E-06	0	1,61E-03	1,79E-03
ADP fossil	MJ	2,55E+00	5,22E-01	1,24E+00	5,90E-01	1,26E-01	0	0	0	0	0	0	0	0	1,35E-01	0	3,40E-01	5,50E+00

Table 13: Life Cycle Impact Assessment Results for IGLOO Cellulose in dense-pack application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
ODP	kg CFC-11 eq	9,01E-09	1,43E-09	1,24E-09	1,54E-09	3,44E-10	0	0	0	0	0	0	0	0	3,51E-10	0	8,90E-10	1,48E-08
GWP total	kg CO2 eq	-2,47E+00	8,01E-02	6,57E-02	8,75E-02	5,15E-02	0	0	0	0	0	0	0	0	2,00E-02	0	6,57E-01	-1,51E+00
GWP fossil	kg CO2 eq	3,58E-01	8,00E-02	1,32E-01	8,75E-02	2,85E-02	0	0	0	0	0	0	0	0	2,00E-02	0	5,39E-02	7,60E-01
GWP biogenic	kg CO2 eq	-2,83E+00	0,00E+00	-6,67E-02	0,00E+00	2,30E-02	0	0	0	0	0	0	0	0	0,00E+00	0	6,03E-01	-2,27E+00
GWP luluc	kg CO2 eq	5,54E-04	5,15E-05	4,00E-04	4,79E-05	2,56E-06	0	0	0	0	0	0	0	0	1,09E-05	0	5,63E-05	1,12E-03
SFP	kg O3 eq	4,06E-02	2,02E-02	6,09E-03	6,62E-03	2,81E-03	0	0	0	0	0	0	0	0	1,51E-03	0	6,26E-03	8,40E-02
AP	kg SO2 eq	5,62E-03	1,05E-03	3,50E-04	2,92E-04	9,79E-05	0	0	0	0	0	0	0	0	6,69E-05	0	5,68E-04	8,04E-03
EP	kg N eq	2,31E-04	5,03E-05	6,58E-05	2,89E-05	8,84E-06	0	0	0	0	0	0	0	0	6,61E-06	0	3,53E-03	3,92E-03
ADP fossil	MJ	5,61E+00	1,15E+00	2,72E+00	1,30E+00	2,77E-01	0	0	0	0	0	0	0	0	2,97E-01	0	7,47E-01	1,21E+01

ODP = Ozone depletion potential ; GWP total = Global warming potential, total ; GWP fossil = Global warming potential, fossil ; GWP biogenic = Global warming potential, biogenic ; SFP = Smog Formation Potential ; AP = Acidification potential ; EP = Eutrophication potential ; ADP fossil = Abiotic Resource Depletion Potential of Non-renewable (fossil) energy resources

5.2 Resource use

Table 14: Life Cycle Inventory Results in resource use for IGLOO Cellulose in loose fill application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
RPRE	MJ	2,20E-01	5,59E-03	2,04E-01	7,60E-03	5,47E-04	0	0	0	0	0	0	0	0	1,74E-03	0	1,89E-02	4,59E-01
RPRM	MJ	1,27E+01	0,00E+00	2,90E-01	0,00E+00	-2,81E-01	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	1,27E+01
RPRT	MJ	1,29E+01	5,59E-03	4,94E-01	7,60E-03	-2,80E-01	0	0	0	0	0	0	0	0	1,74E-03	0	1,89E-02	1,31E+01
NRPRE	MJ	3,25E+00	5,37E-01	2,08E+00	6,16E-01	1,26E-01	0	0	0	0	0	0	0	0	1,41E-01	0	4,05E-01	7,15E+00
NRPRM	MJ	0,00E+00	0,00E+00	3,29E-01	0,00E+00	-2,96E-02	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	2,99E-01
NRPRT	MJ	3,25E+00	5,37E-01	2,41E+00	6,16E-01	9,67E-02	0	0	0	0	0	0	0	0	1,41E-01	0	4,05E-01	7,45E+00
SM	kg	8,70E-01	0,00E+00	1,93E-02	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	8,90E-01
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
RE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
FW	m3	3,99E-03	6,13E-05	4,46E-04	7,57E-05	9,96E-06	0	0	0	0	0	0	0	0	1,73E-05	0	3,10E-04	4,91E-03

