# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

SmartEPD-2025-001-0619-01

## SonaKrete

INTERNATIONAL CELLULOSE CORPORATION

SMART EPD CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION

**Date of Issue:** Oct 24, 2025

**Expiration:** Oct 24, 2030

**Last updated:** Oct 23, 2025

## General Information

International Cellulose Company

12315 Robin Blvd Houston, Texas 77045

7133221897

icc@saint-gobain.com spray-on.com

| | |
|---|---|
| **Product Name:** | SonaKrete |
| **Functional Unit:** | 1 m2 material with RSI=1m2k/w |
| **Declaration Number:** | SmartEPD-2025-001-0619-01 |
| **Date of Issue:** | October 24, 2025 |
| **Expiration:** | October 24, 2030 |
| **Last updated:** | October 23, 2025 |
| **EPD Scope:** | Cradle to gate with other options<br>A1 - A3, A4, A5, C1 - C4 |
| **Market(s) of Applicability:** | North America |

## General Organization Information

International Cellulose Corporation (ICC) is the industry's leading manufacturer of spray-applied, cellulosic thermal and acoustical finishes. For over 60 years, ICC has provided trusted solutions that seamlessly integrate into architectural designs, enhancing insulation, sound control, and aesthetics. As a subsidiary of Saint-Gobain, one of the world's largest and oldest building products companies, ICC is committed to innovation and sustainability in creating better-built environments.

**Further information can be found at:** https://www.spray-on.com/

## Limitations, Liability, and Ownership

This study was conducted following appropriate ISO standards and best practices and is intended for internal use to assist the company with understanding the life cycle impacts of their products, as well as having the results published in an EPD.

All data for the operation of the facility, as well as transportation distances and modes, was collected directly from the involved manufacturing site(s). Efforts were made to check the data for internal consistency and to verify data with plant personnel. Sub-metering of energy use for each critical stage in the manufacturing process would allow for more detailed analysis and is recommended.

The findings in this research are limited by the inherent uncertainty of creating a representative model through LCA. Many assumptions were made in the modeling of the product system with representative processes and datasets.

While quality control was undertaken at each step in building the LCI and conducting the LCIA, uncertainty is present in the results since the data represents only one year of manufacturing information from the manufacturing location(s). Detailed evaluation of more manufacturing plants and time periods would reduce the uncertainty. Some level of uncertainty is inherent in conducting LCA and decision making must reflect this fact.

Due to the limited availability of datasets, some selected sources may not be of optimal quality. However, they were chosen as the most suitable and comprehensive options available under the circumstances.

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

- Comparison of the environmental performance of Part A: Life Cycle Assessment Calculation Rules and Report Requirements using EPD information shall be based on the product's use and impacts at the construction works level, and therefore EPDs may not be used for comparability purposes when not considering the construction works energy use phase as instructed under this PCR.

• Full conformance with the Part A: Life Cycle Assessment Calculation Rules and Report Requirements allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category Part B PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible.

• *Example of variations: Different LCA software and background LCI datasets may lead to differences in results for upstream or downstream of the life cycle stages declared.*

## Reference Standards

| | |
|---|---|
| **Standard(s):** | ISO 14025 and ISO 21930:2017 |
| **Core PCR:** | UL Part A PCR for Building-Related Products and Services v.4<br>Date of issue: March 01, 2022 |
| **Sub-category PCR:** | UL Part B: Building Envelope Thermal Insulation Products v.3<br>Date of issue: April 10, 2023<br>Valid until: October 31, 2025 |
| **Sub-category PCR review panel:** | Contact Smart EPD for more information. |
| **General Program Instructions:** | Smart EPD General Program Instructions v.2.0, March 2025 |

## Verification Information

| | |
|---|---|
| **LCA Author/Creator:** | Saint-Gobain North American ESG Sustainability Group \| sustainability@saint-gobain.com |
| **EPD Program Operator:** | Smart EPD \| info@smartepd.com \| www.smartepd.com \|<br>585 Grove St., Ste. 145, Herndon, VA 20170, USA |
| **Verification:** | Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External<br>Brandon Kuczenski \| Scope 3 Consulting LLC \| brandon@scope3consulting.com<br>Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External<br>Brandon Kuczenski \| Scope 3 Consulting LLC \| brandon@scope3consulting.com |

