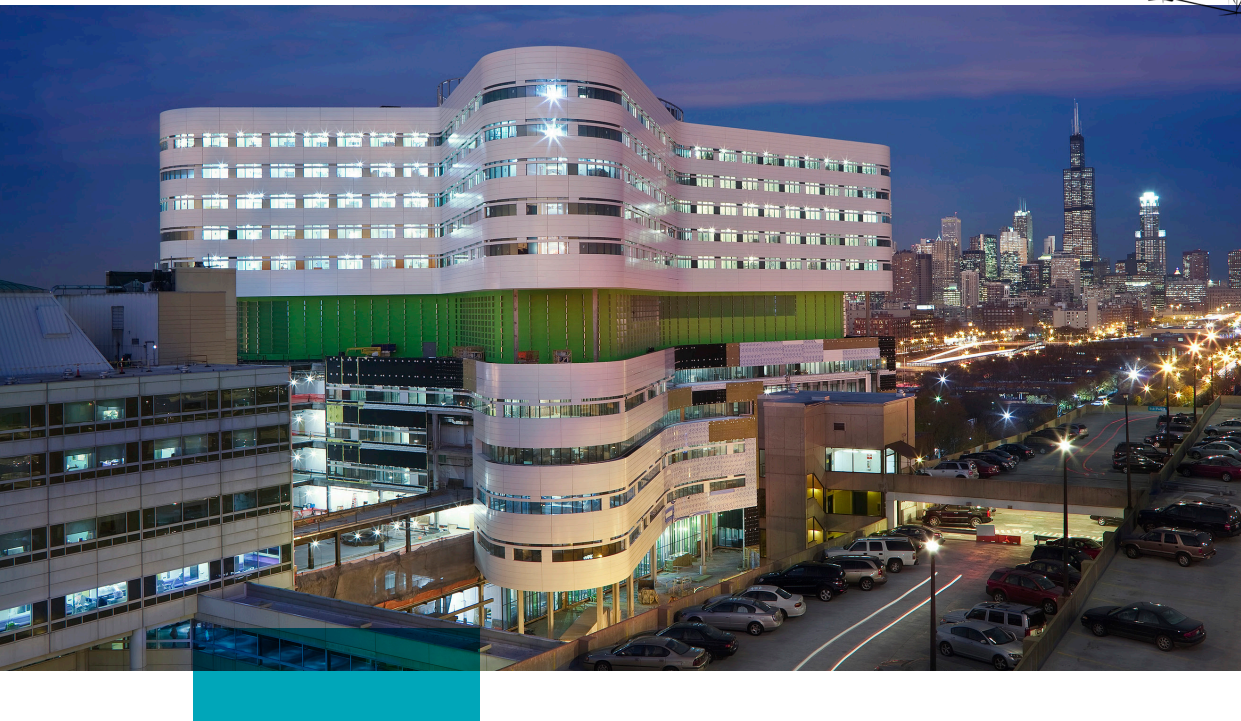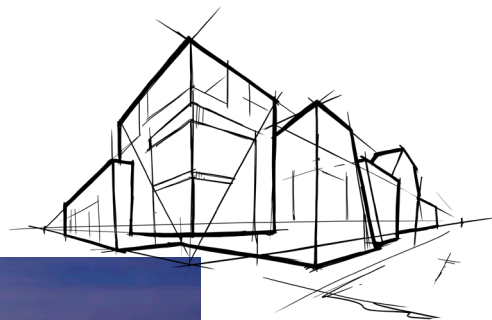# CAVITYROCK®

Exterior Insulation for Cavity Wall and Rainscreen Applications

ROCKWOOL CAVITYROCK® products are semi-rigid stone wool insulation boards designed for exterior cavity wall and rainscreen applications, and are compatible with numerous cladding attachment systems.

CAVITYROCK® is non-combustible and fire resistant, and will not develop toxic smoke or promote flame spread, even when directly exposed to fire. Approved for use in many NFPA 285-compliant designs, it is an important component of fire-resilient exterior wall systems when used as a continuous insulation.

CAVITYROCK® also offers long-term thermal efficiency, moisture control and acoustic performance – improving the energy efficiency and comfort of buildings.

Choose mono-density insulation in thicknesses up to 2" or dual-density in thicknesses of 2.5" to 6".

Learn more at rockwool.com

Thermal Performance

The use of CAVITYROCK® as a continuous insulation helps you meet building code requirements.

ROCKWOOL™

CAVITYROCK®

Exterior Insulation for Cavity Wall and Rainscreen Applications

ROCKWOOL CAVITYROCK® is a semi-rigid, mineral wool insulation board designed for exterior cavity wall and rainscreen applications.

	Performance							Test Standard
Compliance	Mineral Fiber Block and Board Thermal Insulation - Type IVB Compliant							ASTM C612
	MEA Approval, New York City Approval							236 - 05 - M
	For information on CAN/ULC S702 compliance, contact ROCKWOOL Technical Support							
Reaction to Fire	Flame spread index = 0; Smoke developed index = 0							ASTM E84 (UL 723)
	Flame spread index = 0; Smoke developed index = 0							CAN/ULC S102
	Determination of Non Combustibility of Building Materials - Non Combustible							CAN/ULC S114
	Behaviour of materials at 750°C - Non Combustible							ASTM E136
Monolithic Densiity (thickness: 1", 1.5", 2")	> 4.3 lbs/ft^3 (>69 kg/m^3)* * Density will change with thickness, please contact ROCKWOOL for more information							ASTM C303
Density (thickness ≥ 2.5")	Dual Density - 6.2 lbs/ft^3 (100 kg/m^3) outer layer and 3.8 lbs/ft^3 (61 kg/m^3) inner layer							ASTM C303
Corrosion Resistance	Stress Corrosion Cracking Tendency of Austenitic Stainless Steel - Passed Corrosion of Steel - Passed							ASTM C795 ASTM C665
Thermal Resistance	R-Value / inch @ 75°F 4.3 hr.ft^2.F/Btu RSI value / 25.4 mm @ 24°C 0.75 m^{2}K/W							ASTM C518 (C177)
Reaction to Moisture	Moisture Sorption - 0.03% by volume							ASTM C1104
	Water Vapor Transmission, Desiccant Method - 1555ng/Pa.s.m^2 (27 perm)							ASTM E96
	Determination of Fungi Resistance - Passed							ASTM C1338
Thickness Dimensions	1" (25.4 mm) to 4" (101.6 mm) in 1/2" increments. 5" (127 mm) and 6" (152.4 mm) 24" x 48" (610 mm x 1219 mm) and 16" x 48" (406 mm x 1219 mm)							
Acoustical Performance	Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000Hz	4000 Hz	NRC	ASTM C423
	1.5"	0.19	0.55	1.03	1.06	1.02	1.01	0.9	
	2"	0.26	0.71	1.14	1.09	1.04	1.03	1	
	3"	0.72	0.93	0.88	0.84	0.9	0.97	0.9	

Issued 01-01-18
Supersedes 08-23-17

Please contact ROCKWOOL for Declare labels for other ROCKWOOL manufacturing facilities.

ROCKWOOL™

ROCKWOOL LEED v4 Solutions Guide

The right choice for creating sustainable buildings and achieving LEED® certification.

The ROCKWOOL Group is the world leader in stone wool solutions. Our product portfolio is well placed to tackle many of today's biggest sustainability and development challenges and we offer carefully designed, innovative sustainable solutions for your comfort, safety and for the benefit of the environment.

Our products

ROCKWOOL stone wool insulation products not only help in creating sustainable buildings; they are made from a natural fire safe and durable material with no added flame retardants or blowing agents.

Rock: A natural, renewable resource

All ROCKWOOL products are made from stone wool – consisting of a blend of naturally occurring volcanic diabase rock. This stone is a renewable and plentiful natural resource in itself, but just as importantly our high-tech production process ensures that all our insulation products are produced in a sustainable and environmentally responsible way.

Major energy savings

One of the best ways to reduce the energy consumption of a building is through proper insulation. ROCKWOOL stone wool products are a major energy and CO_2 saver, as they allow new and existing buildings to benefit from durable, efficient and versatile thermal insulation. Actually, the energy savings obtained from installing the right insulation will outweigh the energy consumption used for its production in just a few months time.

In most cases, properly installed insulation can cut the building's energy need for heating or cooling of up to 70-90%. In addition, ROCKWOOL insulation works continuously and requires no maintenance or replacement. In other words, it's an investment, which will quickly pay off!

Creating sustainable buildings

The LEED® v4 Green Building Rating System includes revised performance criteria for certifying the design and construction of commercial, institutional and residential buildings. LEED® works for all buildings anywhere, regardless of where they are in their life cycle and the process is designed to inspire innovative solutions that support healthy, highly efficient and cost-saving green buildings during the design, construction, operation and maintenance of these high-performance structures.

ROCKWOOL insulation is the right choice for creating sustainable buildings and achieving LEED® v4 points for your high-performance buildings.

Energy & Atmosphere

Minimum energy performance & Optimize energy performance

Energy efficient building design requires a well-insulated and properly constructed building envelope. ROCKWOOL provides a range of thermal insulation products that can be used on the exterior, interior or both to achieve the prerequisite minimum energy performance and optimized energy performance credits.

