LEED version 4.1

PRODUCT DATA FOR CERTIFICATION

MINERAL PLUS WITH ECOSE TECHNOLOGY

LEEDv4.1 (Leadership in Energy and Environmental Design) is a voluntary standard that defines high performance green buildings which are healthier, more environmentally responsible, and more profitable structures. Credits for certification can be earned in various categories, each with a unique focus on sustainable design: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation and design process.

KNAUF INSULATION products can put you on the right track for the highest result into the certification!

<table>
<thead>
<tr>
<th>LEED - Credit Category code</th>
<th>Definition</th>
<th>Knauf Insulation Products contribution</th>
<th>Contributes towards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy and Atmosphere (EA)</strong></td>
<td>To achieve increasing levels of performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.</td>
<td>ECOSE Technology products help reducing energy demand through very high insulation efficiency (building envelop, partition walls, HVAC equipment, floors and ceilings).</td>
<td>18 points</td>
</tr>
<tr>
<td><strong>Materials and Resources (MR)</strong></td>
<td>To encourage the use of products where Life Cycle Assessment (LCA) is available and have environmentally, economically and socially preferable LCA. To reward project including products with verified LCA.</td>
<td>Third party verified Environmental Product Declarations (EPDs) are available on line for ECOSE Technology products¹.</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>Materials and Resources (MR)</strong></td>
<td>To encourage the use of products where LCA is available and have environmentally, economically and socially preferable LCA. To reward project including products verified to be extracted or sourced in a responsible manner.</td>
<td>ECOSE Technology Products are manufactured with up to 80% of recycled content (pre-consumer and post-consumer waste)².</td>
<td>1 point</td>
</tr>
</tbody>
</table>

² [https://ibu-epd.com/](https://ibu-epd.com/)

For additional information please contact Sustainability@knaufinsulation.com
**LEED version 4.1**

**PRODUCT DATA FOR CERTIFICATION**

**MINERAL PLUS WITH ECOSE TECHNOLOGY**

---

<table>
<thead>
<tr>
<th>LEED - Credit Category code</th>
<th>Definition</th>
<th>Knauf Insulation Products contribution</th>
<th>Contributes towards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials and Resources (MR)</strong>&lt;br&gt;Building Product Disclosure and Optimization – Material Ingredients</td>
<td>To encourage the use of products where LCA is available and have environmentally, economically and socially preferable LCA. To reward project for which the products chemical ingredients are inventoried.</td>
<td>ECOSE Technology products contain no ingredients listed on the REACH Authorization or Candidate list or Substances of Very High Concern list.</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality (EQ)</strong>&lt;br&gt;Low-Emitting Materials</td>
<td>To reduce concentrations of chemical contaminants, as Volatile Organic Compound (VOC) that can damage air quality, human health, productivity and the environment. Emissions from ceilings, walls, thermal, and acoustic insulation are a complete category to be assessed.</td>
<td>ECOSE Technology products are compliant with the German AgBB Testing and Evaluation Scheme and the higher category (A+) of the French labelling. The binder is without added phenol formaldehyde. Products with or without facing, (with the exception of the black facing) are certified for Indoor Air Comfort5 Eurofins Gold.</td>
<td>3 points</td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality (EQ)</strong>&lt;br&gt;Acoustic Performance</td>
<td>To provide spaces that promote occupants’ well-being, productivity and communication through effective acoustic design.</td>
<td>ECOSE Technology products have high performance acoustic properties. Products reduce HVAC background noise levels, increase sound insulation of building envelope, partitions, ceilings and aid in controlling reverberation time.</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality (EQ)</strong>&lt;br&gt;Thermal Comfort</td>
<td>To promote occupants productivity, comfort, and well-being by providing quality thermal comfort.</td>
<td>Insulation is a design alternative strategy. Heat radiation and air-conditioning will be minimized which will have positive comfortability feel and increase productivity for workers.</td>
<td>1 point</td>
</tr>
</tbody>
</table>

---

**Annex 1: Materials and Resources: Sourcing of Raw Materials**

---

3 See annex 2

4 [www.product-testing.eurofins.com](http://www.product-testing.eurofins.com) and certificate in annex 3

5 See annex 4

---

For additional information please contact Sustainability@knaufinsulation.com
LEED version 4.1
PRODUCT DATA FOR CERTIFICATION
MINERAL PLUS WITH ECOSE TECHNOLOGY

Here below additional detailed information\(^6\) about pre-consumer waste (reintroduction of manufacturing scrap into another manufacturing process) and post-consumer waste (produced by the end consumer) utilized in the raw materials batch for the manufacturing of the ECOSE® technology glass mineral wool.

In LEED, total recycled content is the sum of \(100\%\) post-consumer recycled content plus \(50\%\) of the pre-consumer recycled content.