Table 15: Life Cycle Inventory Results in resource use for IGLOO Cellulose in dense-pack application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
RPRE	MJ	4,83E-01	1,23E-02	4,50E-01	1,67E-02	1,20E-03	0	0	0	0	0	0	0	0	3,82E-03	0	4,16E-02	1,01E+00
RPRM	MJ	2,79E+01	0,00E+00	6,37E-01	0,00E+00	-6,18E-01	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	2,79E+01
RPRT	MJ	2,84E+01	1,23E-02	1,09E+00	1,67E-02	-6,17E-01	0	0	0	0	0	0	0	0	3,82E-03	0	4,16E-02	2,89E+01
NRPRE	MJ	7,14E+00	1,18E+00	4,58E+00	1,35E+00	2,78E-01	0	0	0	0	0	0	0	0	3,09E-01	0	8,91E-01	1,57E+01
NRPRM	MJ	0,00E+00	0,00E+00	7,23E-01	0,00E+00	-6,51E-02	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	6,58E-01
NRPRT	MJ	7,14E+00	1,18E+00	5,30E+00	1,35E+00	2,13E-01	0	0	0	0	0	0	0	0	3,09E-01	0	8,91E-01	1,64E+01
SM	kg	1,91E+00	0,00E+00	4,25E-02	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	1,96E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
RE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
FW	m3	8,78E-03	1,35E-04	9,80E-04	1,66E-04	2,19E-05	0	0	0	0	0	0	0	0	3,81E-05	0	6,82E-04	1,08E-02

RPRE = Renewable primary resources used as energy carrier (fuel) ; RPRM = Renewable primary resources with energy content used as material ; RPRT = Total use of renewable primary energy resources ; NRPRE = Non-renewable primary resources used as an energy carrier (fuel) ; NRPRM = Non-renewable primary resources with energy content used as material ; NRPRT = Total use of non-renewable primary energy resources ; SM = Secondary material ; RSF = Renewable secondary fuels ; NRSF = Non-renewable secondary fuels ; RE = Recovered energy ; FW = Net use of fresh water resources

5.3 WASTE CATEGORIES AND OUTPUT FLOWS

Table 16: Life Cycle Inventory Results in waste categories and output flows for IGLOO Cellulose in loose fill application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
HWD	kg	5,41E-03	5,81E-04	1,64E-03	6,99E-04	1,08E-04	0	0	0	0	0	0	0	0	1,60E-04	0	7,37E-04	9,33E-03
NHWD	kg	4,86E-01	3,26E-02	3,06E-02	3,47E-02	7,48E-03	0	0	0	0	0	0	0	0	7,94E-03	0	1,03E+00	1,63E+00
HLRW	m3	2,26E-10	5,07E-12	8,56E-10	6,64E-12	6,45E-13	0	0	0	0	0	0	0	0	1,52E-12	0	1,87E-11	1,12E-09
ILLRW	m3	1,59E-09	2,66E-11	2,98E-09	3,41E-11	3,26E-12	0	0	0	0	0	0	0	0	7,80E-12	0	1,03E-10	4,74E-09
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
MR	kg	0,00E+00	0,00E+00	1,20E-03	0,00E+00	1,94E-02	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	2,06E-02
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00

Table 17: Life Cycle Inventory Results in waste categories and output flows for IGLOO Cellulose in dense-pack application

Indicators	Unit	Production			Construction		Use							End-of-Life				Total
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
HWD	kg	1,19E-02	1,28E-03	3,60E-03	1,54E-03	2,38E-04	0	0	0	0	0	0	0	0	3,52E-04	0	1,62E-03	2,05E-02
NHWD	kg	1,07E+00	7,16E-02	6,72E-02	7,64E-02	1,65E-02	0	0	0	0	0	0	0	0	1,75E-02	0	2,26E+00	3,57E+00
HLRW	m3	4,98E-10	1,12E-11	1,88E-09	1,46E-11	1,42E-12	0	0	0	0	0	0	0	0	3,34E-12	0	4,12E-11	2,45E-09
ILLRW	m3	3,49E-09	5,84E-11	6,54E-09	7,50E-11	7,17E-12	0	0	0	0	0	0	0	0	1,71E-11	0	2,26E-10	1,04E-08
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
MR	kg	0,00E+00	0,00E+00	2,64E-03	0,00E+00	4,27E-02	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	4,54E-02
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0	0,00E+00	0	0,00E+00	0,00E+00