## Product Information

| | |
|---|---|
| **Functional Unit:** | 1 m2 material with RSI=1m2k/w |
| **Mass:** | 8 kg |
| **Reference Service Life:** | 75 Years |
| **Product Specificity:** | ✗ Product Average<br>✓ Product Specific |

## Product Description

SonaKrete is a premium acoustical finish system that combines high-performance sound absorption with a refined, seamless appearance. Expertly applied to solid substrates and to complex surfaces, it offers exceptional design flexibility while ensuring lasting durability. Made from sustainable cellulose fibers and applied with a specialty water-based adhesive, SonaKrete provides an environmentally friendly solution that enhances acoustics without sacrificing aesthetics. GREENGUARD Gold

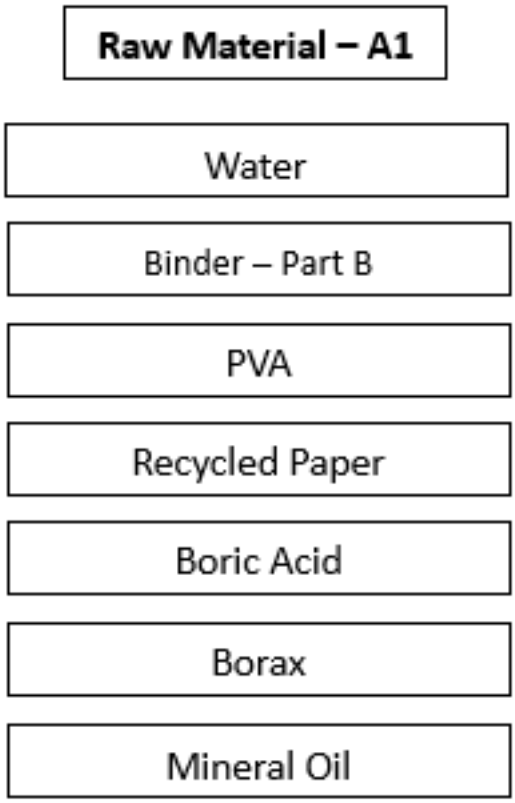
certified, it supports healthier indoor environments, making it an ideal choice for spaces where performance and visual appeal coexist. Available in standard and custom colors, SonaKrete effortlessly integrates into any project, transforming ceilings into refined, sound-absorbing surfaces that enrich both the design and functionality of the space.

**Further information can be found at:** https://www.spray-on.com/sonakrete/

## Product Specifications

| | |
|---|---|
| **Product Classification Codes:** | EC3 - ThermalMoistureProtection -> Insulation -> SprayedInsulation<br>Masterformat - 072129 |
| **Form Factor:** | ThermalMoistureProtection >> Insulation >> SprayedInsulation |
| **Insulation type:** | Cellulose |
| **Density:** | 144.17 kg/m3 |
| **Thickness for RSI =1:** | 55.48 mm |
| **List of standards required for the testing, evaluation, and approval of the declared product and its application in building assemblies for building code and other regulation compliance :** | ASTM C 423 Sound Absorption (Noise Reduction Coefficient) ASTM C 518 Thermal Conductivity ASTM E 84 Surface Burning Characteristics ASTM E 736 Bond Strength ASTM E 119 Fire Tests of Building Construction and Materials |

## Product Composition Diagram



## Material Composition

| Material/Component Category | Origin | % Mass |
|---|---|---|
| Water | None | 21-31 |
| Part B - Binder | None | 5-15 |
| PVA | None | 2-6 |
| Recycled Paper | None | 44-54 |
| Boric Acid | None | 5-11 |
| Borax | None | 1-3 |
| Mineral Oil | None | 0.01-1 |

| Packaging Material | Origin | kg Mass |
|---|---|---|
| Pallet | None | 2.05E-02 |
| Drum - HDPE | None | 1.34E-02 |
| Pallet Wrap - LDPE | None | 1.78E-02 |
| Bag - LDPE | None | 4.47E-02 |

| Biogenic Carbon Content | kg C per m2 |
|---|---|
| Biogenic carbon content in product | None |
| Biogenic carbon content in accompanying packaging | 0.236 |

| Hazardous Materials |
|---|
| No substances required to be reported as hazardous are associated with the production of this product |

## EPD Data Specificity

**Primary Data Year:** 2024

**Manufacturing Specificity:**

- ✗ Industry Average
- ✗ Manufacturer Average
- ✓ Facility Specific

**Averaging:**

Averaging was not conducted for this EPD.