Materials & Resources

Building life-cycle impact reduction
A properly constructed and well-insulated building envelope utilizing the long lasting high performance of ROCKWOOL thermal insulation products can assist your project team in achieving the building life-cycle impact reduction through a whole-building life-cycle assessment.

Building product disclosure and optimization - environmental product declarations
ROCKWOOL can deliver third-party UL certified industry wide cradle-to-grave EPDs according to ISO 14025 and ISO 14044 and are available for download at
www.ROCKWOOL.com.

Building product disclosure and optimization - sourcing of raw materials
The ROCKWOOL Group Code of Conduct for Suppliers addresses topics such as equal opportunities, trade union recognition, fair employment terms and the abolition of child labour. This document must be signed by all of our major suppliers including but not limited to suppliers of raw materials and equipment for repair, maintenance, operations as well as suppliers with whom we spend more than US $100,000. Currently, 75% of our key suppliers have already signed the Code of Conduct.

The ROCKWOOL Group procurement policy provides opportunity to engage with our suppliers on social and ethical topics, and implies that high-risk suppliers will be audited against our Code of Conduct. The ROCKWOOL Group has adopted the ICC *"Business Charter for Sustainable Development – Principles for Environmental Management"*, where our suppliers are also required to ensure their own suppliers meet the same standards.

Our commitment is documented through our corporate governance published in the ROCKWOOL Group Annual Report as well as the ROCKWOOL Group Sustainability Report which is self-declared and follows the Global Reporting Initiative (GRI) Sustainability Report CSR framework (GRI G4).

Building product disclosure and optimization - material ingredients
ROCKWOOL stone wool products are made up of approximately 97 percent minerals such as volcanic rock, as well as upcycled and recycled materials from our factories and other industries that might otherwise be landfilled or downcycled. Stone wool is also fully recyclable and can be recycled again and again without degrading its quality.

ROCKWOOL values transparency and has published complete content inventory for the product at 0.1% (1000 ppm) identified by name and Chemical Abstract Service Registration Number (CASRN), disclosing role, amount and hazard screen using GreenScreen benchmark, as defined in GreenScreen v1.2. Our AFB evo™ product also holds a Declare label.

≤ 40 %

The average recycled content of the stone wool core is up to 40%, depending on production site and product.
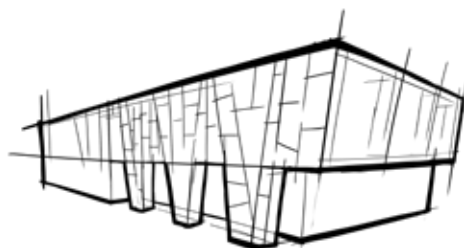
ROCKWOOL Products for LEED® v4

ROCKWOOL Products		Energy and Atmosphere (EA)		Materials & Resources (MR)				Indoor Environmental Quality (EQ)			
		Minimum Energy Performance	Optimize Energy Performance	Building Life-Cycle Impact Reduction	Building Product Disclosure and Optimization - Environmental Product Declarations	Building Product Disclosure and Optimization - Sourcing of Raw Materials	Building Product Disclosure and Optimization - Material Ingredients	Minimum Acoustical Performance	Low-Emitting Materials	Thermal Comfort	Acoustic Performance
Walls	**Exterior Walls**										
	CAVITYROCK®	x	x	x	x	x	x	x		x	x
	COMFORTBOARD™ 110	x	x	x	x	x	x	x		x	x
	COMFORTBOARD™ 80	x	x	x	x	x	x	x		x	x
	COMFORTBATT®	x	x	x	x	x	x	x	x	x	x
	Interior Walls										
	AFB®			x	x	x	x	x	x		x
	AFB evo™			x	x	x	Declare	x	x*		x
	SAFE'n'SOUND®			x	x	x	x	x	x		x
	ROCKBOARD® 40/60/80			x	x	x	x	x			x
	Curtain Wall										
	CURTAINROCK® 40/80	x	x	x	x	x	x	x		x	x
	Firestopping										
	ROXUL SAFE™			x	x	x	x	x			x
	ROXUL SAFE™ 45			x	x	x	x	x			x
	Metal Building										
	PLUS™ MB	x	x	x	x	x	x	x		x	x
	ROXUL SAFE™ 65	x	x	x	x	x	x	x		x	x
	ROXUL SAFE™ 55	x	x	x	x	x	x	x		x	x
	Sandwich Wall										
	CONROCK 60®	x	x	x	x	x	x	x		x	x
	CONROCK®	x	x	x	x	x	x	x		x	x
Roofs	**Flat Roof**										
	TOPROCK® DD	x	x	x	x	x	x	x		x	x
	TOPROCK® DD PLUS	x	x	x	x	x	x	x		x	x
	ROCKWOOL MULTIFIX™	x	x	x	x	x	x	x		x	x
	MONOBOARD®	x	x	x	x	x	x	x		x	x
	MONOBOARD® Plus	x	x	x	x	x	x	x		x	x

* UL validated formaldehyde free

Indoor Environmental Quality

Low-emitting materials

Our wellbeing goes hand-in-hand with the comfort of the environment where we work, live, learn, play or even – in the case of a hospital – recover.

All ROCKWOOL stone wool insulation batt products are certified according to GREENGUARD Gold in accordance with California Department of Public Health (CDPH) Standard Method v1.1–2010.

In addition, AFB evo™ is UL validated to be Formaldehyde Free.

ROCKWOOL North American production facilities

With production facilities strategically placed to support local resources and reduced environmental impacts from transportation, ROCKWOOL's primary raw material sources are located in close vicinity of our facilities though certain materials may be sourced from further than 100 miles (160 km).

Milton, Ontario, Canada
The ROCKWOOL Group entered the North American market for the first time in 1988. This location marks the group's first factory and serves as ROCKWOOL's head office for North American operations.

Grand Forks, British Columbia, Canada
This facility has been in operation since November 1999 and was the first expansion for ROCKWOOL within North America. The Grand Forks facility operates to meet the needs of North America's western regions.

Byhalia, Mississippi, USA
In the spring of 2014, a new 600,000 sq. ft. facility opened in Marshall County, Mississippi; approximately 30 miles south of Memphis.

*COMING SOON (2020) – Ranson, West Virginia, USA
This new manufacturing facility will cover some 460,000 square feet and employ around 150 people.

Grand Forks, BC, Canada

Milton, ON, Canada

Ranson, WV, USA*

Byhalia, MS, USA
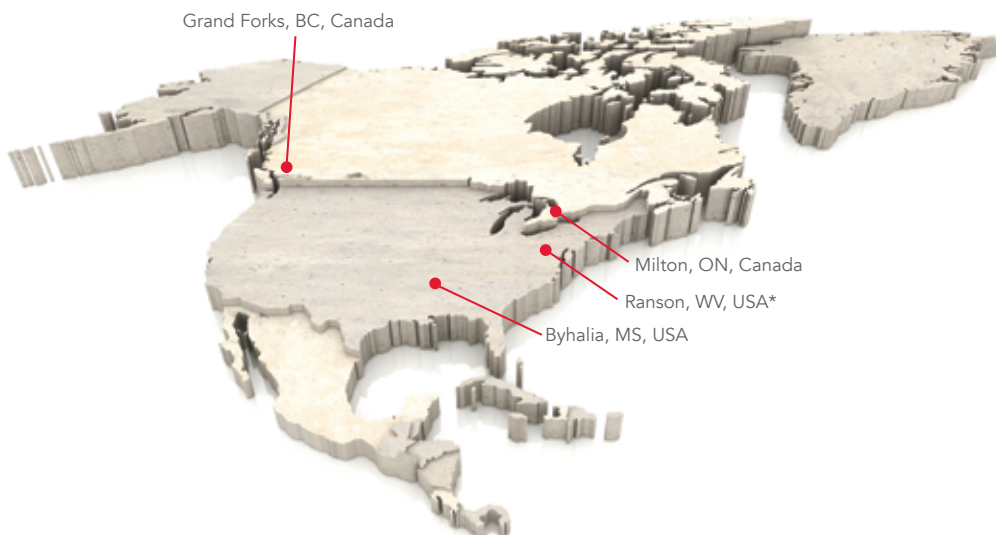
For information on how ROCKWOOL products and resource-efficient solutions support sustainable design strategies, or for assistance with your calculations, contact one of our Technical Specialists at 1-877-823-9790 or visit www.ROCKWOOL.com.

At the ROCKWOOL Group, we are committed to enriching the lives of everyone who comes into contact with our solutions. Our expertise is perfectly suited to tackle 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, while supporting our stakeholders in reducing their own carbon footprint.

Stone wool is a versatile material and forms the basis of all our businesses. With more than 11,000 employees 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 fibres for industrial use to insulation for the process industry and marine and offshore.

ROCKWOOL
8024 Esquesing Line
Milton, ON L9T 6W3
Tel: 1 800 265 6878
rockwool.com

Declare.