<table>
<thead>
<tr>
<th></th>
<th>Visé (B)</th>
<th>Lannemezan (Fr)</th>
<th>Krupka (Cz)</th>
<th>Bernburg (D)</th>
<th>Eskisehir (Tr)</th>
<th>Stupino (Ru)</th>
<th>Cwmbran (UK)</th>
<th>St Helens (UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% pre-consumer waste content</td>
<td>10.5%</td>
<td>4.3%</td>
<td>20.9%</td>
<td>27%</td>
<td>48.2%</td>
<td>0%</td>
<td>1.7%</td>
<td>0%</td>
</tr>
<tr>
<td>% post-consumer waste content</td>
<td>60.3%</td>
<td>58.7%</td>
<td>48%</td>
<td>32.9%</td>
<td>26%</td>
<td>44.1%</td>
<td>62.3%</td>
<td>79.5%</td>
</tr>
<tr>
<td>Total recycled content (100%) (\text{pre-consumer}+50%) (\text{post-consumer})</td>
<td>65.6%</td>
<td>60.8%</td>
<td>58.4%</td>
<td>46.4%</td>
<td>50.1%</td>
<td>44.1%</td>
<td>63.1%</td>
<td>79.5%</td>
</tr>
<tr>
<td>LEED MR 4 contributes towards 2 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recycled content claims must conform to the definition ISO 14021-1999.

**Pre-consumer waste**: waste comes from process waste that is used to make a different product. This definition does not include in-house industrial scrap or trimmings, which are normally fed back into the same manufacturing process.

**Post-consumer waste**: waste which comes from curbside recycling programs (glass, plastic, paper, etc). Other postconsumer feedstock is generated when construction and demolition debris is recycled. To be a feedstock, the raw materials must have served a useful purpose in the consumer market before being used again.

---

\(^6\) Data 2019

For additional information please contact Sustainability@knaufinsulation.com
LEED version 4.1
PRODUCT DATA FOR CERTIFICATION
MINERAL PLUS WITH ECOSE TECHNOLOGY

Annex 2: REACH and SVHC declaration.

Subject: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006

Dear Customer,

Thank you for your enquiry with regard to the following products:

KNAUF INSULATION MINERAL PLUS WITH ECOSE™ TECHNOLOGY PRODUCTS

Knauf Insulation has registered Mineral Wool Insulation fibre, manufactured or imported by its legal entities and used in the manufacture of the products listed above, under the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006.

The registered fibres meet the following definition:

- EC number: 925-099-9
- Definition: Man made vitreous (silicate) fibres with random orientation with alkaline and alkaline earth oxides (Na2O+K2O+CaO+MgO+B2O3) content greater than 18% by weight and fulfilling one of the nota Q conditions.
- Public name: MMVF type Q fibre
- Classification: Not classified (manmade vitreous (silicate) fibre with an index number of 60012-00-2 fulfilling one of the nota Q conditions in the Classification labelling, packaging regulations (CLP) (EC) No 1272/2008, as amended in regulation (EC) No 790/2009 and thus exempted from classification.

The registration is confirmed by the receipt of registration numbers for each of the listed legal entities by the European Chemical Agency (ECHA). The registration numbers are inscribed on the relevant company product safety data sheets.

Knauf Insulation Mineral Plus with ECOSE™ products do not contain any substances listed under the Candidate List of Substances of Very High Concern for Authorisation in concentration higher than 0.1% (w/w).

If you have any questions please do not hesitate to contact us; details below.

Bruno Stikli
Product Stewardship & Standardisation Manager
ads@knaufinsulation.com

Knauf Insulation SPRL
Rue de la Meulière 35, 4400 Vise - Belgium

For additional information please contact Sustainability@knaufinsulation.com
LEED version 4.1
PRODUCT DATA FOR CERTIFICATION
MINERAL PLUS WITH ECOSE TECHNOLOGY

Annex 3: Indoor Environmental Quality - Low-Emitting Materials

Here below, an example of Eurofins Indoor Air Comfort Gold Certificate for ECOSE products:
LEED version 4.1

PRODUCT DATA FOR CERTIFICATION

MINERAL PLUS WITH ECOSE TECHNOLOGY

Appendix to Certificate

IACG-323-01-37-2017

Knauf Insulation

receives the Indoor Air Comfort Gold certificate with validity 19 June 2022 for below product group, including subgroups and individual products listed in the following table:

<table>
<thead>
<tr>
<th>Product group</th>
<th>Production site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knauf Insulation unfaced Mineral Wool and Mineral Plus with ECOSE® Technology</td>
<td>Bernburg, Germany</td>
</tr>
<tr>
<td></td>
<td>Eskisehir, Turkey</td>
</tr>
<tr>
<td></td>
<td>Kocaeli, Czech Republic</td>
</tr>
<tr>
<td></td>
<td>Lannemezan, France</td>
</tr>
<tr>
<td></td>
<td>Vies, Belgium</td>
</tr>
</tbody>
</table>

The products in this group are based on identical or similar recipes and are produced under equivalent conditions. Grouping of the products and inspection of the production process is part of the Indoor Air Comfort Gold certification. A worst-case product, which is representative for the whole group, is being tested frequently.

For additional information please contact Sustainability@knaufinsulation.com
Annex 4: ECOSE product and sound absorption examples

STC in North America is the composite Sound Transmissions Class and is equivalent to Rw Sound Reduction Index in Europe. α coefficient is the coefficient for sound absorption.
LEED version 4.1
PRODUCT DATA FOR CERTIFICATION
MINERAL PLUS WITH ECOSE TECHNOLOGY

For additional information please contact Sustainability@knaufinsulation.com