## System Boundary

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

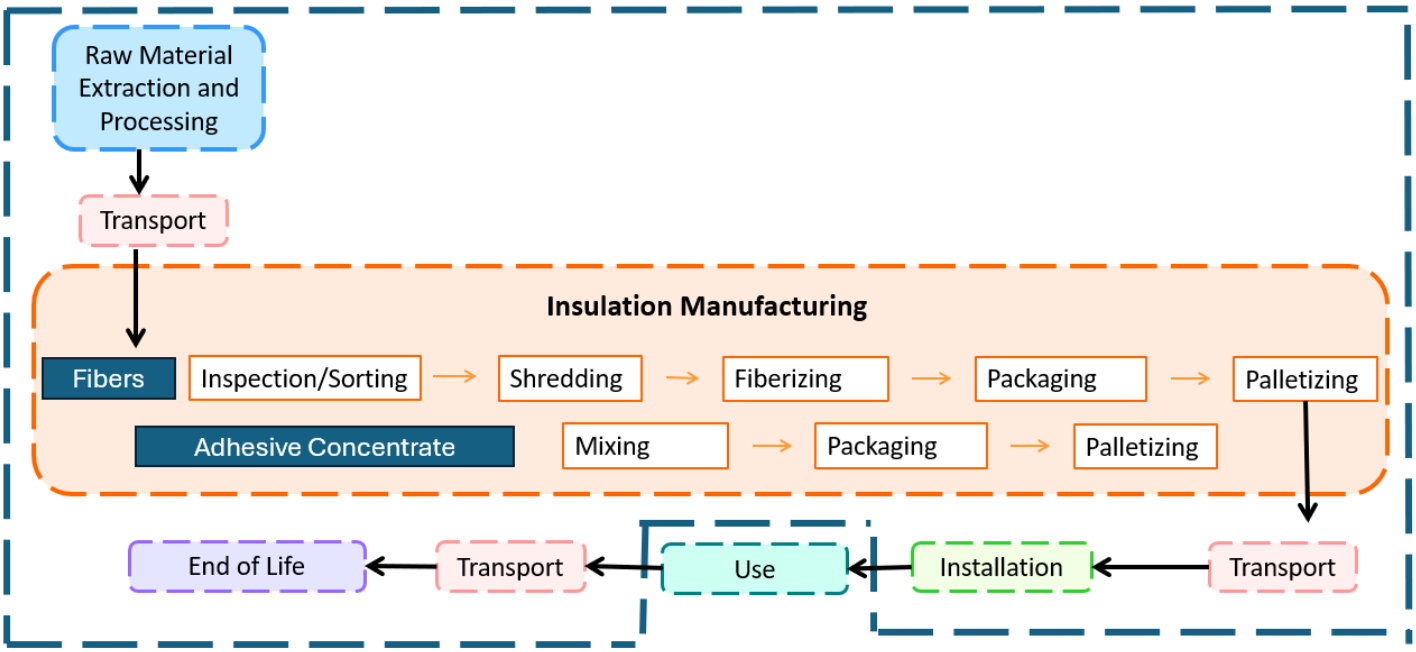
Note:

ND = Module not declared

## Plants

ICC Houston Texas Plant
12315 Robin Blvd, Houston, TX 77045, USA

## Product Flow Diagram




## Software and Database

| | |
|---|---|
| **LCA Software:** | Sphera LCA for Experts (formerly GaBi) v. 10.9 |
| **LCI Foreground Database(s):** | GaBi Professional Database v. 2025.1 |
| **LCI Background Database(s):** | Ecoinvent v. 3.9.1 \| cutoff system model |

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

## Data Quality

Wherever secondary data is used, the study adopts critically reviewed data for consistency, precision, and reproducibility to limit uncertainty. Since the inventory flows for the utilized databases are very often accompanied by a series of data quality ratings, a general indication of precision can be inferred. Using these ratings, the data sets used generally have medium-to-high precision.

