ROCKWOOL STONE WOOL INSULATION

ROCKWOOL™ Stone Wool Insulation is designed for thermal, fire, and acoustic performance in residential and commercial construction applications.

ROCKWOOL

At ROCKWOOL, we are committed to enriching the lives of everyone who experiences our solutions. Our expertise is perfectly suited to tackling many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding. Our range of products reflects the diversity of the world's needs, supporting our stakeholders in reducing their own carbon footprint along the way.

Stone wool is a versatile material and forms the basis for all our businesses. With operations in 39 countries, we are the world leader in stone wool solutions, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibers for industrial use to insulation for the process industry, marine and offshore. For more information, visit: www.rockwool.com

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

EPD Program and Program Operator Name, Address, Logo, and Website	UL Solutions 333 Pfingsten Rd, Northbrook IL, 60062 www.ul.com www.spot.ul.com
General Program Instructions and Version Number	Program Operator Rules v 2.7 2022
Manufacturer Name and Address	ROCKWOOL, 8024 Esquesing Line, Milton, ON, Canada
Declaration Number	4790711618.101.2 (updated 3/2025)
Declared Product & Functional Unit or Declared Unit	1m^2 of insulation at RSI=1
Reference PCR and Version Number	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, Version 4.0, 2022 Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1, Edition 3.0, 2023.
Description of Product Application/Use	ROCKWOOL® stone wool insulation
Product RSL Description (if Appl.)	75 years
Markets of Applicability	Residential and commercial applications
Date of Issue	February 24, 2025
Period of Validity	5 Years
EPD Type	Product-specific
Range of Dataset Variability	n/a
EPD Scope	Cradle to gate with options (A1-A3, A4-A5, C1-C4, D)
Year(s) of Reported Primary Data	2022
LCA Software & Version Number	One Click LCA Version 0.26.0.
LCI Database(s) & Version Number	Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA database version: 7.6.
LCIA Methodology & Version Number	TRACI 2.1

The PCR review was conducted by:	UL Solutions PCR Review Panel epd@ul.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Cooper McCollum, UL Solutions
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	McMac CX
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Maggie Wildnauer, WAP Sustainability

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, 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.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

1. Product Definition and Information

1.1. Description of Company/Organization

With four manufacturing facilities and more than 1,200 employees in the United States and Canada, ROCKWOOL® is North America's largest stone wool producer, offering advanced building insulation, industrial and technical solutions. The EPD covers the building insulation products available in the North American market manufactured at the following locations:

- Milton, Ontario, Canada
- Grand Forks, British Columbia, Canada
- Byhalia, Mississippi, United States
- Ranson, West Virginia, United States

1.2. Product Description

Product Identification

ROCKWOOL stone wool insulation products are available as batt, semi-rigid and rigid board materials in a range of thicknesses, dimensions, densities, and specifications, optimized for a variety of applications from interior partitions to exterior walls, roofs, and below grade assemblies. Characterized by its thermal, fire and acoustical performance, ROCKWOOL stone wool insulation is an inorganic material, providing unaffected long-term performance. The thermal resistance of ROCKWOOL stone wool insulation products ranges from R 3.8 – R 4.3 per inch (RSI 0.67 – 0.76 per 25.4 mm).

ROCKWOOL stone wool insulation is fire resistant and can withstand temperatures up to 2,150°F (1,277°C) and does not contribute to the development and spread of fire or the release of toxic gases. The non-directional structure of the fibers helps to absorb acoustic waves and can reduce the intensity and propagation of noise. Stone wool is water repellent and vapor permeable, as well as resistant to rot, mold and mildew growth.

Figure 1: ROCKWOOL stone wool insulation (visual representation)

ROCKWOOL stone wool insulation products are produced using the same primary material composition and following the same manufacturing process. Depending on the application and performance requirements, select ROCKWOOL stone wool insulation can be manufactured as either mono density or dual density boards and/or manufactured with a facing.

The ROCKWOOL products captured by this EPD are as follows:

- **Exterior Wall:** Cavityrock®, Cavityrock® Black, Comfortboard® 80, Comfortboard® 110, Comfortbatt®, Frontrock™
- **Interior Wall:** AFB®, AFB® evo, Safe'n'Sound®, Rockboard® 40, Rockboard® 60, Rockboard® 40 RFF
- **Curtain Wall:** Curtainrock®, Curtainrock® 40, Curtainrock® 80, Curtainrock® 40 RFF, Curtainrock® 80 RFF
- **Firestopping:** ROXUL Safe®, ROXUL Safe® RFF, ROXUL Safe® 45
- **Metal Building:** Plus MB, ROXUL Safe® 55, ROXUL Safe® 65

- **OEM Products:** Conrock®, Conrock® 60, Fabrock™ LT, Fabrock™ HD, Fabrock™ 30, Fabrock™ 60, Fabrock™ 85, Fabrock™ 120, Fabrock™ Wrap
- **Low Slope Roof:** Toprock® DD, Toprock® DD Plus, Multifix™

Figure 2: Examples of ROCKWOOL stone wool insulation products and applications including (clockwise from left to right) 1) thermal and acoustics batts, 2) rigid exterior boards, 3) curtainwall and fire blocking systems, and 4) flat roof boards.

Product Specification

A general list of technical product compliance and specifications is included in Table 1. For more information on technical requirements refer to the applicable product Technical Data Sheet at www.rockwool.com.

Table 1: Product Specifications

	Compliance					Thermal Resistance	Reaction to Fire			
	ASTM C612 Mineral Fiber Block and Board Thermal Insulation	**CAN/ ULC-S702** Mineral Fiber Thermal Insulation for Buildings	**ASTM C553** Mineral Fiber Blanket Thermal Insulation	**ASTM C665** Mineral Fiber Blanket Thermal Insulation	**ASTM C726** Mineral Wool Roof Insulation Board	**ASTM C518 (C177)** RSI value / 25.4 mm @ 24 °C	**ASTM E84 (UL 723)** Flame Spread Index / Smoke Developed Index	**CAN/ULC-S102** Flame Spread Index / Smoke Developed Index	**ASTM E136** Behavior of materials at 750°C - Noncombustible	**CAN/ULC-S114** Determination of Non-Combustibility of Building Materials - Non Combustible
Exterior Walls										
Cavityrock®	Type IVB	Type 1	N/A	N/A	N/A	0.75 m²K/W	0 / 0	0 / 0	✓	✓
Cavityrock® Black	Type IVB	Type 1	N/A	N/A	N/A	0.75 m²K/W	10 / 25	10 / 10	N/A	N/A
Comfortboard® 110	Type IVA	Type 1	N/A	N/A	N/A	0.70 m²K/W	0 / 0	0 / 0	✓	-
Comfortboard® 80	Type IVB	Type 1	N/A	N/A	N/A	0.72 m²K/W	0 / 0	0 / 0	✓	✓
Comfortbatt®	N/A	Type 1	-	Type 1	N/A	≥ 0.65 m²K/W	0 / 0	0 / 0	✓	✓
Frontrock™	Type IVA	Type 1	N/A	N/A	N/A	0.70 m²K/W	0 / 0	0 / 0	✓	✓
Interior Walls										
AFB®	N/A	Type 1	Type 7	Type 1	N/A	N/A	0 / 0	0 / 0	✓	✓
AFB® evo	N/A	Type 1	N/A	Type 1	N/A	N/A	0 / 0	0 /5	✓	✓
Safe'n'Sound®	N/A	Type 1	N/A	Type 1	N/A	N/A	0 / 0	0 / 0	✓	✓
Rockboard® 40	Type IVA	-	N/A	N/A	N/A	N/A	0 / 0	0 / 0	✓	✓
Rockboard® 60	Type IVB	-	N/A	N/A	N/A	N/A	0 / 0	0 / 0	-	✓