ROCKWOOL™ Exterior Stone Wool Insulation-Unfaced: CAVITYROCK®, CURTAINROCK® 40/80, COMFORTBOARD™ 110/80, ROXUL SAFE™

ROCKWOOL

Final Assembly: Byhalia, Mississippi, USA
Life Expectancy: Life of Structure
End of Life Options: Salvageable/Reusable in its Entirety, Landfill (100%)

Ingredients:

Glass, Oxide, Chemicals, Urea, Polymer with Formaldehyde and Phenol[1]**; Syrups, Hydrolized Starch, Proprietary Ingredient** (0.05-0.2%)[2]

[1]LBC Temp Exception I10-E9 Phenol Formaldehyde in Mineral Wool Insulation

[2]LBC Temp Exception I10-E4 Proprietary Ingredients <1%

Living Building Challenge Criteria:

RXL-1002	EXP. 01 OCT 2020
VOC Content: N/A	VOC Emissions: N/A
Declaration Status	☐ LBC Red List Free
	■ LBC Compliant
	☐ Declared

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL **LIVING FUTURE** INSTITUTE℠ declareproducts.com

Safe Use Instruction Sheet

This ROCKWOOL Safe Use Instruction Sheet [SUIS] is provided for manufactured articles neither regulated by OSHA Hazard Communication Standard, 29 CFR 1910.1200 nor by the Canada Hazardous Products Regulation SOR/2015-17 [WHMIS 2015].

ROCKWOOL provides this SUIS for safe handling and use instructions.

1. Identification of the article

Product Name   Resin-Bonded Stone Wool Insulation

Product Family	Product Identification	Intended Use
I.	AFB evo™	Interior Wall and Floor Applications
II.	COMFORTBOARD™, COMFORTBATT®, SAFE'N'SOUND®, AFB®, CAVITYROCK®, CURTAINROCK®, ROCKBOARD®, ROXUL Plus®, SAFE®	Interior and Exterior Applications
III.	MONOBOARD® PLUS, TOPROCK® DD Plus, MULTIFIX	Roof Insulation or Insulating Cover Board over Other Insulations
IV.	MONOBOARD®, TOPROCK® DD, TOPROCK® DD	Low-Slope Roof Applications
V.	CONROCK®, FABROCK™	OEM
VI.	ProRox® NA, SeaRox® NA	Industrial Piping and Equipment Applications

Manufacturer   ROCKWOOL

Address	Canada	USA
	8024 Esquesing Line	4594 Cayce Rd
	Milton, Ontario	Byhalia
	Canada	MS 38611
	L9T 6W3	USA

Company Phone Number
1-800-265-6878
1-877-823-9790 (8:30 am to 5:00 pm ET)

Email   contactus@rockwool.com

2. Hazards identification

OSHA   This product is considered an article as per OSHA 29 CFR 1910.1200.

29 CFR 1910.1200(c) defines an article as follows: "Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Articles meeting the above definition are not regulated by OSHA 29 CFR 1910.1200 and are exempt from SDS and label requirements.

2. Hazards identification - Continued

WHMIS
This product is considered an article per the Canadian Hazardous Products Regulation SOR/2015-17. Manufactured articles that meet the definition of the Canadian Hazardous Products Act (any article that is formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design, and that, when being installed, if the intended use of the article requires it to be installed, and under normal conditions of use, will not release or otherwise cause an individual to be exposed to a hazardous product) are not regulated by the Canadian Hazardous Products Regulation SOR/2015-17 and are exempt from SDS and label requirements.

Adverse physiochemical, human health and environmental effects
This product may cause temporary mechanical irritation to the eyes and skin. Temporary irritation of the upper respiratory tract (scratchy throat, coughing, congestion) may result from exposure to dusts and fibers in excess of applicable exposure limits. Pre-existing chronic eye, skin and respiratory conditions may temporarily worsen due to exposure to dusts and fibers (see section 8 for safe handling instructions).

3. Composition / information on ingredients

Product Family	Stone wool (a, b)	Non added formaldehyde binder	Phenol Formaldehyde Binder	Syrups, hydrolysed starch	Mineral Oil
I.	97%	<3%	-	<1%	<0.2%
II.	97%	-	<3%	<1%	<0.2%
III.	94-96%	-	<6%	<1%	<0.2%
IV.	94-96%	-	<6%	<1%	<0.2%
V.	97%	-	<3%	<1%	<0.2%
VI.	97%	-	<3%	<1%	<0.2%

a: Man-made vitreous (silicate) fibres with random orientation with alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+ MgO+BaO) content greater than 18 % by weight and fulfilling Note Q conditions

b: Man Made Vitreous Wool Fibres are IARC classified as Group 3 (not classifiable as to their carcinogenicity to humans)

Possible facing materials: Mineral fleece. Aluminium foil, Aluminium foil reinforced mineral fiber grid, PE craft paper, Wired mesh, PP film, Plaster board, Mineral cloth, Bitumen.

4. First aid measures

Eye contact
Rinse immediately with water for at least 15 minutes.

Skin contact (if itching occurs)
Remove contaminated clothing and wash skin gently with cold water and a mild soap. Never use compressed air to remove fibers from skin or clothing.

Inhalation
If affected, remove from exposure.

Ingestion
Rinse mouth and drink plenty of water.

If any irritation persists, seek immediate medical attention.

5. Fire fighting measures

Suitable extinguishing media

Water, Foam, Carbon Dioxide or dry powder (No unsuitable extinguishing firefighting media known.

Protective equipment for firefighters

Do not enter fire area without proper protective equipment, including NIOSH-approved self-contained breathing apparatus (SCBA). Observe normal fire fighting procedures.

6. Accidental release

Personal precautions

In case of high concentrations of dust: Ventilate and/or use same protective equipment as mentioned in section 8

Methods for cleaning up

Use personal protective equipment as required. Clean contaminated surface with vacuum or dampen with water spray prior to sweeping up. Place waste in appropriate containers for disposal.

7. Handling and storage

Precautions and safe handling

No specific measures required. A serrated knife for cutting is preferred. Minimize dust creation and ensure adequate ventilation of workplace.

Storage conditions

Keep product dry and in original packaging until use.

Incompatible materials

None known.

8. Exposure controls / personal protection

Exposure guidelines

Follow all applicable exposure limits. Local regulations may apply. ROCKWOOL recommends that users of the products adhere to the OSHA-recommended PEL of 1 f/cc TWA (fibers longer than 5 μm with diameters less than 3μm). This recommended PEL, together with recommended work practices and personal protective equipment, were adopted in a Health and Safety Partnership Program (HSPP) agreement in 1999 between OSHA and the North American Insulation Manufacturers Association (NAIMA), of which ROCKWOOL is a member. Adherence to the OSHA-recommended PEL, work practices and protective equipment in the HSPP is expected to provide appropriate protection against all inhalation-related health risks that may be associated with exposures to mineral wool fibers (ACGIH, 1997; NAIMA, 1999; OSHA, 1999; National Research Council, 2000; IARC, 2001), and to minimize eye and skin irritation.

Reference	Exposure	Legal or Recommended Exposure Limit
OSHA	Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter	1 f/cc TWA (recommended)
	Inert dust and particulates not otherwise regulated	15 mg/m3 TWA-PEL (total particulate) 5 mg/m3 TWA-PEL (respirable particulate)
ACGIH	Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter	1 f/cc TWA (threshold limit value TLV)
	Particulates not otherwise classified, containing no asbestos and < 1% crystalline silica	10 mg/m3 TWA-PEL (inhalable particulate) 3 mg/m3 TWA-PEL (respirable particulate)

8. Exposure controls / personal protection

Engineering controls
Provide local exhaust and/or general ventilation to main exposure below regulatory and recommended limits. Vacuum or wet cleaning methods recommended.

Individual protection measures, including personal protection

Eyes	Wear safety glasses with side shielding or similar
Skin/body	Wear protective gloves
	Wear long sleeve shirt and long trousers
Respiratory	Ensure proper ventilation
	Use appropriate certified respirator when airborne particulates are above exposure limits (properly fitted NIOSH disposable N95 type dust respirator or better is recommended)
General hygiene	Wash hands with cold water after handling products
	Remove and wash clothes worn during working with product.

9. Physical and chemical properties

Physical State Solid

Color Grey, green, brown

Odor May have slight resin odor

Melting Point Approximately 2150°F (1177°C)

Water solubility Insoluble in water

10. Stability and reactivity

Reactivity and Stability
Stable under normal conditions of use

Decomposition products
Primary combustion products of the cured urea extended phenolic formaldehyde binder, when heated above 390°F (200°C), are carbon monoxide, carbon dioxide, ammonia, water and trace amounts of formaldehyde. Other undetermined compounds could be released in trace quantities. Emission usually only occurs during the first heating. The released gases may be irritating to the eyes, nose and throat during initial heat-up. Use appropriate respirators (air supplied) particularly in tightly confined or poorly ventilated areas during initial heat-up.

11. Toxicological information

Stone wool fibers are not classifiable as OSHA irritants. Coarse fibers and dust from mineral wool products can cause emporary and reversible irritation (itching, redness) of the skin and eyes. The itching and possible inflammation are a mechanical reaction to dust and coarse fibers (more than about 5 μm in diameter) and are not damaging in the way chemical irritants may be. The symptoms generally abate within a short time after the end of exposure. When products are handled continually, the skin itching generally diminishes.

Man Made Vitreous Wool Fibers are IARC classified as Group 3 (not classifiable as to their carcinogenicity to humans)

12. Ecological information

The products are stable, not expected to cause harm to animals, plants or fish, and have no known adverse environmental effects.