Due to limited dataset availability, some selected sources may not be of optimal quality. However, they were chosen as the most suitable and comprehensive options under the circumstances. For example, the mineral oil dataset used is over 10 years old, but was selected due to the absence of more recent alternatives and its relevance as the closest available approximation. Similarly, outdated datasets were used for truck and barge transportation, as no newer versions are readily accessible. Other datasets that are currently outdated, but have been used as the best approximation include, boric acid, vinyl acetate, borax, pallet, and plastic film extrusion. While these datasets help complete the model, they may introduce uncertainty into the results. Therefore, it's important to acknowledge and discuss these data quality limitations.

The Saint-Gobain North American ESG Department has collected specific data on energy and material inputs, wastes, water use, emissions, and transportation impacts for included manufacturing plant(s). Data quality discussion

## Life Cycle Module Descriptions

**Raw Materials (Module A1)**
A thorough analysis of the material inputs was completed for the inventory of this study.

**Transportation of Raw Materials (Module A2)**
Raw materials are transported to the manufacturing sites by standard freight truck, train, or ocean freighters. Unless otherwise noted, transport vehicles are fueled with diesel fuel. The Raw material transportation distance was modeled based on the actual data provided by experts from the plant.

**Manufacturing (Module A3)**
Cellulose fibers are shredded and fiberized and combined with other additives to enhance performance and functionality. Once processed, the fibers are bagged for secure storage and transport. Adhesive concentrate is produced by blending the ingredients in an industrial mixer.

**Packaging (Module A3)**
Cellulose fibers are securely packaged in 4 oz. plastic bags, with each unit weighing 30 lbs. Adhesive concentrate is contained in durable plastic drums, each containing 50 gallons, ensuring safe transport and preservation of quality.

**Final Product Transportation (Module A4)**
Final products are transported on trucks throughout the United States. This study assumed an average of 1419.71 km (SonaKrete) for the final shipment of product based on assumptions from the plant team based on transport data.

**Installation (Module A5)**
SonaKrete is spray-applied to solid substrates and troweled out to create a seamless finish. It is installed using specialized spray equipment and approved techniques by a network of licensed applicators, trained by ICC and supported by their field services team. During application, fibers and adhesives are combined to create a seamless, durable coating that enhances acoustical performance.

**Use (Modules B1-B7)**
The use phase was not included within the LCA.

**End of Life (Modules C1-C4)**
C1 - Removal at end of life requires human labor only and therefore deconstruction does not contribute to the lifetime environmental impacts.

C2 - After removal, the insulation is assumed to be transported 160 km to the disposal site to be landfill.

C3 - No waste processing is required before being landfill.

C4 - After removal, the insulation is assumed to be landfilled. Since removal is typically associated with demolition or remodeling activities, the insulation is not assumed to be reused or recycled. These products are spray-applied using specialized equipment and adhesives directly onto properly prepared substrates such as ribbed metal decking, gypsum, concrete, steel, and wood, remaining exposed as interior finishes, unlike traditional cellulose insulation used in attics and walls. With a bond strength exceeding 350 PSF and durability designed to last the building's lifetime, they should be classified as inert waste. During demolition, they remain firmly fused to the substrate, preventing separation and minimizing environmental impact, further reinforcing their inert classification.

All end-of-life disposal is based off Part A (Product Category Rules for Building-Related Product and Services: Part A  Life Cycle Assessment Calculation Rules and Report Requirements. Version 4. March 2022. UL Environment) guidance.