	Compliance					Thermal Resistance	Reaction to Fire			
	ASTM C612 Mineral Fiber Block and Board Thermal Insulation	**CAN/ ULC-S702** Mineral Fiber Thermal Insulation for Buildings	**ASTM C553** Mineral Fiber Blanket Thermal Insulation	**ASTM C665** Mineral Fiber Blanket Thermal Insulation	**ASTM C726** Mineral Wool Roof Insulation Board	**ASTM C518 (C177)** RSI value / 25.4 mm @ 24 °C	**ASTM E84 (UL 723)** Flame Spread Index / Smoke Developed Index	**CAN/ULC-S102** Flame Spread Index / Smoke Developed Index	**ASTM E136** Behavior of materials at 750°C - Noncombustible	**CAN/ULC-S114** Determination of Non-Combustibility of Building Materials - Non Combustible
Curtain Wall										
Curtainrock®	Type IVA	-	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
Curtainrock® 40*	Type IVB	-	N/A	N/A	N/A	0.75 m²K/W	0 / 0	0 / 0	✓	✓
Curtainrock® 80*	Type IVB	-	N/A	N/A	N/A	0.75 m²K/W	0 / 0	0 / 0	✓	✓
Firestopping										
ROXUL Safe®	Type IVA	Type 1	N/A	N/A	N/A	N/A	0 / 0	0 / 0	✓	✓
ROXUL Safe® 45	Type IVA	Type 1	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
Metal Building										
Plus™ MB	-	Type 1	Type III	N/A	N/A	0.70 m²K/W	0 / 0	0 / 0	✓	✓
ROXUL Safe® 65	Type IVB	-	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
ROXUL Safe® 55	Type IVB	-	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
OEM										
Conrock® 60	Type IVB	-	-	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	-	-
Conrock®	Type IVB	Type 1	N/A	N/A	N/A	0.70 m²K/W	0 / 0	0 / 0	-	✓
Fabrock™ LT	Type IVB	-	N/A	N/A	N/A	0.72 m²K/W	0 / 0	0 / 0	✓	✓
Fabrock® HD	Type IVB	-	N/A	N/A	N/A	0.67 m²K/W	0 / 0	0 / 0	-	✓
Fabrock™ 30	Type IVB	-	N/A	N/A	N/A	0.72 m²K/W	0 / 0	0 / 0	✓	✓
Fabrock™ 60	Type IVB	-	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
Fabrock™ 85	Type IVB	-	N/A	N/A	N/A	0.74 m²K/W	0 / 0	0 / 0	✓	✓
Fabrock® 120	Type IVB	-	N/A	N/A	N/A	0.71 m²K/W	0 / 0	0 / 15	-	✓
Fabrock® Wrap	N/A	-	Type VII	N/A	N/A	0.71 m²K/W	0 / 0	0 / 0	✓	✓
Low-slope Roof										
Toprock® DD	N/A	-	N/A	N/A	Type 1	0.68 m²K/W	0 / 0	0 / 0	✓	✓
Toprock® DD Plus	N/A	-	-	-	Type 1	0.68 m²K/W	0 / 0	0 / 0	-	-
Multifix™	N/A	-	N/A	N/A	Type 1	0.68 m²K/W	0 / 0	0 / 0	✓	✓

* Includes unfaced and Reinforced Foil Facing Product Specifications
** Product specification data based on test data available at time of EPD publication.

Product Average

The results in this declaration are representative of the weighted average of all facilities covered by this declaration, based on production volumes, for the reference product (RP) *ROCKWOOL Comfortbatt R13* at a functional unit of 1m^2 at RSI =1. Product specific results for all products captured by this EPD are derived by applying the appropriate product specific scaling factor in the *Environmental Impact* formula below. Scale factors, found in Table 2 (pg. 7), are determined by the product density (kg/m^3) and thermal conductivity (W/m·K). Note, for products that have a facer, the facer results are found separately in Appendix A and must be added to the base product. Scaled values for all products covered by this declaration can be found in Appendix B.

Environmental Impact per m^2 =Environmental Impact (RP) × Product Specific Scaling Factor + Environmental Impact (F)EN1

Where, Environmental Impact (RP) = the environmental impact for the reference product

Environmental Impact (F) = the environmental impact for the facer

Table 2: Product Specific Scale Factors

PRODUCT NAME	SCALE FACTOR	FACER OPTION
AFB®	1.1	
AFB® evo	1.2	
Cavityrock®	1.8	
Cavityrock® Black	1.8	Black fiberglass facer
Comfortbatt® SS R14	1.1	
Comfortbatt® SS R15	1.2	
Comfortbatt® SS R22.5	1.1	
Comfortbatt® SS R24	1.1	
Comfortbatt® SS R30	1.5	
Comfortbatt® SS R32	1.0	
Comfortbatt® WS R13	1.0	
Comfortbatt® WS R14	1.1	
Comfortbatt® WS R15	1.2	
Comfortbatt® WS R21	1.1	
Comfortbatt® WS R22	1.1	
Comfortbatt® WS R23	1.2	
Comfortbatt® WS R24	1.5	
Comfortbatt® WS R28	1.1	
Comfortbatt® WS R30	1.0	
Comfortbatt® WS R32	1.0	
Comfortbatt® WS R38	0.9	
Comfortboard® 110	5.1	
Comfortboard® 80	3.6	
Conrock®	3.9	
Conrock® 60	2.6	
Curtainrock®	1.5	
Curtainrock® 40	1.9	
Curtainrock® 40 RFF	1.9	Reinforced foil facer
Curtainrock® 80	2.9	
Curtainrock® 80 RFF	2.9	Reinforced foil facer
Fabrock™ 120	4.1	
Fabrock™ 30	1.4	
Fabrock™ 60	2.0	
Fabrock™ 85	2.9	
Fabrock™ HD	5.9	
Fabrock™ LT	1.6	
Fabrock™ Wrap	1.6	
Frontrock™	3.9	
Frontrock™ DD	3.0	
Rockboard® 40	1.8	
Rockboard® 40 RFF	1.8	Reinforced foil facer
Rockboard® 60	2.6	
ROCKWOOL Plus™ MB	1.1	
ROXUL Safe®	1.9	
ROXUL Safe™ 45	1.9	
ROXUL Safe™ 55	2.2	
ROXUL Safe™ 65	2.9	
Safe'n'Sound®	1.2	
Smartrock®	1.8	HDVR membrane
Toprock® DD	4.9	
Toprock® DD Plus	4.9	Bitumen coating

1.3. Application

Stone wool insulation is available in board and batt products and can be used in various applications for residential and commercial construction.