13. Disposal considerations

The products, as supplied, are not expected to be a characteristic hazardous waste under RCRA if discarded. Products are not considered to be a hazardous waste. Dispose of waste material according to federal, state, provincial and Local environmental regulations. Comply with relevant regulations with regards to disposal, recycling, treatment, transportation and storage of contents and containers.

14. Transport information

No special precautions. This product is not considered to be a hazardous material for transport.

15. Regulatory information

International Inventories

Articles are exempt from registration or listing chemicals inventories like TSCA (USA), DSL/NDSL (CAN), REACH (EU), ENCS (JP), IECSC (CN), KECL (KR), PICCS (PH), AICS (AUS). Per Section 2. these products are considered an article.

Product Family	California Proposition 65 Status
I.	This product does not contain any Proposition 65 chemicals.
II. - V.	These products contain formaldehyde, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm.

16. Other information

Date of preparation

16-AUG-2018

Date of revision   10-MAY-2019

Comments to revision

Inclusion of ProRox and SeaRox Technical Insulation

Disclaimer

Disclaimer: The information contained herein is based upon data considered to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data, the results to be obtained from the use thereof, or that any such use will not infringe upon any patent. This information is furnished as a guide only and upon the condition that the person receiving it shall make tests to determine the accuracy and suitability for his or her own purpose. No responsibility is assumed for injury or damage from the use of the products described herein.

ROCKWOOL reserves the right, at its discretion, to change and modify this Safe Use Instruction Sheet. This version supersedes any Safety Data Sheets and older versions. ROCKWOOL will not take responsibility for documents downloaded from any website except those downloaded directly from www.rockwool.com. ROCKWOOL takes no responsibility for documentation supplied by a third party as ROCKWOOL cannot control the content of such documentation to ensure accuracy.

ROCKWOOL

MANUFACTURERS DECLARATION OF PRODUCT CONFORMITY FOR PRODUCT SPECIFIC VOC EMISSIONS

The products listed below are determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.2–2017 and GreenGuard Gold for classrooms.

Products covered by this declaration:
COMFORTBOARD™ 80 – 1", 1.25", 1.5", 2"

Extended product grouping covered by this declaration:
CAVITYROCK® – 1", 1.5", 2", 2.5", 3", 3.5", 4"
COMFORTBOARD™ 110 – 1", 1.25"
CURTAINROCK® – 1", 2", 3", 4"
CURTAINROCK® 40 – 2", 3", 4", 5"
CURTAINROCK® 80 – 1", 2", 3", 4"
ROCKBOARD® 40 – 1", 1.5", 2", 2.5", 3", 4"
ROCKBOARD® 60 – 2"
ROCKBOARD® 80 – 1", 1.5", 2"
ROXUL SAFE™ – 2", 3", 4"

VOC Testing:
Test method: ASTM D 5116
Product category: Insulation
Environment: Classroom
Report number: UL 1000405206-1395765 – COMFORTBOARD™ 80, 2"
Report Date: 14th March 2018

Results:

	168 hr emission rate
TVOC	< 0.22mg/m3
Formaldehyde	< 9 µg/m3
Total aldehydes	< 0.043 ppm
Individual VOCs	< ½ CREL or 1/100 TLV

Laboratory:
UL Environment ISO/IEC 17025 approved testing laboratory
Accreditation number AT-1297

Quality Control:
ROCKWOOL has a documented quality control (QC) plan for the production of the above building products with in-plant quality control testing to demonstrate continuing compliance.

This declaration follows the requirements as laid out in the CDPH v1.1 2010 and CDPH v1.2 2017 Standard Method for the Testing & Evaluation of VOC Emissions, Part 8 GUIDELINES FOR USE OF STANDARD METHOD AS BASIS FOR A BUILDING PRODUCT CLAIM.

For more information, please contact ROCKWOOL Technical Innovations at 1.877.823.9790 or
contactus@rockwool.com

ROCKWOOL™ STONE WOOL Insulation

ROCKWOOL NORTH AMERICA

ROCKWOOL™ Stone Wool/Mineral Wool Insulation is optimized for performance, delivering on Thermal Comfort, Acoustics, Fire protection and more.

ROCKWOOL North America is Part of the ROCKWOOL Group, the world's leading stone wool/mineral wool manufacturer. Operating globally for over 80 years, over 30 years in North America the company manufactures stone wool insulation products that serve a wide range of applications in the Commercial, Residential, and Industrial/Technical segments.

Across the full range of our products and operations, ROCKWOOL is dedicated to enriching modern living. We strive to increase our positive impact on people and society by maximizing our positive product impact and minimizing our operational footprint. We recognize that operating with integrity and as a responsible business is equally important and underpins everything we do.

The United Nations Sustainable Development Goals (SDGs) steer our ambitions. We committed to 10 out of the 17 SDGs – pursuing the goals where we can have the greatest impact and that are the most aligned with our business competencies.

Our Environmental Product Declaration is another element of our commitment to serving our customers and the industry's requirements for sustainable solutions.

ENVIRONMENTAL PRODUCT DECLARATION

ROCKWOOL

Rockwool International A/S (Rockwool North America)
Rockwool Stone wall thermal Insulation

According to EN 15804 and ISO 14025
Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. 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, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	ROCKWOOL International A/S (Rockwool North America)
ULE DECLARATION NUMBER	4789092768.101.1
IBU DECLRATION NUMBER	EPD-RWI-20190075-CCD1-EN
DECLARED PRODUCT	ROCKWOOL stone wool Thermal Insulation
REFERENCE PCR	Product Category Rules Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, 03.2018 Product Category Rules Part B: Mineral insulating materials, 12.2018

DATE OF ISSUE	17/07/2019
DATE OF EXPIRATION	17/06/2024

CONTENTS OF THE DECLARATION	General information Product / Product description LCA calculation rules LCA scenarios and further technical information LCA results References	
The PCR review was conducted by:		IBU – Institut Bauen und Umwelt e.V.
		PCR was approved by the Independent Expert Committee (IEC) of IBU
The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories ☐ INTERNAL ☒ EXTERNAL		*Grant R. Martin*
		Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with EN 15804 and the reference PCR by:		IBU – Institut Bauen und Umwelt e.V.

Environment

(UL)

ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	ROCKWOOL International A/S (ROXUL Inc. - ROCKWOOL North America)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-RWI-20190075-CCD1-EN
Issue date	18.06.2019
Valid to	17.06.2024

ROCKWOOL stone wool Thermal Insulation
ROCKWOOL International A/S (ROXUL Inc. - ROCKWOOL North America)

www.ibu-epd.com / https://epd-online.com

Institut Bauen und Umwelt e.V.

General Information

ROCKWOOL International A/S (ROCKWOOL North America)

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-RWI-20190075-CCD1-EN

This declaration is based on the product category rules:
Mineral insulating materials, 12.2018
(PCR checked and approved by the SVR)

Issue date
18.06.2019

Valid to
17.06.2024

ROCKWOOL stone wool Thermal Insulation

Owner of the declaration
ROXUL Inc.
d/b/a ROCKWOOL North America
8024 Esquesing Line
Milton, Ontario
Canada
L9T 6W3

Declared product / declared unit
1 m² of stone wool thermal insulation product with an $R_D=1$ m²K/W.

Scope:
The span of products, which are contained in this EPD refer to thermal insulation products for the North American market, for wall (interior and exterior) and roof applications with a range of densities from 36 to 200 kg/m³ (2.2 to 12.5 lbs/ft³). The declared reference product in this EPD is 1m² Safe'n' Sound stone wool batt for interior partition of wood and steel frame constructions with a thermal resistance of $R_D=1$ m² K/W ($R_{US}=5.68$). The corresponding thermal conductivity has been measured at 24°C as per ASTM C518.

The products included in this EPD are all manufactured in one or several of the ROCKWOOL North American facilities:

- Milton (Ontario, Canada)
- Grand Forks (British Columbia, Canada)
- Byhalia, (Mississippi, US).

The EPD is based on weighted LCA inventory data from the 3 plants. The environmental impacts and indicators are determined by applying the product specific scaling factor and R_D value (please refer to section "Technical Data" for guidance). Speciality facings are not included in the scaling factors. The LCA results for these are listed in the Annex. The production data correspond to the year 2017.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Verification

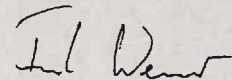| The standard /EN 15804/ serves as the core PCR |
|---|
| Independent verification of the declaration and data according to /ISO 14025:2010/ |

☐ internally   ☒ externally

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Head of Board IBU)

Dr. Frank Werner
(Independent verifier appointed by SVR)

Product

Product description / Product definition

ROCKWOOL stone wool thermal insulation is
a firesafe material for insulation against heat, cold,
fire, vibrations and noise.

It is traditionally made from volcanic rock (typically
basalt or dolomite), an increasing proportion of
recycled material, a low percentage of resin binder,
which in ROCKWOOL thermal insulation products are
usually up to 3%, syrups/ hydrolyzed starch in less
than 1% and mineral oil in less than 0.2%.

