

Paroc products in LEED certifications

LEED BD+C v4 and v4.1 material requirements



PREFACE

This document is an assessment of the compliance of Paroc products with LEED environmental rating system requirements. The aim is to present the environmental qualities of Paroc products as well as highlight the essential Paroc sustainable best practices. The features have been presented in a way that contributes to meeting the requirements of global environmental certifications.

This document applies to all Paroc products produced in Sweden, Finland, Lithuania, Russia and Poland.

The following environmental rating systems for buildings are assessed:

- LEED v4.1 Building Design + Construction
- LEED v4 Building Design + Construction



The document focuses on providing information on how well Paroc products follow LEED's guidelines in different categories. Especially in categories Materials and Resources (MR 2, 3, 4 and 5) and Indoor Environmental Quality (IEQ 2). Additionally, Paroc products do have a contribution towards EA 2 Optimize energy performance, IEQ 5 Thermal Comfort and IEQ 9 Acoustic Performance, where insulation products contribute on general a level. Separate documents are not required to prove these categories' requirements.

All the necessary certificates can be found on the Paroc website or be provided upon request via customer service.

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GENERAL CONTRIBUTION

The table below shows LEED assessment categories that Paroc products contribute to. In some credits the criteria's requirements can't be met with only one product, or credit awarding depends on many other aspects too without any link on the products. Therefore, the contribution of Paroc products to most of the credits is lower than the total credits available.

	Energy and Atmosphere Contribution	Total credits available	
	EA Optimized energy performance	18 (+1)	1 (+1)
	Materials and Resources Contribution	Total credits available	
	MR Environmental product declarations	2 (+1)	1 (+1)
	MR Sourcing of raw materials	2 (+1)	2 (+1)
	MR Material ingredients	1 (+1)	1 (+1)
	MR C&D waste management	2 (+1)	2 (+1)
	Indoor Environmental Quality Contribution	Total credits available	
	IEQ Low emitting materials	3 (+1)	1 (+1)
	IEQ Thermal comfort	1	1
	IEQ Acoustic performance	1 (+1)	1 (+1)

Note: The +1 in the table means that there is an exemplary performance credit available if the exemplary level criteria of the credit have been met.

CREDITS THAT REQUIRE DOCUMENTATION OF PAROC PRODUCTS

Materials and Resources



MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 1

Paroc practices in brief

- **Type III EPD's** according to **EN 15804, ISO 21930 and ISO 14025** for Building Insulation -products
- **Self-declared EPD's** for Technical Insulation -products, type III EPD's available later 2022

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>All Paroc's Building Insulation -products have a product specific type III EPD. Technical Insulation -products will have product specific type III EPDs publicly available early 2022 latest.</p> <p>Paroc BI products contribute with 1 product for this credit. Paroc TI products contribute with 0,25 product for this credit (will be 1 product after type III EPDs are published).</p>
Assessment	<p>One credit can be achieved by using at least 20 different permanently installed products sourced from at least five different manufacturers have either a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 or an EPD according to ISO 14025, ISO 14040 and ISO 14044 and EN 15804 or ISO 21930.</p>
Documents	<p>Product specific EPD's from company website</p>

LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>All Paroc's Building Insulation -products have a product specific type III EPD. Technical Insulation -products will have product specific type III EPDs publicly available early 2022 latest.</p> <p>Paroc BI products contribute with 1,5 products for this credit. Paroc TI products contribute with 1 product for this credit (will be 1,5 products after type III EPDs are published).</p>
Assessment	<p>One credit can be achieved by using at least 20 different permanently installed products sourced from at least five different manufacturers (10 different permanently installed products from three different manufacturers for Core & Shell and Warehouses & Distribution Centers) that have either a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 or an EPD according to ISO 14025, ISO 14040 and ISO 14044 and EN 15804 or ISO 21930.</p>
Documents	<p>Product specific EPD's from company website</p>

PAROC PRACTICES IN DETAIL

- Paroc EPD's for Building Insulation -products follow the ISO 14025, ISO 21930 and EN 15804 standards. These type III EPD's include products produced in the Finnish (eXtra, Natura), Swedish (eXtra, Klimstskiva™ ZERO), Polish (UNS 37) and Lithuanian (Ultra) factories and that have no facing or other features other than stone wool on them.
- Paroc also has three international EPD's for Technical Insulation -products that cover all production plants in Finland, Sweden, Poland and Lithuania. These EPD's also cover products with no facing and have been divided into three groups based on the same density categories as the Finland and Sweden specific EPD's. There are international EPD's for products with an average density of 35 kg/m³, 93 kg/m³ and 144 kg/m³ which are equivalent with the less than 70 kg/m³, 70–120 kg/m³ and more than 120 kg/m³ categories. These EPD's are self-declarations done in accordance with the EN 15804 standard.
- Paroc is currently working on type III EPD's for Technical Insulation -products that follow ISO 14025, ISO 21930 and EN 15804 standards.
- The EPD's for Building Insulation -products have been based on 1 m² of product, with Cradle to Grave -scope
- The EPD's for Technical Insulation -products have been based on 1 m³ of product, with Cradle to Grave -scope

MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 2

Paroc practices in brief

- **Type III EPD's** according to **EN 15804, ISO 21930 and ISO 14025**
- Both EPD types contain information on the **CO₂, CFC-11, SO₂, phosphate and ethene (C₂H₄)** emissions, but the emissions are not benchmarked

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	Both the type III EPDs and the self declared EPD's contain information on the amounts of emissions in the following categories: CO₂, CFC-11, SO₂, phosphate and ethene (C₂H₄) which account for four of the required categories. This credit can not be awarded yet with Option 2 because impacts categories are not benchmarked, though plan is to publish Optimized EPDs in the upcoming years.
Assessment	Based on costs, 50 % of the permanently installed products must be third party certified products that demonstrate impact reduction below industry average in at least three of the following categories: kg CO ₂ -e; kg CFC-11, kg H+ or SO ₂ ; kg nitrogen or phosphate; and formation of tropospheric ozone (kg NO _x , kg O ₃ or ethene C ₂ H ₄) as well as depletion of nonrenewable energy resources (MJ).
Documents	-

LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	Both the type III EPDs and the self declared EPD's contain information on the amounts of emissions in the following categories: CO₂, CFC-11, SO₂, phosphate and ethene (C₂H₄) which account for four of the required categories. This credit can not be awarded yet because impact categories are not benchmarked, though plan is to publish Optimized EPDs.
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Assessment	Use at least 5 permanently installed products sourced from at least three different manufacturers that have a compliant embodied carbon optimization report or action plan separate from the LCA or EPD. Reports include such factors as reduction in GWP relative to baseline and reduction in impact categories (kg CO ₂ -e; kg CFC-11, kg H ₂ O or SO ₂ ; kg nitrogen or phosphate; and formation of tropospheric ozone (kg NO _x , kg O ₃ or ethene C ₂ H ₄) as well as depletion of nonrenewable energy resources (MJ)) relative to baseline
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Documents	-
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MR 3 RESPONSIBLE SOURCING OF MATERIALS

Paroc practices in brief

- Self-reported **Corporate Sustainability Report (CSR)** according to **GRI** guidelines
- **REWOOL®** system for Extended Producer Responsibility (**EPR**)

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>Option 1 - Sustainability Report by OC according to GRI, third party verification from SCS Global Services according to AccountAbility's AA1000 Principles.</p> <p>Option 2 - REWOOL® (0,5 valuation factor for EPR system) & recycled content (content and valuation varies between production plants)</p>
Assessment	<p>In option 1 (1 point), use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria.</p> <p>AND/OR</p> <p>In option 2 (1 point), use products that meet at least one of the responsible extraction criteria for at least 25%, by cost, of the total value of permanently installed building products in the project.</p>
Documents	<p>Owens Corning Sustainability Report from company website</p> <p>REWOOL® information from company website</p> <p>Recycled content document given upon request</p>

LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	REWOOL® (0,5 valuation factor for EPR system) & recycled content (content and valuation varies between production plants)
Assessment	Use products sourced from at least three different manufacturers that meet at least one of the responsible sourcing and extraction criteria for at least 15% (1 point) or 30% (2 points), by cost, of the total value of permanently installed building products in the project. Exemplary from achieving 45 %.
Documents	REWOOL® document from company website Recycled content document given upon request

PAROC PRACTICES IN DETAIL

- When it comes to corporate sustainability reporting (CSR), Paroc does self-reporting and follows the guidelines of GRI (Global Reporting Initiative) providing information on the company's sustainable practices and principles. The report is verified by SCS Global Services according to AccountAbility's AA1000 Principles.
- In order to minimize environmental impacts and the amount of stone wool ending up in landfills from construction sites, Paroc also has created an Extended Producer Responsibility (EPR) system called REWOOL®. In short, Paroc takes back pure and recyclable excess stone wool from construction sites which is then directed back to the Paroc production line and used to produce new Paroc products.