Common residential construction includes single family and multi-family low-rise and mid-rise construction. Common applications include exterior walls as thermal board and batt products, and interior wall and floors / ceilings as fire and acoustic insulation. Stone wool can also be used in attics, cathedral ceilings, party walls, below grade foundation walls and under concrete slabs.

Commercial construction applications using stone wool insulation include board products in exterior walls, rainscreen and cavity wall applications, the insulation component of exterior insulation and finish systems (EIFS), and as batt products in stud cavities for wood and steel construction and in interior partitions for acoustic and fire performance. Stone wool board and batt products are also used in perimeter fire containment systems, firestopping applications, low slope roof assemblies, metal building fire rated systems and in below grade applications.

ROCKWOOL stone wool can also be used as the insulation components of sandwich wall panel systems, and for acoustic, fire and thermal performance in various OEM applications.

1.4. Declaration of Methodological Framework

This EPD is a Cradle to gate with options assessment covering the following lifecycle stages: product manufacturing (A1-A3), construction stage (A4-A5), and end-of-life stage (C1-C4). In addition, the assessment of potential loads and benefits outside of the system boundaries were assessed and declared in module D.

The LCA follows the attributional approach, and the setting of the system boundary follows the modularity principle as described in ISO 21930. No known flows are deliberately excluded from this EPD.

The declared functional and technical performance of the product is expected to remain the same throughout the reference service life (RSL) of 75 years on the assumption of proper installation as per ROCKWOOL standard guidelines and recommendations, and that the product remains clean and dry.

Flow Diagram

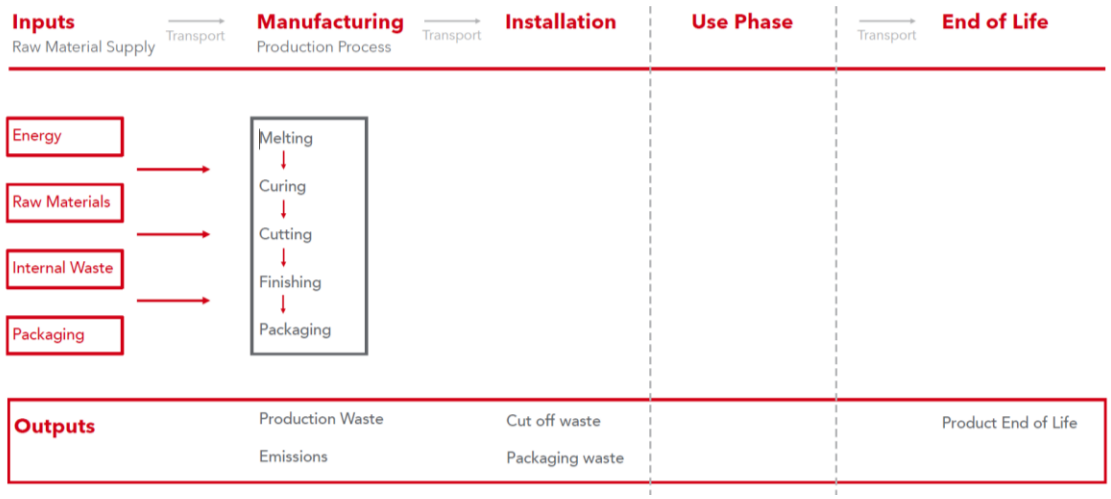

Figure 3: Flow diagram of inputs and outputs

1.5. Technical Requirements

At minimum, the products covered by this declaration comply with the listed standards, as applicable.

- ASTM C612 – Standard Specification for Mineral Fiber Block and Board Thermal Insulation
- ASTM C665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
- ASTM C726 – Standard Specification for Mineral Wool Roof Insulation Board
- CAN ULC S702 – Standard for Mineral Fibre Thermal Insulation for Buildings

For more information on technical requirements refer to the applicable product Technical Data Sheet at www.rockwool.com.

1.6. Properties of Declared Product as Delivered

ROCKWOOL products are available in varying thicknesses, density, sizes, and thermal resistance resulting in varying technical performance for different applications. ROCKWOOL products are manufactured within tightly controlled specifications to meet internal and third-party requirements and is expected to meet technical requirements as advertised on the relevant Technical Data Sheet (current at the time of manufacturing) upon delivery.

1.7. Material Composition

The primary components in ROCKWOOL stone wool insulation are stone wool fibers (biosoluble) and binder. The raw ingredient for stone wool fibers derives primarily of basalt rock, an abundant resource, locally sourced for each production facility. The binder is a mixture of resin, urea plus mineral oil. There are no regulated hazardous substances associated with the production of this product. Possible facing materials, if applicable, minerally coated fibre glass mat, fiberglass reinforced aluminium foil with polyethylene film, asphalt / bitumen.

Compositional breakdown for unfaced and faced products are as follows:

UNFACED	FACED
Stone wool, biosoluble (>94%)	Stone wool, biosoluble (>87%)
Binder (<6%)	Binder (<5%)
Mineral oil (<1%)	Mineral oil (<1%)
	Facer (<8%)

For more detailed information, refer to product specific ROCKWOOL Health Product Declarations.

1.8. Manufacturing

The manufacturing process of stone wool insulation includes melting the raw materials that are spun into fibers and covered with the binder mixture. The fibers are laid to the appropriate thickness and density and then goes through a curing oven. Once cured, the product is cut to the applicable size, stacked and packaged.