The ROCKWOOL Products described in this
declaration are produced for the North American
market in the form of slabs or mats in the density range
from 36 up to 200 kg/m³. The products are supplied in
thicknesses of 25 to 203 mm.

Product-specific environmental impacts are compiled
by applying the relevant scaling factor (listed in the
Scaling Factor table) in the Product Specific Scaling
formula.

Product Name	scaling compared to reference	Product Name	scaling compared to reference
SAFE'n'SOUND	1,0	CURTAINROCK 80	2,4
AFB	1,0	CURTAINROCK 80 RFF *	2,4
AFB evo	0,9	FABROCK 120	3,5
CAVITYROCK	1,6	FABROCK 30	1,1
COMFORTBATT R10	0,9	FABROCK 60	1,7
COMFORTBATT R14	0,9	FABROCK 85	2,4
COMFORTBATT R15	1,0	FABROCK BATT	1,1
COMFORTBATT R22	0,9	FABROCK HO	5,1
COMFORTBATT R22.5	0,9	FABROCK LT	1,3
COMFORTBATT R23	1,1	FABROCK WRAP	1,4
COMFORTBATT R24 WS	1,3	MONOBOARD	4,9
COMFORTBATT R24 SS	0,9	MONOBOARD PLUS	4,9
COMFORTBATT R28	0,9	ROCKBOARD 40	1,5
COMFORTBATT R30	0,9	ROCKBOARD 40 BM *	1,5
COMFORTBATT R32	0,9	ROCKBOARD 60	2,2
COMFORTBOARD 110	4,3	ROCKBOARD 80	3,1
COMFORTBOARD 80	3,1	ROCKWOOL PLUS MB	0,9
CONROCK	3,2	ROXUL SAFE	1,8
CONROCK 60	2,2	ROXUL SAFE 45	1,6
CURTAINROCK	1,3	ROXUL SAFE 55	2,0
CURTAINROCK 40	1,6	ROXUL SAFE 65	2,5
CURTAINROCK 40 RFF *	1,6	TOPROCK DD	4,3
		TOPROCK DD PLUS	4,3

*) See annex for Environmental impact of specialty
facing.

Product Specific Scaling Formula:

Environmental Impact per m2 = Environmental
Impact reference product * scaling factor +
Environmental Impact facing material**.
**) Only add facing material for products with specialty
facings.

Please note that the R_D-values used for scaling give a
very good indication of the amount of material needed
to achieve the desired insulation effect of other product
types, but it is not an exact measure.

For the use and application of the product the
respective Federal or local legal provisions at the place
of use (outside European Union) apply.

Application

The spectrum of products, included in the scope of
this EPD refer to thermal insulation products, for
interior and exterior wall and roof applications with a
range of densities from 36 to 200 kg/m³ (2 to 12 lb/sqf).

The products included in this EPD along with their
intended use are presented in the table below:

Intended Use of Products

Product Family	Product Identification	Intended use
I.	AFB evo™	Interior Wall and Floor Applications
II.	COMFORTBOARD™, COMFORTBATT®, SAFE'n'SOUND®, AFB®, CAVITYROCK®, CURTAINROCK®, ROXUL SAFE™, ROCKBOARD®, PLUS™ MB	Interior and Exterior Applications
III.	MONOBOARD®, TOPROCK® DD, TOPROCK® DD MULTIFIX™	Roof Insulation or Insulating Cover Board over Other Insulation
IV.	MONOBOARD® PLUS, TOPROCK® DD Plus	Low-Slope Roof Applications
V.	CONROCK®, FABROCK®	OEM

Technical Data

The technical specifications for the products described
in the EPD are stated below. Further documentation is
available via www.rockwool.com.

Technical data

Name	Value	Unit
Sound absorption coefficient /ASTM C423/	7 - 11	%
Compressive Strength /ASTM C165/	0 - 190	kPa at 25% compression
Reaction to Moisture (Water Vapor Transmission, Desiccant Method) /ASTM E96/	27 - 41	perm
Thermal Resistance /ASTM C518 (C177)/	3.9-4.3	Fhr.ft2/Btu
Flame Spread/Smoke Developed /ASTM E84 [UL 723] / CAN/ULC S102/	0/0	
Determination of Fungi Resistance /ASTM C1338/	Passed	

Performance data of the product with respect to its
characteristics in accordance with the relevant
technical provision.

Base materials / Ancillary materials

The stone wool raw materials are non-scarce natural
stone and secondary raw materials in a percentage up
to 97%. The raw materials are used either in their
natural form, crushed or in a cement-bound briquette.
The product composition is presented below:

- virgin stone (71%)
- slags and other secondary materials (23%)
- binder (5.7%)
- mineral oil and bonding agent (0.3%)

Mineral wool fibers produced by ROCKWOOL are
classified as non-hazardous under /REACH/
(Regulation (EC) No 1272/2008 of the European
parliament and of the council of 16 December 2008 on
classification, labelling and packaging of substances
and mixtures). ROCKWOOL are registered with
/REACH/ under the following definition: "Man-made
vitreous (silicate) fibers with random orientation with
alkaline oxide and alkali earth oxide
($Na_2O+K_2O+CaO+MgO+BaO$) content greater than
18% by weight and fulfilling one of the Note Q
conditions".

Non added formaldehyde alternatives are available

ROCKWOOL

and covered by this EPD. (Regulation (EC) No 1272/2008 - REACH)

The possible facing materials include Mineral fleece. Aluminium foil, Aluminium foil reinforced mineral fiber grid, PE craft paper, Wired mesh, PP film, Plaster board, Mineral cloth, Bitumen and are presented in the Annex.

The product is typically packaged in PE shrink wrap bundles, that are shipped on single use wooden pallets. The packaging consists of 8% of the final product.

Reference service life

When installed correctly, the service life of ROCKWOOL stone wool is only limited by the service life of the structure wherein the product is installed. For the purpose of this EPD the reference service life of the structure is considered to be 75 years, as also defined in the North American PCR /UL 10010-1:2018/. For more information, please refer to the scenario section in this EPD.

LCA: Calculation rules

Declared Unit

The specific product, referred to in the declared unit is $1m^2$ of Safe 'n' Sound stone wool batt with a thermal resistance $R_{SI}=1m^2K/W$. The reference product has a thickness of 37mm (1.5 in) and a density of 40 kg/m³ (2.5 lb/ft³).

Applied averages are based on the annual production volumes at the North American production facilities. The environmental impacts of applied facing are listed in Annex.

Declared unit (reference product)

Name	Value	Unit
Declared Unit	1	m^2
Gross density	40	kg/m³
Surface	1	m^2
Weight	1.48	kg
Conversion factor to 1 kg	0.676	-
Thickness to achieve declared unit	0.037	m

System boundary

EPD type: **Cradle to Grave.**

The modules considered in the life cycle assessment as per system boundaries, outlined in section 5.5. of the /PCR/ Part A: "Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report" are described as follows:

Production

The product stage **A1-A3** includes:
- Provision of preliminary products and energy and relevant upstream processes;
- Transporting the raw materials and preliminary materials to ROCKWOOL production facilities;
- Production process in the ROCKWOOL production facilities including energy inputs and emissions;
- Electricity consumption;
- Waste processing up to the end-of-waste state or disposal of waste residues, during the production stage;
- Production of packaging material;
- Manufacturing of products and co-product.

The environmental impact of co-products from the steel and coal fired electricity production (slags, alumina and ashes entering the system as inputs to the manufacturing) is accounted for and economic allocation is applied.

Recycled stone wool and fuels come free of environmental burden, as it enters the product system as waste. Their transport to the factory is accounted for.

During the melting of raw materials pig iron is created in the cupola furnace. Pig iron is a co-product, which is subsequently sold to the market and economic allocation is applied.

Modules A1, A2 and A3 are declared as an aggregated Module A1-A3.

State or Province electricity grid mixes have been applied.

Construction/Installation

The Construction Stage **A4-A5** includes:
- A4 transport to the building site
- A5 installation to the building

The transport in A4 is modeled by volume with truck as a default vehicle, as the most conservative approach. The values are based on annual average delivery data. In A5 the default installation is assumed to be manual, therefore no energy consumption or ancillary equipment is needed. The product waste from installation is assumed to be 2% and according to the modularity principle of /EN15804/ its impacts are fully allocated to A5.

The A5 stage, according to /EN 15804/ includes also waste processing up to the end-of-waste state or disposal of final residues during the construction process stage and impacts and aspects related to product losses during installation.

Finally, the A5 module includes also the corresponding end-of-life considerations for packaging. The default assumption here for installation waste is 100% landfill.

Building Use

The use-stage **B1-B7**, related to the building fabric includes:
- B1 use or application of the installed product;
- B2 maintenance;
- B3 repair;
- B4 replacement;
- B5 refurbishment;
- B6 – Operational energy use:
- B7 – Operational water use:

ROCKWOOL Stone wool insulation is installed permanently in the structure and does not require maintenance, repair, replacement or refurbishment under normal use conditions. Similarly,

ROCKWOOL stone wool insulation has no operational energy or water use.

End of Life
The End-of-life stage **C1-C4** includes:
- C1 de-construction, demolition;
- C2 transport to waste processing;
- C3 waste processing for reuse, recovery and/or recycling;
- C4 disposal.