HWD = Hazardous waste disposed ; NHWD = Non-hazardous waste disposed ; HLRW = High-level radioactive waste, conditioned, to final repository ; ILLRW = Intermediate- and low-level radioactive waste, conditioned, to final repository ; CRU = Components for re-use ; MR = Materials for recycling ; MER = Materials for energy recovery ; EE = Recovered energy exported from the product system

5.4 BIOGENIC CARBON

Table 18: BCR and BCE from IGLOO Cellulose and its packaging for 1 FU as loose fill application in attics

Category	Module	BCR (kg CO_2)	BCE (kg CO_2)	Comments
Product	A1	-1,29E+00	0.00E+00	100% landfilled
	A5	-1,29E-03	3,24E-04	
	C4	0.00E+00	3,24E-01	
Wood Packaging	A3	-3,03E-02	0.00E+00	3% landfilled
	A5	-3,03E-05	2,49E-04	

Table 19: BCR and BCE from IGLOO Cellulose and its packaging for 1 FU as dense-pack application in walls

Category	Module	BCR (kg CO_2)	BCE (kg CO_2)	Comments
Product	A1	-2,83E+00	0.00E+00	100% landfilled
	A5	-2,83E-03	7,13E-04	
	C4	0.00E+00	7,13E-01	
Wood Packaging	A3	-6,67E-02	0.00E+00	3% landfilled
	A5	-6,6711E-05	5,47E-04	

BCR = Biogenic Carbon Removal
BCE = Biogenic Carbon Emissions

6. LCA INTERPRETATION

The raw materials (A1) contribute to the largest share of the environmental impacts for all impact categories except Eutrophication, where the product's landfill is the most significant module. Boric acid is the most contributing raw material, representing over 80% of the impacts over A1 on all the impact categories. When biogenic carbon is included in the calculation, the product's impact on global warming potential significantly decreases as biogenic carbon is stored in the product. As the product's end-of-life is 100% landfill, only 26% of the biogenic carbon is re-emitted.

Fossil carbon dioxide emissions are the primary contributor to global warming, and crude oil is the main driver to abiotic depletion.

Some assumptions were made for this study that may affect the results. The most important assumptions are:

- The end-of-life scenario is based on PCR part B[6], which is based on studies and regional averages and may not reflect the actual end-of-life of the product. Results may differ significantly depending on the actual waste management (e.g. if it's incinerated or recycled instead of landfilled).
- The paper degradation in landfills (10% after 100 years) is based on a study on wooden materials and wood-based products. However, the association of paper with flame retardants may affect the degradation of the product.
- Methane flaming at the landfill site is also based on regional averages (WARM model[15],[16],[17] as specified in PCR Part B[6]) and may not correspond to the real end-of-

life of the product. Methane has significant impacts on Global Warming. Therefore, the flaming of its emissions greatly affects the product's impacts on this indicator.

- The load capacity and empty-return rate for transportation follow those of the Ecoinvent dataset. However, these parameters are averages that may not reflect the reality of the product, and may significantly affect the results for modules A2 and A4.

7. Additional environmental information

7.1 Environment and health during manufacturing

Igloo Cellulose USA Inc. is fully committed to the diligent protection of both the environment and the health and safety of its employees and the employees of its customers. The manufacturing process includes state-of-the-art environmental control equipment, and the employees are equipped with the highest quality personal protective equipment. Igloo Cellulose USA Inc. research and development process strives to create products that have a sustainable impact on buildings and their occupants.

7.2 Energy savings during use

The use of insulation material reduces the energy consumption of a building throughout its life cycle, thereby reducing its environmental impact. In the case of this LCA, the environmental benefits provided by IGLOO Cellulose due to the reduction in energy consumption of the building have not been included in this EPD, in accordance with PCR Part B[6]. In order to assess the potential impact reductions, energy simulations could be performed, taking into account several building parameters (geometry, type of heating, etc.) to determine the resulting energy saving.

7.3 Environment and health during installation

The manufacturer's installation instructions should be followed. During installation, personal protective equipment (dust masks or respirators, earplugs and safety glasses) should be worn to protect the installer's respiratory system, ears and eyes from excessive exposure to sawdust. In addition, the use of knee pads and rubber gloves is recommended.

7.4 Extraordinary effects

There are no extraordinary effects to report.

7.5 Delayed emissions

No delayed emissions shall be reported.

7.6 Regulated hazardous substances

The insulation product contains only the materials listed in Table 2, these are not on the US Environmental Protection Agency (EPA) list of Hazardous substances (40 CFR part 302.4).