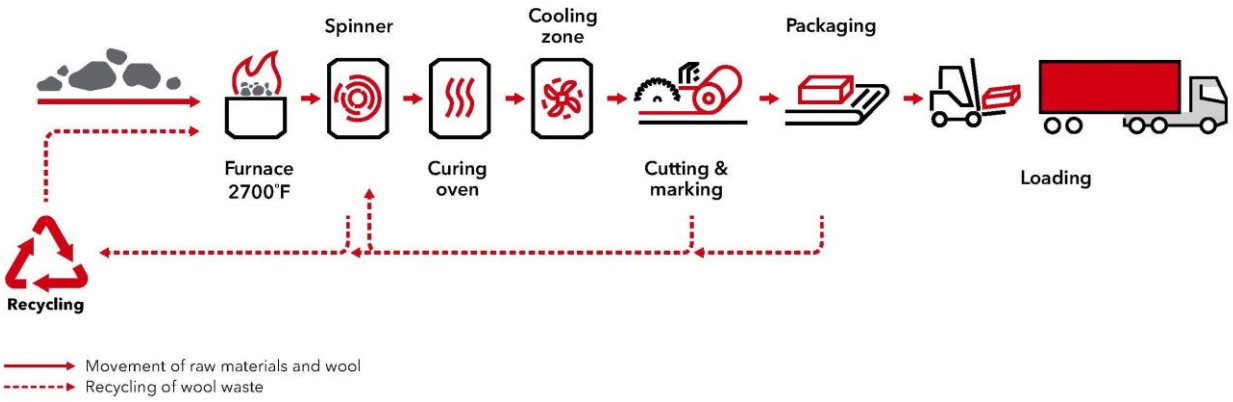

Figure 4: Manufacturing process of ROCKWOOL stone wool insulation

1.9. Packaging

Packaging materials include low-density polyethylene (LDPE) for bags and shrink bundling, wood pallets and corrugate/cardboard, if applicable. Disposal scenarios are otherwise based on regional assumptions per the referenced PCR, as listed in the table below.

COUNTRY	MATERIAL TYPE	RECYCLING RATE	LANDFILL RATE	INCINERATION RATE
Canada	Plastics	78%	22%	0%
	Other Materials	20%	80%	0%
United States	Plastics	9%	68%	17%
	Metals	57%	34%	9%
	Pulp (cardboard/paper)	68%	20%	5%

1.10. Transportation

The transportation method for products covered by this declaration vary between facilities and product type, primarily consisting of diesel truck and/or rail. Road infrastructure and maintenance are included in the LCA as considered in the Ecoinvent database. The weighted average distance for both truck and rail was assumed for this declaration.

	DIESEL TRUCK	RAIL
Weighted Average	664 km (413 m)	229 km (142 m)

1.11. Product Installation

Stone wool insulation products are installed in various applications as both batt and board products. The installation process does not require the use of utilities or resources.

Stone wool batt products installed within a wall cavity can be friction fit between steel stud, wood stud and I-joist spaces. Stone wool board products are installed in various applications and are generally mechanically fastened to the substrate. Attachment and support of the insulation, considered outside of the system boundary of this declaration, will depend on the application, loads and requirements of the project. More information can be found in the ROCKWOOL Board Insulation Attachment Guide.

Packaging waste during the installation phase is considered within the system boundary of this declaration. Disposal scenarios assumed per Section 1.9.

1.12. Use

ROCKWOOL stone wool insulation does not require the use of utilities or resources, nor does it require any maintenance or repair. During the use phase, the stone wool insulation products are a passive measure that helps to reduce operational energy consumption for the lifetime of the building. Any operational carbon emission savings arising from the use of insulation are not accounted in this declaration as they considered outside the system boundary and should be considered in the whole building life cycle assessment.

1.13. Reference Service Life and Estimated Building Service Life

The products covered by this declaration are expected to have a reference service life equal to the estimated life of the building, 75 years.

1.14. Reuse, Recycling, and Energy Recovery

ROCKWOOL stone wool insulation can be reused and/or recycled back into new stone wool insulation products at end-of-life. While a formal program is not readily available in the North American market, ROCKWOOL stone wool insulation from select customers can be recycled at select ROCKWOOL manufacturing facilities. Any post-consumer stone wool insulation recycled during the assessment year is not assumed as a disposal scenario in this declaration (Refer to Section 1.15).

1.15. Disposal

Stone wool insulation is not considered a hazardous waste product. Disposal of cut-off waste (insulation) during installation and at end-of-life is considered within the system boundary of this declaration. Insulation cut-off waste is

assumed at 1% and the disposal scenario assumes 100% landfill. Disposal scenarios for packaging materials are outlined in Section 1.9.

2. Life Cycle Assessment Background Information

2.1 Functional or Declared Unit

The functional unit for this declaration is 1m^2 of installed insulation with a thickness that gives an average thermal resistance RSI= 1 m^2·k/W and with a building service life of 75 years. The reference product ROCKWOOL Comfortbatt® R13.

NAME	VALUE	UNIT
Functional Unit	1m^2 of installed insulation with a thickness that gives an average thermal resistance RSI= 1 m^2·k/W	
Mass	1.2	Kg
Thickness to achieve Functional Unit	0.089	m

For faced ROCKWOOL stone wool insulation, the declared unit is 1m^2 of the facer material that is added to the top surface of the product.

2.2 System Boundary

This EPD is a Cradle to gate with options covering the following lifecycle stages: product manufacturing (A1-A3), construction stage (A4-A5), and end-of-life stage (C1-C4). In addition, the assessment of potential loads and benefits outside of the system boundaries were assessed and declared in module D.

Considerations for the different modules are based on relevant technical information and realistic assumptions for each facility covered by this declaration.

2.3 Estimates and Assumptions

ROCKWOOL stone wool insulation is considered a passive building material and does not require the use of energy, maintenance, or replacement throughout the reference service life. Estimates and assumptions relevant to the life cycle assessment and calculations for the products and processes covered in this declaration can be found in Section 3 and/or in the relevant sections.

2.4 Cut-off Criteria

All energy and material flows within the system boundary were included in the assessment. No known flows are deliberately excluded from this EPD.

2.5 Data Sources

The primary data collected for the life cycle assessment is based on production measurements from the 2022 calendar year for all facilities covered by this declaration. Secondary data was selected from Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA database version: 7.6.

2.6 Data Quality

All primary and secondary data was assessed for quality including temporal, geographical, technological representativeness, and completeness. The data was considered to accurately denote the production of ROCKWOOL stone wool insulation in North America, at the facilities covered by this declaration, representative of stable production for the period under review. Secondary data was specific to the appropriate regions for each facility covered in this declaration. Generic and proxy data was used for upstream and downstream processes, as applicable.

2.7 Period under Review

The declaration is representative of production of ROCKWOOL stone wool insulation for the 2022 calendar year, for all facilities covered by this declaration.

2.8 Allocation

The allocation of the manufacturing process and energy inputs was calculated based on mass. This declaration covers the listed ROCKWOOL building insulation products and product families listed in Section 1.2. The environmental impact of co-products was not accounted for in this declaration.

2.9 Comparability (Optional)

This declaration does not include any comparisons or benchmarking. Comparisons between insulation products should only be made with caution and consider the product categories rules, the declared and functional units and background LCI inputs and assumptions, geographic scope, and time periods. Environmental declarations from different programs based upon differing PCRs may not be comparable. When comparing EPDs created using the PCR followed in this declaration, variations and deviations are possible. Example of variations: different LCA software and background LCI datasets may lead to different results for upstream or downstream of the life cycle stages declared.