These stages also include provision and all transport, provision of all materials, products and related energy and water use. Manual deconstruction is assumed for C1 and no impacts are assigned. The credits from disposal (heat or electricity recovery) are assigned to module D.

Module D includes reuse, recovery and/or recycling potentials expressed as net impacts and benefits. Here the credits from electricity generation on landfill are considered.
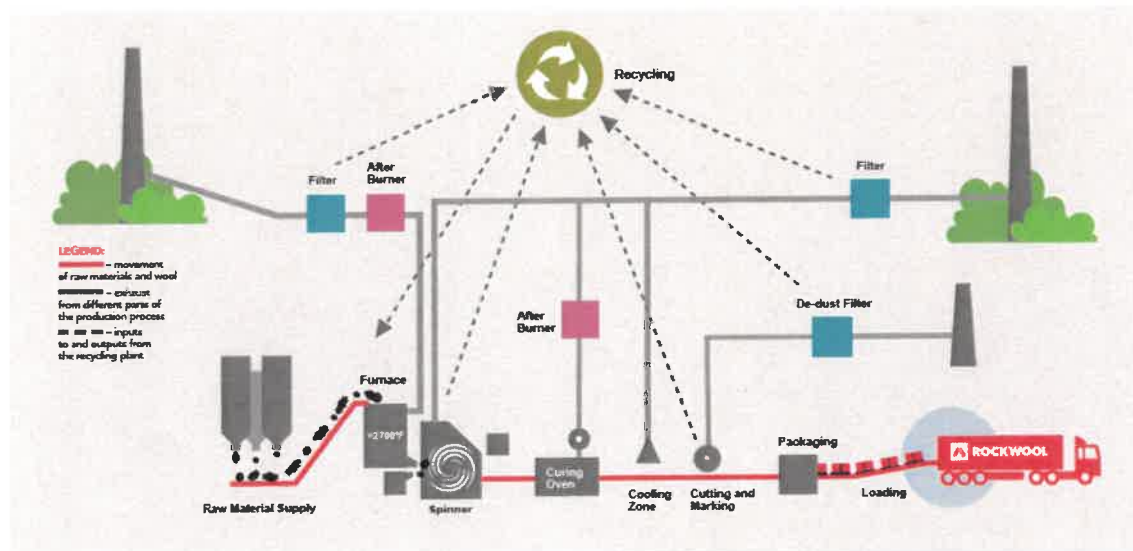
Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

. LCA results across EPDs can be calculated with different background databases, modelling assumptions, geographic scope and time periods, all of which are valid and acceptable according to Product Category Rules (PCR) and ISO standards. Caution should be used when attempting to compare EPD results.
The used software for the development of the declaration was /GaBi/, version 8.0.1.257 by thinkstep.

LCA: Scenarios and additional technical information

The following technical information for the declared modules can be used for scenario development in a building context.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel /volumetric transport considered/	38	l/100km
Transport distance /weighted average from factory specific distances/	981	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	40	kg/m³

The transport of the materials to the customer is modeled as a volumetric transport, meaning that the truck reaches its capacity with volume before it reaches it with mass. The same conservative approach is followed for all the products of this EPD, even for the ones with high density.

Installation into the building (A5)

Name	Value	Unit
Other resources	-	kg
Electricity consumption	0	kWh
Material loss	2	%

Reference service life
The declared reference service life only applies for the reference conditions which are stated below.

Name	Value	Unit
Life Span according to the manufacturer	75	a
Declared product properties	/ASTM C423/: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method" /ASTM C165/: "Standard Test Method for Measuring Compressive Properties of Thermal Insulations".	-

	-/ASTM E96/: "Standard Test Methods for Water Vapor Transmission of Materials". -/ASTM C518 (C177)/: "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus". -/ASTM E84 (UL 723)/: "Standard Test Method for Surface Burning Characteristics of Building Materials". -/ASTM C1338/: "Standard Test Method for determining Fungi Resistance of Insulation Materials and Facings".	
Design Application parameters, including references to the appropriate practices	See installation guidelines. Installation to be conducted in accordance with manufacturer's guidelines	
Quality of work assumption when installed in accordance with the manufacturer's instructions	It is assumed that the manufacturer's instructions are clear and followed. In case of any uncertainty the manufacturer should be contacted for instructions	
Outdoor environment, e.g. weathering, pollutants, UV and wind	Not for outdoor application, except if specifically stated on the product	
Indoor Environment, e.g. temperature, moisture etc.	Not in direct contact with indoor environment, except if specifically stated on the product.	
Usage conditions, e.g. frequency of use, mechanical exposure etc.	No usage conditions, except if specifically stated on the product. Please follow manufacturer's guidelines	
Maintenance, e.g. required frequency, type and quality of replacement components	No maintenance is generally required, unless specifically stated on the product. Please refer to manufacturer guidelines	

End of life (C1 - C4)

Name	Value	Unit
Landfilling	1.48	kg
Transport to landfill	50	km
Utilization rate	50	%

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

Any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state are included in module D. Such declared benefits can for ROCKWOOL products occur in stages A5, C3 and C4. For the internal recycling of stone wool it is important that no double counting occurs. The outputs of waste stone wool from modules A5 and C1 are considered linked to the inputs of waste stone wool into A1. Therefore only the net output flow (output from A5 plus C1 minus input to A1) is considered as a net output flow from the system and considered in Module D.

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	MNR	MNR	MNR	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m2 of thermal insulation product with an R=1m2K/W

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO$_2$-Eq.]	1.31E+0	4.25E-1	2.65E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.29E-3	0.00E+0	2.20E-2	-9.93E-2
ODP	[kg CFC11-Eq.]	2.11E-9	7.06E-17	3.50E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.76E-19	0.00E+0	1.28E-16	2.27E-15
AP	[kg SO$_2$-Eq.]	1.03E-2	3.60E-4	2.62E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.84E-6	0.00E+0	1.32E-4	-2.44E-4
EP	[kg (PO$_4$)^3-Eq.]	1.14E-3	7.96E-5	4.96E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.09E-6	0.00E+0	1.50E-5	-1.99E-5
POCP	[kg ethene-Eq.]	1.84E-3	1.38E-6	4.56E-5	1.54E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.40E-7	0.00E+0	1.01E-5	-3.35E-5
ADPE	[kg Sb-Eq.]	4.63E-7	3.29E-8	7.19E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.09E-10	0.00E+0	8.10E-9	-1.61E-8
ADPF	[MJ]	1.57E+1	5.79E+0	5.97E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.19E-2	0.00E+0	3.08E-1	-2.70E+0

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: 1 m2 of thermal insulation product with an R=1m2K/W

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	3.88E+0	3.24E-1	1.91E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.06E-3	0.00E+0	3.97E-2	-3.27E-1
PERM	[MJ]	2.29E+0	0.00E+0	-1.74E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	6.17E+0	3.24E-1	1.66E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.06E-3	0.00E+0	3.97E-2	-3.27E-1
PENRE	[MJ]	1.50E+1	5.83E+0	7.56E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.23E-2	0.00E+0	3.19E-1	-3.08E+0
PENRM	[MJ]	2.91E+0	0.00E+0	-6.76E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	1.79E+1	5.83E+0	6.89E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.23E-2	0.00E+0	3.19E-1	-3.08E+0
SM	[kg]	6.41E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.41E-2
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m³]	1.44E-2	5.70E-4	8.21E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.07E-6	0.00E+0	8.04E-5	-1.37E-3

Caption: PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m2 of thermal insulation product with an R=1m2K/W

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	4.18E-7	3.24E-7	1.50E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.03E-9	0.00E+0	5.44E-9	-9.09E-10
NHWD	[kg]	1.32E-1	4.72E-4	1.54E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.86E-6	0.00E+0	1.48E+0	6.42E-3
RWD	[kg]	7.49E-4	7.88E-6	3.23E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.79E-8	0.00E+0	4.28E-6	-1.05E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	3.71E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	2.28E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	6.84E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

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Annex

For the following facing options, applicable to ROCKWOOL technical insulation products:

Black mat facer, reinforced foil facer, fiberglass facer

to the

ENVIRONMENTAL PRODUCT DECLARATION
as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	ROCKWOOL International A/S (ROCKWOOL Technical Insulation)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-RWI-20190075-CCD1-EN
Issue date	18.06.2019
Valid to	17.06.2019

ROCKWOOL stone wool technical insulation
ROCKWOOL International A/S (ROCKWOOL Technical Insulation)

Institut Bauen und Umwelt e.V.

LCA: Results for the facing options

The LCA approach for the facings options follows the general methodology and assumptions from ROCKWOOL International, as these are explained in the background methodology report and have been verified and approved. This Annex is not a stand-alone document and it is used as a supplementary file to the verified EPD for technical Insulation.