7.7 Additional Information on Releasing Hazardous Substances - Indoor Air Quality During Use Phase

7.7.1 Mould and micro-organisms

The product is resistant, there is no mold growth according to ASTM C1338-96. .

7.7.2 Emissions of dust and fibers during building use phase

The product is isolated from indoor air; therefore, it is not intended to come into contact with indoor air.

7.8 Contribution of Product to Comfort Inside Buildings

7.8.1 Characteristics of the product linked to the creation of hygrothermal comfort conditions in the building

The product is a thermal insulation product; as such, it contributes to the hygrothermal comfort of the building.

7.8.2 Characteristics of the product linked to the acoustic comfort in the building

In addition to its hygrothermal performance, the product can contribute to the acoustic comfort of the building.

7.9 Further information

For more specific properties and performance data of IGLOO Cellulose, please visit the following link: https://cellulose.com/wp-content/uploads/2025/11/Igloo-Cellulose-Spec-Sheet.pdf.

8. References

[1] ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework (Edition 2, 2006)

[2] ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines (Edition 1, 2006)

[3] ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures. (Edition 1, 2006)

[4] ISO 21930:2017 : Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

[5] UL Environment Standard 10010, Product Category Rules for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements version 4.0

[6] Product Category Rules for Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1, edition 4.0, dated November 2025

[7] Simapro 9.5.0.0, July 2023

[8] Ecoinvent 3.9.1, December 2022

[9] ASTM C739-21a - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation. March 2024

[10] Electronic Code of Federal Regulations (e-CFR), Title 16—Commercial Practices, 16 CFR Chapter II, Subchapter B - CONSUMER PRODUCT SAFETY ACT REGULATIONS, 16 CFR Part 1209 - INTERIM SAFETY STANDARD FOR CELLULOSE INSULATION. July 1979

[11] Electronic Code of Federal Regulations (e-CFR), Title 16—Commercial Practices, 16 CFR Chapter II, Subchapter B - CONSUMER PRODUCT SAFETY ACT REGULATIONS, 16 CFR Part 1404 - CELLULOSE INSULATION. July 1979

[12] National Overview: Facts and Figures on Materials, Wastes and Recycling. EPA (United States Environmental Protection Agency). https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials#recycling. Accessed 21st November 2025.

[13] Investigation into the Landfilling and Recovery of Wood and Wooden Pallets at U.S. Landfills in 2021, Yash Mansharamani, faculty of the Virginia Polytechnic Institute and State University. May 2024. https://vtechworks.lib.vt.edu/server/api/core/bitstreams/1f33b547-77f3-4695-b935-052c6d10b11d/content

[14] IPCC, 2006. WASTE GENERATION, COMPOSITION AND MANAGEMENT DATA, Guidelines for National Greenhouse Gas Inventories. (biogenic carbon content in paper and paperboard)

[15] Landfilling and Landfill Carbon Storage for the Waste Reduction Model (WARM), United States Environmental Protection Agency (EPA), June 2014. https://www.epa.gov/waste-reduction-model/landfilling-and-landfill-carbon-storage-waste-reduction-model-warm?utm.com

[16] Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) - Containers, Packaging, and Non-Durable Good Materials Chapters, United States Environmental Protection Agency (EPA), December 2023. Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)

[17] Landfill Gas Monte Carlo Model Documentation and Results, James Levis and Morton A. Barlaz, June 2014. https://www.epa.gov/sites/default/files/2016-03/documents/lanfl_gas_mont_carlo_modl.pdf

[18] Intergovernmental Panel on Climate Change. IPCC 2021. 2021

[19] Center of Environmental Science (CML) of Leiden University. CML-IA Baseline. August 2016

[20] U.S. Environment Protection Agency. Tool for the Reduction and Assessment of Chemical and other environmental Impacts (TRACI) v2.1. 2012

Owner of the EPD **Responsible for data, LCA and information**	**Igloo Cellulose USA Inc.** 700 Silver St, Agawam, MA 01001, USA www.cellulose.us	
EPD Program **Program operator**	**ASTM International** 100 Barr Harbor Drive, West Conshohocken, PA 19428 United States of America (USA) www.astm.org	
Author(s) of the LCA and EPD	**WeLOOP** 254 Rue du Bourg 59130 Lambersart France	
Identification of the project report	Environmental Product Declaration Background Report - IGLOO® Cellulose insulation	
Verification **Name of the third-party verifier** **Date of verification**	ISO 14025:2006 Charles Thibodeau March 16, 2026	