3. Life Cycle Assessment Scenarios

Table 3. Transport to the building site (A4)

NAME	VALUE	UNIT	VALUE	UNIT
Fuel type	Truck: Diesel		Train: Diesel	
Liters of fuel	40	l/100km	0.0122	l/tkm
Vehicle type	Truck		Rail	
Transport distance	664	km	229	km
Capacity utilization (including empty runs, mass based)	100	%	100	%
Gross density of products transported	0.0390	kg/m^3	0.0390	kg/m^3
Weight of products transported (if gross density not reported)	-	kg	-	kg
Volume of products transported (if gross density not reported)	-	m^3	-	m^3
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	>1	-	>1	-

Table 4. Installation into the building (A5)

NAME	VALUE	UNIT
Insulation cut-off waste 1%. Disposal scenario assumes 100% landfill.		
Ancillary materials	0	kg
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	0	m^3
Other resources	-	kg
Electricity consumption	N/A	kWh
Other energy carriers	N/A	MJ
Product loss per functional unit	N/A	kg
Waste materials at the construction site before waste processing, generated by product installation	0.012	kg
Output materials resulting from on-site waste processing (specified by route, e.g. for recycling, energy recovery and/or disposal)	-	kg
Biogenic carbon contained in packaging	0.104	kg CO_2
Direct emissions to ambient air, soil and water	0	kg
VOC content*	0	$\mu g/m^3$

*The VOC content shall be determined in accordance to “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers – version 1.2”. CA Specification 01350.

Table 5. Reference Service Life

NAME	VALUE
RSL	75 years
Declared product properties (at the gate) and finishes, etc.	Per Table 1 in Section 1.2.
Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes)	Installation per recommended guidelines
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Per applicable product Technical Data Sheet
Outdoor environment, (if relevant for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	Installation and protection per recommended guidelines
Indoor environment, (if relevant for indoor applications), e.g. temperature, moisture, chemical exposure)	Installation and protection per recommended guidelines
Use conditions, e.g. frequency of use, mechanical exposure.	N/A
Maintenance, e.g. required frequency, type and quality of replacement components	N/A

Table 6. End of life (C1-C4)

NAME		VALUE	UNIT
Collection process (specified by type)	Collected separately	0	kg
	Collected with mixed construction waste	1.2	kg
Recovery (specified by type)	Reuse	N/A	kg
	Recycling	N/A	kg
	Landfill	1.2	kg
	Incineration	N/A	kg
	Incineration with energy recovery	N/A	kg
	Energy conversion efficiency rate	N/A	
Disposal	Product or material for final deposition	1.2	kg
Removals of biogenic carbon (excluding packaging)		N/A	kg CO_2
End of Life distance to landfill		50	km

Table 7. Reuse, recovery and/or recycling potentials (D) from treatment of packaging waste (A5), relevant scenario information

NAME	VALUE	UNIT
Net energy benefit from energy recovery from waste treatment declared as exported energy in A5 (R>0.6)	0.17	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in A5 (R<0.6)	-	MJ
Net energy benefit from material flow declared in A5 for energy recovery	-	MJ
Process and conversion efficiencies	73%	
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors);	-	

Note: mod. D includes benefits from recycling and incineration of packaging materials in A5.

Table 8. Reuse, recovery and/or recycling potentials (D), relevant scenario information

NAME	VALUE	UNIT
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	-	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)	-	MJ
Net energy benefit from material flow declared in C3 for energy recovery	-	MJ
Process and conversion efficiencies	-	
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors);	-	

4. Life Cycle Assessment Results

Table 9. Description of the system boundary modules
MND = module not declared, MNR = module not required

	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
EPD Type: Cradle to gate with options	X	X	X	X	X	MND	MND	MND	MND	MND	MNR	MNR	X	X	X	X	X

4.1. Life Cycle Impact Assessment Results

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

Table 10. North American Impact Assessment Results – TRACI 2.1. / ISO 21930

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP 100	kg CO_2e	1.29E+00	1.65E-01	2.20E-02	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.03E-02	0.00E+00	6.20E-03	-1.22E-01
ODP	kg CFC_{-11}e	5.40E-08	2.73E-08	1.45E-09	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.82E-09	0.00E+00	2.02E-09	-1.82E-09
AP	kg SO_2e	1.73E-01	3.76E-02	3.71E-03	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	2.04E-03	0.00E+00	2.91E-03	-3.32E-02
EP	kg Ne	5.05E-04	7.04E-05	1.23E-05	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	4.22E-06	0.00E+00	5.43E-06	-1.34E-05
POCP	kg O_3e	2.67E-02	6.47E-04	3.03E-04	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	3.26E-05	0.00E+00	5.34E-05	-2.71E-04
ADP_{fossil}	MJ	1.49E+00	3.22E-01	2.59E-02	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	2.05E-02	0.00E+00	2.42E-02	-2.88E-01

GWP – Global warming potential, ODP – Ozone depletion, AP – Acidification potential, EP – Eutrophication potential, POCP- Photochemical ozone creation potential, ADPfossil – Abiotic depletion potential from fossil resources

4.2 Life Cycle Inventory Results

Table 10. Resource Use

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPR_E	MJ	3.25E+00	3.14E-02	3.47E-02	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.77E-03	0.00E+00	1.50E-03	-1.17E-01
RPR_M	MJ	9.07E-01	0.00E+00	-9.07E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RPR_T	MJ	4.16E+00	3.14E-02	-8.72E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.77E-03	0.00E+00	1.50E-03	-1.17E-01
$NRPR_E$	MJ	1.27E+01	2.38E+00	2.13E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.51E-01	0.00E+00	1.73E-01	-1.40E+00
$NRPR_M$	MJ	2.50E+00	0.00E+00	-1.54E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	-9.54E-01	0.00E+00
$NRPR_T$	MJ	1.52E+01	2.38E+00	-1.33E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.51E-01	0.00E+00	-7.81E-01	-1.40E+00
SM	kg	2.23E-01	9.83E-04	2.34E-03	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	4.96E-05	0.00E+00	3.64E-05	2.89E-02
RSF	MJ	2.48E-02	1.03E-05	2.49E-04	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	6.43E-07	0.00E+00	9.51E-07	-1.90E-05
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.82E-02	2.97E-04	1.85E-04	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	1.78E-05	0.00E+00	1.90E-04	-7.43E-04

RPR_E – Renewable *primary resources for energy,* RPR_M – Renewable *primary resources for materials,* RPR_T – Total Renewable *primary resources,* $NRPR_E$ – Non-renewable *primary resources for energy,* $NRPR_M$ – Non-renewable *primary resources for materials,* $NRPR_T$ – Total Non-renewable *primary resources, SM – Secondary materials, RSF – Renewable secondary fuels, NRSF – Non-renewable secondary fuels, FW – Fresh water*