## LCA Discussion

### Allocation Procedure

Allocation was conducted based on the production mass data provided by the facility as a percentage of the overall production mass. Since the plant does not have submetering, there is no way to determine exact consumption for specific product lines. Mass allocation is the most accurate and representative way to allocate energy and water usage data. No waste flows during production have been allocated as co-products. Emissions associated with land use change were not included in the LCA due to the negligible impacts. Allocation was conducted based on the production mass data provided by the Houston facility.

### Cut-off Procedure

All inputs and outputs to a process shall be included in the calculation of results, for which data are available. Any data gaps are filled by conservative assumptions with average, generic, or proxy data.

For hazardous substances, as defined by the U.S. Resource Conservation and Recovery Act (RCRA), the following requirements apply:
The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available.
If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.

If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This LCA is in compliance with the cut-off criteria since no known processes were neglected or excluded from this analysis outside of the specific items outside the system boundary.

## Renewable Electricity

| | |
|---|---|
| **Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:** | ✕ No |

## Scenarios

### Transport to the building/construction site (A4)

A4 Module

| | |
|---|---|
| **Fuel Type:** | Diesel |
| **Liters of Fuel:** | 30 l/100km |
| **Vehicle Type:** | Truck |
| **Transport Distance:** | 1419.71 km |
| **Capacity Utilization:** | 85 % |
| **Packaging Mass:** | 9.60E-02 kg |
| **Capacity utilization volume factor:** | <1 |
| **Assumptions for scenario development:** | Final products are transported on trucks throughout the United States. This study assumed an average of 1419.71 km (SonaKrete) for the final shipment of product based on assumptions from the plant team based on transport data. |

### Installation in to the building/construction site (A5)

A5 Module

| | |
|---|---|
| **Installation Scrap Rate Assumed:** | 0 % |
| **Ancillary Materials:** | 0 kg |
| **Net Fresh Water Consumption Specified by Water Source and Fate:** | 1.31E-02 m3 |
| **Electricity Consumption:** | 7.88E-01 kWh |
| **Product Lost per Declared/Functional Unit:** | 0 kg |
| **Waste Materials at the Construction Site Before Waste Processing:** | 9.60E-02 kg |
| **Mass of Packaging Waste Specified by Type:** | (Plastics): 7.59E-02; (Pulp): 2.04E-02 kg |
| **Biogenic Carbon Contained in Packaging:** | 8.64E-01 kg |
| **Assumptions for scenario development:** | SonaKrete is spray-applied to solid substrates and troweled out to create a seamless finish. It is installed using specialized spray equipment and approved techniques by a network of licensed applicators, trained by ICC and supported by their field services team. During application, fibers and adhesives are combined to create a seamless, durable coating that enhances acoustical performance. |

## End of Life (C1 - C4)

C1 - C4 Modules

### Collection Process

| | |
|---|---|
| **Collected with Mixed Construction Waste:** | 8.00E+00 kg |

### Disposal

| | |
|---|---|
| **Product or Material for Final Disposal:** | 8.00E+00 kg |
| **Removals of Biogenic Carbon:** | 0.00E+00 kg CO2 |

# Results

## Environmental Impact Assessment Results

IPCC AR5 GWP 100, TRACI 2.1, CML 2016 v4.8
per 1 m2 of product material with RSI=1m2k/w.
LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

| Impact Category | Method | Unit | A1A2A3 | A4 | A5 | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|---|---|---|---|
| GWP-total | IPCC AR5 GWP 100 | kg CO2 eq | 4.82e+0 | 1.07e+0 | 5.73e-1 | 0 | 1.21e-1 | 0 | 1.81e-1 |
| GWP- fossil | IPCC AR5 GWP 100 | kg CO2 eq | 5.68e+0 | 1.07e+0 | 5.65e-1 | 0 | 1.21e-1 | 0 | 1.82e-1 |
| ODP | TRACI 2.1 | kg CFC 11 eq | 2.00e-8 | 3.98e-11 | 4.67e-12 | 0 | 4.52e-12 | 0 | 3.74e-14 |
| AP | TRACI 2.1 | kg SO2 eq | 2.90e-2 | 6.32e-3 | 1.31e-3 | 0 | 7.17e-4 | 0 | 9.06e-4 |
| EP | TRACI 2.1 | kg N eq | 7.78e-3 | 3.50e-4 | 1.37e-4 | 0 | 3.97e-5 | 0 | 3.75e-5 |
| POCP | TRACI 2.1 | kg O3 eq | 5.28e-1 | 1.74e-1 | 2.73e-2 | 0 | 1.97e-2 | 0 | 1.62e-2 |
| ADP-fossil | CML 2016 v4.8 | MJ | 1.03e+2 | 1.34e+1 | 5.95e+0 | 0 | 1.52e+0 | 0 | 2.59e+0 |