Below the impact assessment results and life cycle indicators are presented, for all the possible facing options that can be available in a ROCKWOOL Technical Insulation product. If the provided product has the specific facing, its final impact result is given by adding the result of the product, as calculated above, and the result of the specific facing option. Both results are expressed per m² therefore no additional conversion is needed, The final result is given by the formula:

$$\text{Environmental Impact per m}^2 \text{ product X-with facing} = \text{Environmental Impact product X without facing} + \text{Environmental Impact facing material}$$

The disposal scenario for the fibrous tissue is assumed to be landfill for all the facing options.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² Black Mat Facer (black tissue)

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
GWP	[kg CO₂-Eq.]	2,04E-01	5,45E-03	0,00E+00	0,00E+00	0,00E+00	8,57E-04	0,00E+00	1,46E-03	0,00E+00
ODP	[kg CFC11-Eq.]	3,72E-19	7,88E-19	0,00E+00	0,00E+00	0,00E+00	1,42E-19	0,00E+00	8,39E-18	0,00E+00
AP	[kg SO₂-Eq.]	1,16E-03	4,24E-06	0,00E+00	0,00E+00	0,00E+00	7,28E-07	0,00E+00	8,72E-06	0,00E+00
EP	[kg (PO₄)³-Eq.]	7,94E-05	9,09E-07	0,00E+00	0,00E+00	0,00E+00	1,62E-07	0,00E+00	9,61E-07	0,00E+00
POCP	[kg ethene-Eq.]	7,55E-05	1,82E-08	0,00E+00	0,00E+00	0,00E+00	2,95E-09	0,00E+00	6,89E-07	0,00E+00
ADPE	[kg Sb-Eq.]	7,97E-06	3,64E-10	0,00E+00	0,00E+00	0,00E+00	6,62E-11	0,00E+00	5,34E-10	0,00E+00
ADPF	[MJ]	3,03E+00	6,67E-02	0,00E+00	0,00E+00	0,00E+00	1,17E-02	0,00E+00	2,05E-02	0,00E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: Black Mat Facer (black tissue)

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
PERE	[MJ]	6,09E-01	3,64E-03	0,00E+00	0,00E+00	0,00E+00	6,82E-04	0,00E+00	2,70E-03	0,00E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	6,09E-01	3,64E-03	0,00E+00	0,00E+00	0,00E+00	6,82E-04	0,00E+00	2,70E-03	0,00E+00
PENRE	[MJ]	3,30E+00	6,67E-02	0,00E+00	0,00E+00	0,00E+00	1,18E-02	0,00E+00	2,09E-02	0,00E+00
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,30E+00	6,67E-02	0,00E+00	0,00E+00	0,00E+00	1,18E-02	0,00E+00	2,09E-02	0,00E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	7,45E-04	6,67E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-06	0,00E+00	5,27E-06	0,00E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: Black Mat Facer (black tissue)

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
HWD	[kg]	3,75E-09	3,81E-09	0,00E+00	0,00E+00	0,00E+00	6,55E-10	0,00E+00	3,59E-10	0,00E+00
NHWD	[kg]	1,88E-02	5,54E-06	0,00E+00	0,00E+00	0,00E+00	9,53E-07	0,00E+00	9,77E-02	0,00E+00
RWD	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	MND	MNR	MNR	MND	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² Reinforced foil facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
GWP	[kg CO₂-Eq.]	4,58E-01	3,03E-03	0,00E+00	0,00E+00	0,00E+00	4,26E-04	0,00E+00	7,43E-04	0,00E+00
ODP	[kg CFC11-Eq.]	1,89E-19	4,24E-19	0,00E+00	0,00E+00	0,00E+00	7,09E-20	0,00E+00	4,05E-18	0,00E+00
AP	[kg SO₂-Eq.]	2,14E-03	2,42E-06	0,00E+00	0,00E+00	0,00E+00	3,65E-07	0,00E+00	4,05E-06	0,00E+00
EP	[kg (PO₄)³-Eq.]	1,33E-04	4,85E-07	0,00E+00	0,00E+00	0,00E+00	8,11E-08	0,00E+00	4,73E-07	0,00E+00
POCP	[kg ethene-Eq.]	1,34E-04	1,21E-08	0,00E+00	0,00E+00	0,00E+00	1,35E-09	0,00E+00	3,38E-07	0,00E+00
ADPE	[kg Sb-Eq.]	1,60E-07	1,82E-10	0,00E+00	0,00E+00	0,00E+00	3,31E-11	0,00E+00	2,70E-10	0,00E+00
ADPF	[MJ]	5,18E+00	3,64E-02	0,00E+00	0,00E+00	0,00E+00	5,81E-03	0,00E+00	1,01E-02	0,00E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: Reinforced foil facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
PERE	[MJ]	2,50E+00	1,82E-03	0,00E+00	0,00E+00	0,00E+00	3,45E-04	0,00E+00	1,35E-03	0,00E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,50E+00	1,82E-03	0,00E+00	0,00E+00	0,00E+00	3,45E-04	0,00E+00	1,35E-03	0,00E+00
PENRE	[MJ]	6,20E+00	3,03E-02	0,00E+00	0,00E+00	0,00E+00	5,88E-03	0,00E+00	1,08E-02	0,00E+00
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	6,20E+00	3,03E-02	0,00E+00	0,00E+00	0,00E+00	5,88E-03	0,00E+00	1,08E-02	0,00E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	6,22E-03	3,03E-06	0,00E+00	0,00E+00	0,00E+00	5,74E-07	0,00E+00	2,64E-06	0,00E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: Reinforced foil facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
HWD	[kg]	4,98E-09	1,90E-09	0,00E+00	0,00E+00	0,00E+00	3,27E-10	0,00E+00	1,79E-10	0,00E+00
NHWD	[kg]	1,22E-01	2,77E-06	0,00E+00	0,00E+00	0,00E+00	4,76E-07	0,00E+00	4,89E-02	0,00E+00
RWD	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² Fiberglass facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
GWP	[kg CO_2-Eq.]	6,26E-02	1,68E-03	0,00E+00	0,00E+00	0,00E+00	2,63E-04	0,00E+00	4,49E-04	0,00E+00
ODP	[kg CFC11-Eq.]	1,14E-19	2,42E-19	0,00E+00	0,00E+00	0,00E+00	4,37E-20	0,00E+00	2,58E-18	0,00E+00
AP	[kg SO_2-Eq.]	3,56E-04	1,30E-06	0,00E+00	0,00E+00	0,00E+00	2,24E-07	0,00E+00	2,68E-06	0,00E+00
EP	[kg $(PO_4)^3$-Eq.]	2,44E-05	2,79E-07	0,00E+00	0,00E+00	0,00E+00	4,98E-08	0,00E+00	2,95E-07	0,00E+00
POCP	[kg ethene-Eq.]	2,32E-05	5,59E-09	0,00E+00	0,00E+00	0,00E+00	9,06E-10	0,00E+00	2,12E-07	0,00E+00
ADPE	[kg Sb-Eq.]	2,45E-06	1,12E-10	0,00E+00	0,00E+00	0,00E+00	2,03E-11	0,00E+00	1,64E-10	0,00E+00
ADPF	[MJ]	9,30E-01	2,05E-02	0,00E+00	0,00E+00	0,00E+00	3,58E-03	0,00E+00	6,29E-03	0,00E+00
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources										

RESULTS OF THE LCA - RESOURCE USE: Fiberglass facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
PERE	[MJ]	1,87E-01	1,12E-03	0,00E+00	0,00E+00	0,00E+00	2,10E-04	0,00E+00	8,31E-04	0,00E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,87E-01	1,12E-03	0,00E+00	0,00E+00	0,00E+00	2,10E-04	0,00E+00	8,31E-04	0,00E+00
PENRE	[MJ]	1,02E+00	2,05E-02	0,00E+00	0,00E+00	0,00E+00	3,61E-03	0,00E+00	6,44E-03	0,00E+00
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,02E+00	2,05E-02	0,00E+00	0,00E+00	0,00E+00	3,61E-03	0,00E+00	6,44E-03	0,00E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	2,29E-04	2,05E-06	0,00E+00	0,00E+00	0,00E+00	3,53E-07	0,00E+00	1,62E-06	0,00E+00
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: Fiberglass facer

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
HWD	[kg]	1,15E-09	1,17E-09	0,00E+00	0,00E+00	0,00E+00	2,01E-10	0,00E+00	1,10E-10	0,00E+00
NHWD	[kg]	5,78E-03	1,70E-06	0,00E+00	0,00E+00	0,00E+00	2,93E-07	0,00E+00	3,00E-02	0,00E+00
RWD	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy										

ROCKWOOL Cavityrock®: Stone Wool Insulation, Exterior Products (unfaced) by ROCKWOOL Inc.

Health Product Declaration v2.2
created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 27799
CLASSIFICATION: 07 21 13 Board Insulation
PRODUCT DESCRIPTION: ROCKWOOL Cavityrock® is a semi-rigid stone wool insulation board designed for exterior cavity and rainscreen applications available in mono-density up to 2" and dual-density in thicknesses of 2.5" to 6". Cavityrock offers superior long-term thermal efficiency, fire resistance, moisture control, acoustic performance and are compatible with numerous framing systems and cladding attachment systems. Rockwool™ is part of Rockwool International A/S, also known as Rockwool Group.

Section 1: Summary

Basic Method / Product Threshold

CONTENT INVENTORY

Inventory Reporting Format
○ Nested Materials Method
◉ Basic Method

Threshold Disclosed Per
○ Material
◉ Product

Threshold Level
◉ 100 ppm
○ 1,000 ppm
○ Per GHS SDS
○ Other

Residuals/Impurities
◉ Considered
○ Partially Considered
○ Not Considered

Explanation(s) provided for Residuals/Impurities?
◉ Yes ○ No

All Substances Above the Threshold Indicated Are:

Characterized   ○ Yes Ex/SC ◉ Yes ○ No
% weight and role provided for all substances.