Table 11. Output Flows and End of Life Waste

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	2.18E-01	0.00E+00	2.18E-03	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	0.00E+00	0.00E+00	2.70E-02	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	7.10E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HWD	kg	5.31E-02	3.94E-03	8.20E-04	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	2.17E-04	0.00E+00	0.00E+00	-5.46E-03
NHWD	kg	1.84E+00	5.92E-02	1.14E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	3.47E-03	0.00E+00	1.20E+00	-1.57E-01
HLRW	kg	8.68E-05	1.58E-05	1.33E-06	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	7.78E-09	0.00E+00	6.45E-09	-3.17E-07
ILLRW	kg	4.99E-05	1.57E-05	9.91E-07	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	9.89E-07	0.00E+00	1.15E-06	-1.71E-06

CRU – Components for reuse, MR – Materials for recycling, MER – Materials for energy recycling, EE – Exported energy, HWD – Hazardous waste, NHWD – Non-hazardous waste, HLRW – High level radioactive waste, ILLRW –Intermediate and low-level radioactive waste

Table 12. Carbon emissions and removals

IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BCRP	Kg CO_2	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Kg CO_2	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Kg CO_2	-1.04E-01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Kg CO_2	0.00E+00	0.00E+00	1.03E-01	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Kg CO_2	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Kg CO_2	5.31E-02	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Kg CO_2	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Kg CO_2	3.88E-01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BCRP – Biogenic carbon removal from product, BCEP – Biogenic carbon emission from product, BCRK – Biogenic carbon removal from packaging, BCEW – Biogenic carbon emission from packaging, BCEW – Biogenic carbon emissions from combustion waste from renewable sources used in production, CCE - Calcination carbon emissions, CCR – Carbonation carbon removals, CWNR – Carbon emissions from combustion of waste from non-renewable sources used in production

5. LCA Interpretation

The environmental impacts assessed in the EPD include Global Warming Potential (GWP), Ozone Depletion, Acidification, Eutrophication, Smog Formation Potential (POCP) and Abiotic Resource Depletion of fossil resources (ADP-fossil). The most significant emissions occur during the product phase, A1-A3, across all environmental impact categories. For GWP, the product phase accounts for 86% of the total lifecycle emissions. Specifically, it is the production process of stone wool insulation (A3) that has the highest contribution within this phase. During the construction phase, the highest contributor is the transportation of products (A4). The end-of-life stage is the lowest overall contributor. The reduction in emissions achieved during the building phase due to the impact of insulation on the operational energy consumption of buildings has not been included in this LCA (refer to Section 6.3).

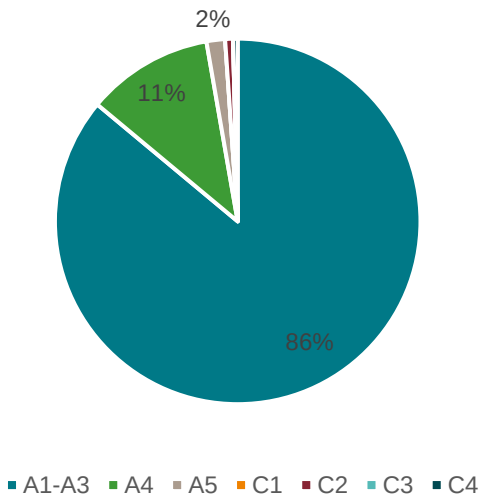

Figure 5: Global Warming Potential (GWP) Distribution [kg CO_2e]

6. Additional Environmental Information

6.1 Environment and Health During Manufacturing

Refer to the ROCKWOOL Policy on Safety, Health, and Environment at www.rockwool.com for more information.

6.2 Environment and Health During Installation

Refer to ROCKWOOL North America Safe Use Instruction Sheet on www.rockwool.com.

6.3. Energy Savings During Use

During the use phase, the stone wool insulation products are a passive measure that helps to reduce operational energy consumption for the lifetime of the building. On average, the ROCKWOOL stone wool insulation has a short energy payback (i.e. the time is takes for a building to save the equivalent amount of energy used in its production). Any operational carbon emission savings arising from the use of insulation are not accounted in this declaration as they considered outside the system boundary and should be considered in the whole building life cycle assessment and/or other calculation methods.

6.4 Extraordinary Effects

Fire: Mitigating fire risk is key to designing homes, commercial spaces and multifamily residential buildings that provide safe places for families to live, work, attend school, shop and recreate.

ROCKWOOL stone wool insulation is fire resistant and can withstand temperatures up to about 2,150°F (1,277°C). It does not contribute to the development of smoke nor the spread of flame and the release of toxic gases. Furthermore, non-combustible stone wool insulation is an important component of fire-resilient enclosure systems when use in NFPA 285 compliant, ASTM E119 or other fire-rated designs.

Water: No extraordinary effects or environmental impacts are expected due to water for the products covered by this declaration.

Mechanical Destruction: Mechanical destruction of the product covered by this declaration are not expected.

6.5 Delayed Emissions

No delayed emissions are expected from the products covered by this declaration.

6.6 Environmental Activities and Certifications

ROCKWOOL products covered by this declaration have a series of sustainability related certifications, some of which included in this declaration. For more information visit www.rockwool.com.

LEED Qualification

This Environmental Product Declaration and the ROCKWOOL stone wool insulation products covered by this declaration qualify for the following LEED credits:

- LEED v4, MR Credit: Building Product Disclosure and Optimization – Environmental Product Declarations, Option 1: Environmental Product Declaration (product valued at 1.0 products for the purposes of credit achievement calculation)
- LEED v4.1, MR Credit: Environmental Product Declarations, Option 1: Environmental Product Declaration (product valued at 1.5 products for the purposes of credit achievement calculation)

Health Product Declaration (HPD)

Health Product Declarations (HPDs) are a standard method of disclosing all ingredients in a material and their associated health risks, as applicable. All ROCKWOOL building insulation products in North America covered by this declaration have an HPD, including faced products, with disclosure at a minimum of 1000ppm. HPDs can be found on the Health Product Declaration Respository.

UL Greenguard Certification Program

The UL GREENGUARD Certification Program is a standardized method for evaluating the Volatile Organic Compound (VOC) emissions of a product, including building materials. By selecting low-emitting products with GREENGUARD Certification, you are aiding in the creation of healthier indoor environments for your home, office or institution. There are two tiers of certification in the UL GREENGUARD Certification Program, both of which include stringent limits on emissions of more than 360 VOCs: GREENGUARD Certification and GREENGUARD Gold Certification. North American ROCKWOOL stone wool insulation products, designed for the use within interior environments are certified under the UL GREENGUARD Certification Program including ROCKWOOL AFB®, ROCKWOOL AFB® evo, ROCKWOOL Comfortbatt®, ROCKWOOL Safe'n'Sound®, ROCKWOOL Curtainrock® and ROCKWOOL ROXUL Safe®.