Note:

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

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Global Warming Potential or Climate Change is an indicator aimed at including in a single value the added effect of all the substances contributing to the greenhouse effect.

Global Warming Potential (GWP-Total) includes biogenic carbon, fossil carbon, land use and land use change. To calculate GWP-Total within the above table, the equation below is used:

**GWP-total = GWP-biogenic + GWP-fossil + GWP-luluc**

- *GWP-total* or *GWPtotal (including biogenic)* is the sum of GWP-biogenic, GWP-fossil and GWP-luluc
- *GWP-biogenic* only includes biogenic carbon which is carbon that is stored in bio-sourced materials, like plants, trees, and soil. This excludes fossil.
- *GWP-fossil or GWPtotal (excluding biogenic)* only includes fossil carbon which is the carbon dioxide emitted when fossil fuels like coal, oil, or natural gas are combusted. This excludes biogenic.
- *GWP-luluc* only includes the greenhouse gas emissions that arise in connection with changes in the specified carbon stock as a result of land use and land use change, such as deforestation.

Depending on the required or optional standards, GWP can be reported with different methods and indicators including United States Environmental Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts (TRACI 2.1, etc.), Intergovernmental Panel on Climate Change (IPCC) Assessment Report (AR 5, AR 6, etc.), Environmental Footprint (EF 3.0, 3.1), and/or EN 15804.
GWP can be reported on a time frame such as GWP 100 for 100-year time horizon.

Emissions from biogenic carbon in packaging are included in the Global Warming Potential (GWP - Total) indicator during the installation stage (A5).

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted.
Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

## Resource Use Indicators

per 1 m2 of product material with RSI=1m2k/w.

| Indicator | Unit | A1A2A3 | A4 | A5 | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|---|---|---|
| RPRE | MJ | 2.31e+1 | 0 | 1.82e+0 | 0 | 0 | 0 | 3.80e-1 |
| RPRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RPRT | MJ | 2.31e+1 | 0 | 1.82e+0 | 0 | 0 | 0 | 3.80e-1 |
| NRPRE | MJ | 8.72e+1 | 0 | 1.82e+0 | 0 | 0 | 0 | 3.80e-1 |
| NRPRM | MJ | 7.60e+0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRPRT | MJ | 1.07e+2 | 1.36e+1 | 7.65e+0 | 0 | 1.54e+0 | 0 | 2.68e+0 |
| SM | kg | 3.96e+0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | m3 | 4.57e-2 | 0 | 1.55e-2 | 0 | 0 | 0 | 2.91e-4 |

Note:

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

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

## Waste and Output Flow Indicators

per 1 m2 of product material with RSI=1m2k/w.

| Indicator | Unit | A1A2A3 | A4 | A5 | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.69e-8 | 0 | 4.23e-9 | 0 | 0 | 0 | 6.40e-10 |
| NHWD | kg | 1.03e-1 | 0 | 1.20e-1 | 0 | 0 | 0 | 8.01e+0 |
| HLRW | kg | 9.57e-7 | 0 | 7.17e-7 | 0 | 0 | 0 | 3.35e-8 |
| ILLRW | kg | 8.77e-4 | 0 | 6.00e-4 | 0 | 0 | 0 | 2.94e-5 |

Note:

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

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

## Carbon Emissions and Removals

per 1 m2 of product material with RSI=1m2k/w.

| Indicator | Unit | A1A2A3 | A4 | A5 | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|---|---|---|
| BCRP | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BCEP | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BCRK | kg CO2 | -8.64e-1 | 0 | 0 | 0 | 0 | 0 | 0 |
| BCEK | kg CO2 | 0 | 0 | 8.64e-1 | 0 | 0 | 0 | 0 |
| BCEW | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CCE | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CCR | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWNR | kg CO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note:

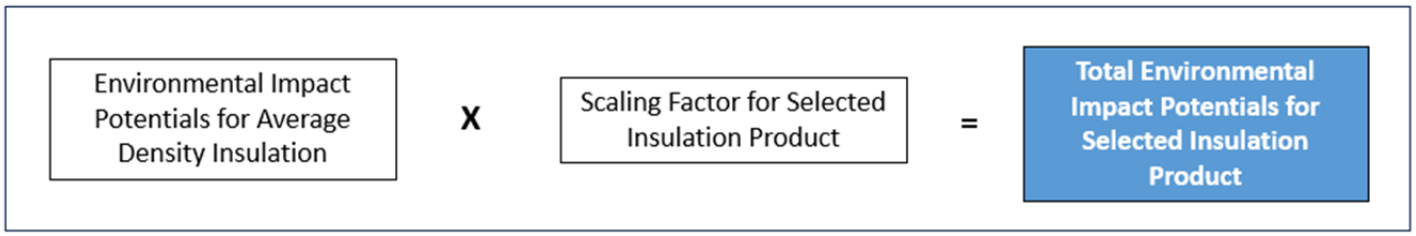
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

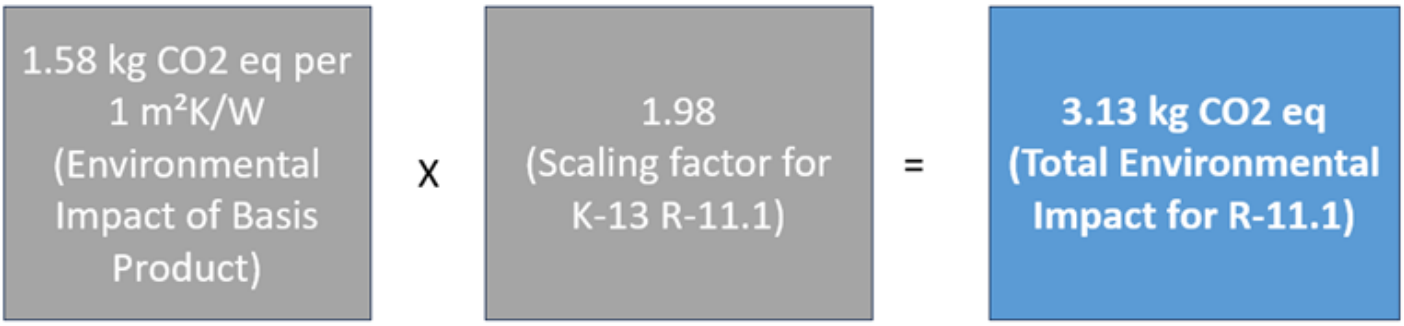
Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

## Impact Scaling Factors

| Product Name | R-Value | Scaling Factor |
|---|---|---|
| SonaKrete | 2.75 | 0.23 |




## Interpretation

The Life Cycle Assessment (LCA) results indicate that the environmental impacts across all products studied are primarily driven by the raw materials stage (A1). Among the raw materials, Part B, Boric Acid, and Polyvinyl Alcohol consistently emerge as the top contributors to environmental impact. It is important to note that the Boric Acid dataset is currently out of date, but was used since there is no better alternative.To mitigate these effects, it is recommended to explore opportunities to reduce the quantities of these materials in product formulations where feasible. Although Mineral Oil was not one of the top contributing raw materials in term of GWP, it is important to note that the results may be affected by the outdated mineral oil dataset. When interpreting the results, it is important to keep the uncertainty and data quality in mind.