MR 4 MATERIAL INGREDIENTS

Paroc practices in brief

- **No substances** listed on the REACH **Authorization** or **Candidate** or **Restriction** list used in Paroc stone wool products

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>Paroc stone wool products contain no substances of very high concern listed in the REACH Authorization or Candidate list.</p> <p>Contribution towards option 2. Products are valued at a 100 % weight, by cost, in the credit calculations.</p>
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Assessment	<p>In option 1 (1 point), Use at least 20 different permanently installed products from at least five different manufacturers that use any of the identified programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).</p> <p>AND/OR</p> <p>In option 2 (1 point), use products that document their material ingredient optimization using the paths identified in the criteria for at least 25%, by cost, of the total value of permanently installed products in the project.</p>
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Documents	REACH statement, latest version given upon request
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LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>Paroc stone wool products contain no substances of very high concern listed in the REACH Authorization or Candidate or Restriction list.</p> <p>Contribution towards option 2, international pathway. Products are valued for 1 product in the credit calculations.</p>
Assessment	<p>In option 1 (1 point), use at least 20 different permanently installed products from at least five different manufacturers that use any of the identified programs to demonstrate the chemical inventory of the product to at least 0.1% (1,000 ppm). (10 different permanently installed products from at least three different manufacturers for CS and Warehouses & Distribution Centers)</p> <p>AND/OR</p> <p>In option 2 (1 point), Use products that have a compliant material ingredient report or action plan. Use at least 5 permanently installed products sourced from at least three different manufacturers. Exemplary from 10 products from 5 different manufacturers.</p>
Documents	<p>REACH statement, latest version given upon request</p>

PAROC PRACTICES IN DETAIL

- Paroc stone wool products do not contain (nor are they added in production) substances mentioned in the Candidate list (substances of very high concern), Authorization list or Restriction list of REACH, therefore products apply with the compliant material ingredient report.

MR 2, 3, & 4 – LOCALLY SOURCED PRODUCTS

LEED V4 AND V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	Paroc's production plants are located in Hällekis and Hässleholm (Sweden), Parainen (Finland), Vilnius (Lithuania), Izoplit (Russia) and Trzemeszno (Poland).
Assessment	V4 & V4.1: For credit achievement calculations (in MR 2, MR 3 and MR 4), products sourced (extracted, manufactured and purchased) within 160 km (100 miles) of the project site are valued at maximum of 200% of their base contribution cost.
Documents	Documents are given upon request

PAROC PRACTICES IN DETAIL

- Paroc products are manufactured in Sweden, Finland, Lithuania, Russia and Poland. Raw materials are harvested from various locations in Europe. Further details on regional materials and harvesting or production locations of various Paroc products will be given project-specifically upon request.

MR 5 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

Paroc practices in brief

- The Paroc stone wool products are **recyclable**
- Paroc has the **REWOOL® system in Finland and Sweden** (available for Paroc customers)

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution

Paroc stone wool is recyclable and can help the constructor to meet their recycling and waste prevention targets, if insulation waste materials are collected separately. Paroc has a REWOOL® system in place to take back recyclable stone wool.

Contribution towards option 1 for 2 credits, 75 % recycling rate.

Assessment

In option 1 (1-2 points), at least 50 % of the construction site or demolition waste, including waste from a minimum of three different waste streams, has to be recycled. An additional point is awarded if the recycling rate exceeds 75 % and at least 4 different waste streams are included.

OR

In option 2 (2 points), do not generate more than 12.2 kg/m² of waste of the building's floor area.

Documents

Documentation from Paroc upon request

LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>Paroc stone wool is recyclable and can help the constructor to meet their recycling and waste prevention targets, if insulation waste materials are collected separately. Paroc has a REWOOL® system in place to take back recyclable stone wool.</p> <p>Contribution towards both options, 50 % recycling rate (1 credit) or less than 50 kg/m² through reuse and source reduction desing (2 credits).</p>
Assessment	<p>In option 1 (1 point), by following the Waste Management Plan divert at least 50% of the total construction and demolition materials from landfills and incineration facilities.</p> <p>AND/OR</p> <p>In option 2 (1-2 points), prevent waste through reuse and source reduction design strategies. Generate less than 75 kg/m² (1 point) or 50 kg/m² (2 points).</p>
Documents	<p>Document upon request from the company about amount of recycled wool</p>

PAROC PRACTICES IN DETAIL

- The stone wool products can be reused. Waste from newly produced stone wool can be reused on the site. It can, for example, be used as a base layer when insulating attic floors before a blowing wool installation is carried out or by being turned into blowing wool.
- Paroc has a REWOOL® system in place to collect recyclable stone wool from construction sites. The goal is to maximize the amount of stone wool that can be recycled. With the REWOOL® system, surplus insulation is recycled and turned into new stone wool insulation, instead of being disposed of as waste. The REWOOL® system involves the collection and transport of waste wool for the production of new stone wool. A small fee is charged for collecting the waste wool, as well as for transport costs, thus avoiding the need for landfill disposal.