Screened   ○ Yes Ex/SC ◉ Yes ○ No
All substances screened using Priority Hazard Lists with results disclosed.

Identified   ○ Yes Ex/SC ○ Yes ◉ No
One or more substances not disclosed by Name (Specific or Generic) and Identifier and/ or one or more Special Condition did not follow guidance.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

MATERIAL | SUBSTANCE | *RESIDUAL OR IMPURITY*
GREENSCREEN SCORE | HAZARD TYPE

ROCKWOOL CAVITYROCK®: STONE WOOL INSULATION, EXTERIOR PRODUCTS (UNFACED) [STONE WOOL, BIOSOLUBLE LT-UNK SYRUPS, HYDROLYZED STARCH NoGS PHENOL, POLYMER WITH FORMALDEHYDE LT-P1 | RES UREA LT-UNK UNDISCLOSED LT-1]

Number of Greenscreen BM-4/BM3 contents ... 0

Contents highest concern GreenScreen Benchmark or List translator Score ... LT-1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

This product is not considered identified due to the proprietary nature of some chemicals within the product's formulation.

VOLATILE ORGANIC COMPOUND (VOC) CONTENT
VOC Content data is not applicable for this product category.

CERTIFICATIONS AND COMPLIANCE *See Section 3 for additional listings.*

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Classroom & Office scenario
LCA: Environmental Product Declaration

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Material Ingredients Option 1

Third Party Verified?	PREPARER: Self-Prepared	SCREENING DATE: 2021-03-05
○ Yes	VERIFIER:	PUBLISHED DATE: 2022-03-14
◉ No	VERIFICATION #:	EXPIRY DATE: 2024-03-05

⬢ Section 2: Content in Descending Order of Quantity

This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- *Basic Inventory method with Product-level threshold.*
- *Nested Material Inventory method with Product-level threshold*
- *Nested Material Inventory method with individual Material-level thresholds*

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.2, available on the HPDC website at: *www.hpd-collaborative.org/hpd-2-2-standard*

ROCKWOOL CAVITYROCK®: STONE WOOL INSULATION, EXTERIOR PRODUCTS (UNFACED)

PRODUCT THRESHOLD: 100 ppm

RESIDUALS AND IMPURITIES CONSIDERED: Yes

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities were considered following standard industry methods.

OTHER PRODUCT NOTES: This declaration is based on pre-cured breakdown of the material ingredients. A mixture of chemicals called binder is applied on the stone wool fibers to adhere them together. The liquid binder turns into solid after chemicals react during the curing process. Therefore, hazard warnings on the HPD might not be applicable as the physical state of a chemical changes during the curing process.

STONE WOOL, BIOSOLUBLE
ID: 65997-17-3

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library**   HAZARD SCREENING DATE: **2021-03-05 13:23:07**

%: **95.0000 - 100.0000**   GS: **LT-UNK**   RC: **PreC**   NANO: **No**   SUBSTANCE ROLE: **Structure component**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: Stone wool products produced by ROCKWOOL are continually monitored and are in fulfilment of the CLP regulation Annex VI Note Q conditions (stone wool can also be referenced by the EC Number: 926-099-9).

The pre-consumer recycled content comes primarily from recycled slag.

The percent by weight of the substance is disclosed as a range to account for variances across the products covered by this HPD.

SYRUPS, HYDROLYZED STARCH
ID: 8029-43-4

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library**   HAZARD SCREENING DATE: **2021-03-05 13:23:07**

%: **1.0000 - 2.0000**   GS: **NoGS**   RC: **None**   NANO: **No**   SUBSTANCE ROLE: **Binder**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: Forms part of the binder which adheres the fibres in the final product.

The percent by weight of the substance is disclosed as a range to account for variances across the products covered by this HPD.

PHENOL, POLYMER WITH FORMALDEHYDE
ID: 9003-35-4

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library**   HAZARD SCREENING DATE: **2021-03-05 13:23:07**

%: **0.0000 - 5.0000**   GS: **LT-P1**   RC: **None**   NANO: **No**   SUBSTANCE ROLE: **Binder**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
RES	AOEC - Asthmagens	Asthmagen (Rs) - sensitizer-induced

SUBSTANCE NOTES: Forms part of the binder which adheres the fibres in the final product.

The percent by weight of the substance is disclosed as a range to account for variances across the products covered by this HPD.

UREA ID: **57-13-6**

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2021-03-05 13:23:08**

%: **0.0000 - 1.0000** GS: **LT-UNK** RC: **None** NANO: **No** SUBSTANCE ROLE: **Binder**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: Forms part of the binder which adheres the fibres in the final product.

The percent by weight of the substance is disclosed as a range to account for variances across the products covered by this HPD.

UNDISCLOSED ID: **Undisclosed**

HAZARD SCREENING METHOD: **Toxnot Chemical Hazard Screening Library** HAZARD SCREENING DATE: **2021-01-20 15:24:33**

%: **0.0000 - 1.0000** GS: **LT-1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Dedusting**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: A de-duster oil used to control and reduce dust. The de-duster oil is considered proprietary by the manufacturer.

The percent by weight of the substance is disclosed as a range to account for variances across the products covered by this HPD.

Section 3: Certifications and Compliance

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Section 01350/CHPS) - Classroom & Office scenario		

CERTIFYING PARTY: Self-declared
APPLICABLE FACILITIES: Grand Forks, British Columbia, Canada; Milton, Ontario, Canada; and Marshall County, Mississippi, USA
CERTIFICATE URL:
https://www.rockwool.com/about/sustainability/certifications-and-listings/#voc

ISSUE DATE: 2020-09-17   **EXPIRY DATE:**   **CERTIFIER OR LAB:** UL Environment

CERTIFICATION AND COMPLIANCE NOTES: Although Cavityrock® (<2", 2") and Cavityrock® (2.5", >2.5") are intended for use in exterior insulation applications, Rockwool is aware that project teams occasionally use the products for interior insulation applications. As such, testing conducted by UL Environment demonstrates the products compliance with CDPH Standard Method V1.2 (Section 01350/CHPS) under the classroom environment scenario.

LCA	Environmental Product Declaration		

CERTIFYING PARTY: Third Party
APPLICABLE FACILITIES: Grand Forks, British Columbia, Canada; Milton, Ontario, Canada; and Marshall County, Mississippi, USA
CERTIFICATE URL:
https://www.rockwool.com/siteassets/o2-rockwool/documentation/epd/rockwool-stone-wool-environmental-product-declaration-epd.pdf#

ISSUE DATE: 2019-07-17   **EXPIRY DATE:** 2024-06-17   **CERTIFIER OR LAB:** UL Environment

CERTIFICATION AND COMPLIANCE NOTES: The environmental impact reference product was SAFE'n'SOUND®. To calculate product-specific environmental impacts of the products covered by this HPD, apply the relevant scaling factor found on page 3 of the EPD (as well as the environmental impact factor for faced materials, if applicable, which can be found in the Annex of the EPD).

Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

This HPD covers the following products: Cavityrock® (<2", 2") and Cavityrock® (2.5", >2.5"). These products have the same compositional chemistry, except at different percent by weights. This variance is limited to 10% or less of the total mass of each product.

MANUFACTURER INFORMATION

MANUFACTURER: **ROCKWOOL Inc.**
ADDRESS: **8024 Esquesing Line**
Milton Ontario L9T 6W3, Canada
WEBSITE: **rockwool.com**

CONTACT NAME: **Alejandra Nieto**
TITLE: **Technical Manager - Sustainability & Research**
PHONE: **1-800-265-6878**
EMAIL: **alejandra.nieto@rockwool.com**

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity
CAN Cancer
DEV Developmental toxicity
END Endocrine activity
EYE Eye irritation/corrosivity
GEN Gene mutation
GLO Global warming

LAN Land toxicity
MAM Mammalian/systemic/organ toxicity
MUL Multiple
NEU Neurotoxicity
NF Not found on Priority Hazard Lists
OZO Ozone depletion
PBT Persistent, bioaccumulative, and toxic

PHY Physical hazard (flammable or reactive)
REP Reproductive
RES Respiratory sensitization
SKI Skin sensitization/irritation/corrosivity
UNK Unknown

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)
LT-P1 List Translator Possible 1 (Possible Benchmark-1)

LT-1 List Translator 1 (Likely Benchmark-1)
LT-UNK List Translator Benchmark Unknown (the chemical is present on at least one GreenScreen Specified List, but the information contained within the list did not result in a clear mapping to a LT-1 or LTP1 score.)
NoGS No GreenScreen.

Recycled Types

PreC Pre-consumer recycled content
PostC Post-consumer recycled content
UNK Inclusion of recycled content is unknown
None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material
Nested Method / Product Threshold Substances listed within each material per threshold indicated per product
Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology
Third Party Verified Verification by independent certifier approved by HPDC
Preparer Third party preparer, if not self-prepared by manufacturer
Applicable facilities Manufacturing sites to which testing applies