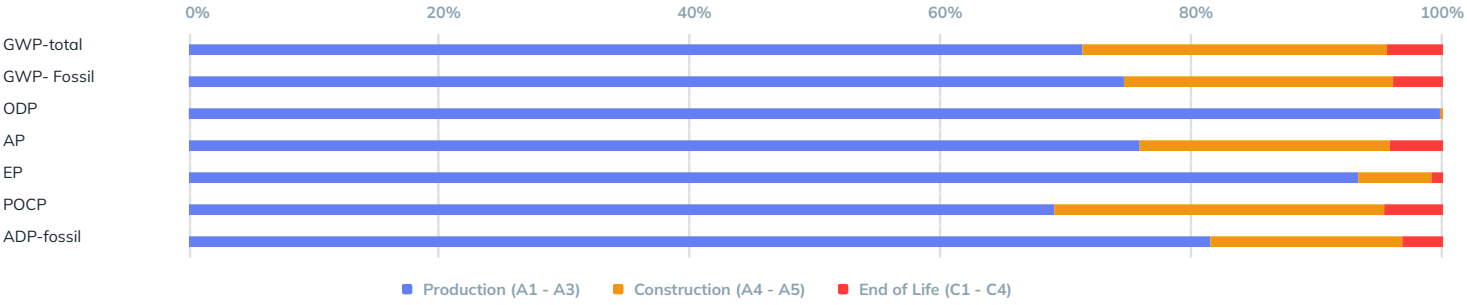
Although the insulation products already incorporate a significant proportion of recycled content, further increasing this percentage would be advantageous. Higher recycled content reduces reliance on virgin raw materials, thereby lowering the associated environmental impacts and improving the overall sustainability profile of the products.

The distribution phase (A4) is identified as the second-largest contributor to the total environmental impact. This data, provided by the plant team, suggests that transportation logistics play a significant role. While optimizing distribution routes can be challenging due to business constraints, efforts to shorten transportation distances or improve logistics efficiency should be explored.

Transportation of raw materials (A2) also contributes notably to the global warming potential. Sourcing raw materials closer to the manufacturing facilities would help reduce emissions associated with long-distance transport. The truck transportation and barge transportation datasets that were used within this study are both outdated, but there are currently no other better alternatives.

This LCA was allocated based on total facility production, as submetering data was not available. The system boundary follows a cradle-to-gate approach and includes optional indicators covering modules A1A5 and C1C4.

Due to limited dataset availability, some selected sources may not be of optimal quality. However, they were chosen as the most suitable and comprehensive options under the circumstances. For example, the mineral oil dataset used is over 10 years old, but was selected due to the absence of more recent alternatives and its relevance as the closest available approximation. Similarly, outdated datasets were used for truck and barge transportation, as no newer versions are readily accessible. While these datasets help complete the model, they may introduce uncertainty into the results. Therefore, it's important to acknowledge and discuss these data quality limitations.




# Further Information

## Additional Trade Names

- SonaSpray FCX
- ThermoCon TR

## EPD Comparability

Comparison of the environmental performance of Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010 1 Edition 3.0, dated April 2023 using EPD information shall be based on the product's use and impacts at the construction works level, and therefore EPDs may not be used for comparability purposes when not considering the construction works energy use phase as instructed under this PCR.

# References

Product Category Rules (PCR) Guidance for Building Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, Sixth Edition, Dated March 28, 2022.

Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010 1 Edition 3.0, dated April 2023

ISO 14040: 2006 Series  Environmental Management-Life Cycle Assessment

ISO 21930:2017 Sustainability in building construction  Environmental declaration of building products

Sphera Managed LCA Content Databases. **https://lcadatabase.sphera.com/**

US LCI Database. **https://www.nrel.gov/lci/**

Ecoinvent Database. **http://ecoinvent.org/**

CertainTeed Website. **https://www.certainteed.com/**

ISO 14025 ISO 14026:2006, Environmental labels and declarations  Type III environmental declarations  Principles and procedures.

ISO 14040 ISO 14040:2006/Amd 1:2020, Environmental Management  Life Cycle Assessment  Principles and framework.

ISO 14044 ISO 14044:2006/Amd 1:2017/Amd 2:2020, Environmental Management Life Cycle Assessment  Requirements and Instructions.

ISO 21930 ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services.

EN 15804 EN 15804 + A2:2019, Sustainability of construction works  Environmental Product Declarations Core rules for the product category of construction products.

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