6.7. Further Information

For more information visit www.rockwool.com.

7. References

ASTM C612 – Standard Specification for Mineral Fiber Block and Board Thermal Insulation

ASTM C665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

ASTM C553 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

ASTM C726 – Standard Specification for Mineral Wool Roof Insulation Board

ASTM C1104 – Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation

ASTM C1338 -– Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings

ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM E96 – Standard Test Method for Water Vapor Transmission of Materials

ASTM E136 – Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C

CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of building Materials and Assemblies

CAN/ULC S114 – Standard Method of Test for Determination on Non-combustibility in Building Materials

CAN/ULC S702 – Standard for Mineral Fibre Thermal Insulation for Buildings

ISO 14025: 2006 - Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040: 2006 - Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006 - Environmental management – Life cycle assessment – Requirements and guidelines

ISO 14046:2013 - Environmental management- Water footprint- Principles, requirements and guidelines

ISO 15392:2008 - Sustainability in building construction- General principles

ISO 15686-1:2011 - Buildings and constructed assets- Service life planning- Part 1: General principles

ISO 15686-2:2008 - Buildings and constructed assets- Service life planning Part 2: Service life prediction procedures

ISO 15686-7:2008 - Buildings and constructed assets- Service life planning Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8:2008 - Buildings and constructed assets- Service life planning Part 8: Reference service life and service life estimation

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

LEED v4 Building Design and Construction, U.S. Green Building Council (July 15, 2019)

LEED v4.1 Building Design and Construction, U.S. Green Building Council (July 28, 2023)

Product Category Rules (PCR) for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, Version 4.0, UL Environment (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.

Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers- version 1.2, January 2017.

UL 2818 – 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Appendix

Appendix A – Facer Environmental Impacts

Table A1: Black Fiberglass Facer

Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP 100	kg CO_2e	5.01E-01	1.43E-02	1.03E-02	MND	MND	MND	MND	MND	MNR	MNR	0.000	4.65E-03	0.000	9.15E-03	0.000
ODP	kg $CFC_{-11}e$	4.01E-08	2.64E-09	8.56E-10	MND	MND	MND	MND	MND	MNR	MNR	0.000	8.55E-10	0.000	2.50E-09	0.000
AP	kg SO_2e	1.54E-01	2.92E-03	3.14E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.45E-04	0.000	4.11E-03	0.000
EP	kg Ne	1.78E-04	6.10E-06	3.67E-06	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.98E-06	0.000	7.18E-06	0.000
POCP	kg O_3e	1.73E-03	4.71E-05	3.56E-05	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.53E-05	0.000	7.60E-05	0.000
ADP_{fossil}	MJ	7.08E-01	2.97E-02	1.47E-02	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.64E-03	0.000	3.14E-02	0.000

GWP – Global warming potential, ODP – Ozone depletion, AP – Acidification potential, EP – Eutrophication potential, POCP- Photochemical ozone creation potential, ADPfossil – Abiotic depletion potential from fossil resources

Table A2: Reinforced Foil Facer (RFF)

Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP 100	kg CO_2e	4.34E-01	4.10E-03	8.77E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.29E-03	0.000	9.26E-02	0.000
ODP	kg $CFC_{-11}e$	1.93E-08	7.54E-10	4.01E-10	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.71E-09	0.000	5.05E-09	0.000
AP	kg SO_2e	1.56E-01	8.33E-04	3.13E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.89E-03	0.000	9.06E-03	0.000
EP	kg Ne	1.43E-04	1.74E-06	2.89E-06	MND	MND	MND	MND	MND	MNR	MNR	0.000	3.95E-06	0.000	1.46E-04	0.000
POCP	kg O_3e	1.40E-03	1.35E-05	2.83E-05	MND	MND	MND	MND	MND	MNR	MNR	0.000	3.05E-05	0.000	1.65E-04	0.000
ADP_{fossil}	MJ	5.25E-01	8.50E-03	1.07E-02	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.93E-02	0.000	6.44E-02	0.000

Table A3: Bitumen Coating

Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP 100	kg CO_2e	1.34E-01	4.10E-03	2.77E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	4.65E-03	0.000	9.15E-03	0.000
ODP	kg $CFC_{-11}e$	7.14E-08	7.54E-10	1.44E-09	MND	MND	MND	MND	MND	MNR	MNR	0.000	8.55E-10	0.000	2.50E-09	0.000
AP	kg SO_2e	4.19E-02	8.33E-04	8.54E-04	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.45E-04	0.000	4.11E-03	0.000
EP	kg Ne	1.30E-04	1.74E-06	2.64E-06	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.98E-06	0.000	7.18E-06	0.000
POCP	kg O_3e	4.04E-04	1.35E-05	8.35E-06	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.53E-05	0.000	7.60E-05	0.000
ADP_{fossil}	MJ	9.27E-01	8.50E-03	1.87E-02	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.64E-03	0.000	3.14E-02	0.000

Table A4: Humidity-dependent Vapor Retarder (HDVR) Facer

Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP 100	kg CO_2e	1.60E-01	4.10E-03	3.28E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	9.29E-03	0.000	9.26E-02	0.000
ODP	kg CFC_{-11}e	2.32E-08	7.54E-10	4.78E-10	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.71E-09	0.000	5.05E-09	0.000
AP	kg SO_2e	4.34E-02	8.33E-04	8.85E-04	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.89E-03	0.000	9.06E-03	0.000
EP	kg Ne	1.18E-04	1.74E-06	2.40E-06	MND	MND	MND	MND	MND	MNR	MNR	0.000	3.95E-06	0.000	1.46E-04	0.000
POCP	kg O_3e	7.32E-04	1.35E-05	1.49E-05	MND	MND	MND	MND	MND	MNR	MNR	0.000	3.05E-05	0.000	1.65E-04	0.000
ADP_{fossil}	MJ	3.18E-01	8.50E-03	6.53E-03	MND	MND	MND	MND	MND	MNR	MNR	0.000	1.93E-02	0.000	6.44E-02	0.000

Appendix B – A1-A3 Product Specific Global Warming Potential (GWP)

Table B1: A1-A3 Product Specific Global Warming Potential (GWP) - TRACI 2.1. / ISO 21930