Indoor Environmental Quality



IEQ 2 LOW-EMITTING MATERIALS

Paroc practices in brief

- **M1 classifications** for nearly all products
- Eurofins "**Indoor Air Comfort GOLD**" product certifications for several technical insulation products

LEED V4 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	<p>Several Paroc products have a Finnish M1 classification which is compliant with the credit requirements (General Emissions Evaluation) in Europe. In addition, several TI products have Indoor Air Comfort Gold classification which is compliant with both, emission and content evaluation.</p> <p>Contribution towards ceiling, wall, thermal and acoustic insulation category.</p>
Assessment	<p>Achieve the threshold level of compliance with emissions and content standards for the number of product categories introduced. Credits based on the project scope, 2-7 categories for 1-3 credits</p> <p>Ceilings, walls, thermal and acoustic insulation products are evaluated as one category and evaluation is based on the General Emissions Evaluation (VOC emission evaluation). 100 % of the ceilings, walls, thermal and acoustic insulation products must meet the evaluation.</p>
Documents	<p>M1 classifications: http://m1.rts.fi/en/</p> <p>M1 certificates available also on company website</p> <p>Indoor Air Comfort Gold classifications from company website</p>

LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

Paroc contribution	Several Paroc products have a Finnish M1 classification which is compliant with the credit requirements (General Emissions Evaluation) in Europe. In addition, several TI products have Indoor Air Comfort Gold classification which is compliant with both emission and content evaluation. Contribution towards insulation category.
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Assessment	Use materials on the building interior (everything within the waterproofing membrane) that meet the low-emitting criteria. Points are awarded according to number of categories counted as low-emitting. 2-4 categories for 1-3 credits. Exemplary for additional category (5th) or 90 % threshold achieved in three categories (additional point if only 2 credits achieved). At least 75 % of the insulation materials must meet the VOC emission evaluation for the category to be counted as low-emitting.
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Documents	M1 classifications: http://m1.rts.fi/en/ M1 certificates available also on company website Indoor Air Comfort Gold classifications from company website
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PAROC PRACTICES IN DETAIL

- Nearly all Paroc products have a Finnish M1 emission classification, which is compliant with the General Emission Evaluation to be counted as low-emitting materials in the Insulation category for V4.1 and ceiling, wall, thermal and acoustic insulation category for V4. A list of Paroc products with a M1 classification can be found on the Finnish Rakennustieto website at <http://m1.rts.fi/en/> also from company website.
- Several Technical Insulation -products have Indoor Air Comfort Gold -certification which is compliant with the General Emission Evaluation to be counted as low-emitting materials in the insulation category for V4.1 and ceiling, wall, thermal and acoustic insulation category for V4.

CREDITS THAT REQUIRE NO DOCUMENTATION OF PAROC PRODUCTS

Paroc products have a general contribution towards following categories and credits. Products can be used in systems that have effect on the credit but by themselves have no effect whether the credit is achieved or not. Therefore, no documentation is needed to prove credit compatibility.

ENERGY AND ATMOSPHERE

EA 2 – Optimize Energy Performance

Analyze efficiency measures during the design process and account for the results in design decision making. Use energy simulation of efficiency opportunities, past energy simulation analyses for similar buildings, or published data (e.g., Advanced Energy Design Guides) from analyses for similar buildings.

Analyze efficiency measures, focusing on load reduction and HVAC-related strategies (passive measures are acceptable) appropriate for the facility. Project potential energy savings and holistic project cost implications related to all affected systems.

PAROC® stone wool products are excellent thermal insulators, the use of which reduces heat loss through the building envelope. Reducing heat losses substantially reduces the building's heating and cooling energy need and the carbon dioxide emissions generated during use of the building.

The use of Paroc stone wool products therefore effect on the credit calculations.

INDOOR ENVIRONMENTAL QUALITY

IEQ 5 – Thermal Comfort

*Design heating, ventilating, and air-conditioning (HVAC) systems and **the building envelope** to meet the requirements of ASHRAE Standard 55–2017, Thermal Comfort Conditions for Human Occupancy with errata or a local equivalent.*

PAROC® stone wool products are used to improve the energy efficiency of the entire building envelope and technical installations. Good energy efficiency evens out the building's thermal conditions, creating pleasant living conditions and thermal comfort.

The use of Paroc stone wool products therefore effect on the credit calculations.

IEQ 9 – Acoustic performance

Provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.

For all occupied spaces, meet two of the following: HVAC background noise, Sound Transmission, and/or Reverberation time. Meet all three for an exemplary performance point.

PAROC® stone wool products are excellent sound absorbers. The porous composition of stone wool dampens sound and thus improves the sound insulation of structures.

The use of Paroc stone wool products therefore effect on the credit calculations.