Product	Scale Factor for Functional Unit (1 m^2 at RSI =1 m^2K/W)	A1-A3 GWP Impact for 1 m^2 of Product (kg CO_2-eq)	A1-A3 GWP Impact of Facer for 1m^2 (kg CO_2-eq)	Total A1-A3 GWP Impact for 1 m^2 of Product (kg CO_2-eq)
AFB®	1.1	1.37		1.37
AFB® evo	1.2	1.57		1.57
Cavityrock®	1.8	2.37		2.37
Cavityrock® Black	1.8	2.32	0.50	2.82
Comfortbatt® SS R14	1.1	1.42		1.42
Comfortbatt® SS R15	1.2	1.57		1.57
Comfortbatt® SS R22.5	1.1	1.43		1.43
Comfortbatt® SS R24	1.1	1.42		1.42
Comfortbatt® SS R30	1.5	1.98		1.98
Comfortbatt® SS R32	1.0	1.34		1.34
Comfortbatt® WS R13	1.0	1.29		1.29
Comfortbatt® WS R14	1.1	1.42		1.42
Comfortbatt® WS R15	1.2	1.57		1.57
Comfortbatt® WS R21	1.1	1.41		1.41
Comfortbatt® WS R22	1.1	1.42		1.42
Comfortbatt® WS R23	1.2	1.60		1.60
Comfortbatt® WS R24	1.5	1.88		1.88
Comfortbatt® WS R28	1.1	1.39		1.39
Comfortbatt® WS R30	1.0	1.30		1.30
Comfortbatt® WS R32	1.0	1.34		1.34
Comfortbatt® WS R38	0.9	1.19		1.19
Comfortboard® 110	5.1	6.54		6.54
Comfortboard® 80	3.4	4.44		4.44
Conrock®	3.9	5.03		5.03
Conrock® 60	2.6	3.41		3.41
Curtainrock®	1.5	1.99		1.99
Curtainrock® 40	1.9	2.46		2.46

Product	Scale Factor for Functional Unit (1 m^2 at RSI =1 m^2K/W)	A1-A3 GWP Impact for 1 m^2 of Product (kg CO_2-eq)	A1-A3 GWP Impact of Facer for 1m^2 (kg CO_2-eq)	Total A1-A3 GWP Impact for 1 m^2 of Product (kg CO_2-eq)
Curtainrock® 40 RFF	1.9	2.46	0.43	2.90
Curtainrock® 80	2.9	3.73		3.73
Curtainrock® 80 RFF	2.9	3.77	0.43	4.20
Fabrock™ 120	4.1	5.32		5.32
Fabrock™ 30	1.4	1.75		1.75
Fabrock™ 60	2.0	2.55		2.55
Fabrock™ 85	2.9	3.73		3.73
Fabrock™ HD	5.9	7.65		7.65
Fabrock™ LT	1.6	2.04		2.04
Fabrock™ Wrap	1.6	2.07		2.07
Frontrock™	3.9	5.03		5.03
Frontrock™ DD	3.0	3.89		3.89
Rockboard® 40	1.8	2.27		2.27
Rockboard® 40 RFF	1.8	2.27	0.43	2.70
Rockboard® 60	2.6	3.41		3.41
ROCKWOOL Plus™ MB	1.1	1.42		1.42
ROXUL Safe®	1.9	2.50		2.50
ROXUL Safe™ 45	1.9	2.48		2.48
ROXUL Safe™ 55	2.2	2.84		2.84
ROXUL Safe™ 65	2.9	3.79		3.79
Safe'n'Sound®	1.2	1.49		1.49
Smartrock®	1.8	2.32	0.16	2.48
Toprock® DD	4.9	6.32		6.32
Toprock® DD Plus	4.9	6.32	0.13	6.45

Table B2: A1-C4 Product Specific Global Warming Potential (GWP) - TRACI 2.1. / ISO 21930

Product	Scale Factor for Functional Unit (1 m2 at RSI =1 m2K/W)	A1-C4 GWP Impact for 1 m2 of Product (kg CO2-eq)	A1-C4 GWP Impact of Facer for 1m2 (kg CO2-eq)	Total A1-C4 GWP Impact for 1 m2 of Product (kg CO2-eq)
AFB®	1.1	1.59		1.59
AFB® evo	1.2	1.81		1.81
Cavityrock®	1.8	2.74		2.74
Cavityrock® Black	1.8	2.68	0.54	3.22
Comfortbatt® SS R14	1.1	1.64		1.64
Comfortbatt® SS R15	1.2	1.81		1.81
Comfortbatt® SS R22.5	1.1	1.66		1.66
Comfortbatt® SS R24	1.1	1.64		1.64
Comfortbatt® SS R30	1.5	2.29		2.29
Comfortbatt® SS R32	1.0	1.55		1.55
Comfortbatt® WS R13	1.0	1.49		1.49
Comfortbatt® WS R14	1.1	1.64		1.64
Comfortbatt® WS R15	1.2	1.81		1.81
Comfortbatt® WS R21	1.1	1.63		1.63
Comfortbatt® WS R22	1.1	1.64		1.64
Comfortbatt® WS R23	1.2	1.86		1.86
Comfortbatt® WS R24	1.5	2.18		2.18
Comfortbatt® WS R28	1.1	1.61		1.61
Comfortbatt® WS R30	1.0	1.50		1.50
Comfortbatt® WS R32	1.0	1.55		1.55
Comfortbatt® WS R38	0.9	1.38		1.38
Comfortboard® 110	5.1	7.57		7.57
Comfortboard® 80	3.6	5.38		5.38
Conrock®	3.9	5.82		5.82
Conrock® 60	2.6	3.94		3.94
Curtainrock®	1.5	2.30		2.30
Curtainrock® 40	1.9	2.85		2.85
Curtainrock® 40 RFF	1.9	2.85	0.55	3.40
Curtainrock® 80	2.9	4.32		4.32

Product	Scale Factor for Functional Unit (1 m2 at RSI =1 m2K/W)	A1-C4 GWP Impact for 1 m2 of Product (kg CO2-eq)	A1-C4 GWP Impact of Facer for 1m2 (kg CO2-eq)	Total A1-C4 GWP Impact for 1 m2 of Product (kg CO2-eq)
Curtainrock® 80 RFF	2.9	4.36	0.55	4.91
Fabrock™ 120	4.1	6.16		6.16
Fabrock™ 30	1.4	2.03		2.03
Fabrock™ 60	2.0	2.96		2.96
Fabrock™ 85	2.9	4.31		4.31
Fabrock™ HD	5.9	8.86		8.86
Fabrock™ LT	1.6	2.36		2.36
Fabrock™ Wrap	1.6	2.40		2.40
Frontrock™	3.9	5.82		5.82
Frontrock™ DD	3.0	4.51		4.51
Rockboard® 40	1.8	2.63		2.63
Rockboard® 40 RFF	1.8	2.63	0.55	3.18
Rockboard® 60	2.6	3.94		3.94
ROCKWOOL Plus™ MB	1.1	1.64		1.64
ROXUL Safe®	1.9	2.89		2.89
ROXUL Safe™ 45	1.9	2.88		2.88
ROXUL Safe™ 55	2.2	3.29		3.29
ROXUL Safe™ 65	2.9	4.39		4.39
Safe'n'Sound®	1.2	1.73		1.73
Smartrock®	1.8	2.32	0.27	2.5
Toprock® DD	4.9	7.32		7.32
Toprock® DD Plus	4.9	7.32	0.15	7.47