BREEAM INTERNATIONAL NEW CONSTRUCTION
PRODUCT DATA FOR CERTIFICATION
ROCK MINERAL WOOL with ECOSE

BREEAM (Building Research Establishment Environmental Assessment Methodology) International New Construction\(^1\) is a voluntary standard that defines high performance green buildings which are healthier, more environmentally responsible and more profitable structures. Using independent assessors, BREEAM examines criteria covering a range of issues in sections that evaluate: management processes, health and wellbeing, energy, transport, water, materials, waste, land use and ecology, pollution and innovation.

KNAUF INSULATION products can put you on the right track to get the highest result for BREEAM certification.

<table>
<thead>
<tr>
<th>BREEAM - Credit Category code</th>
<th>Assessment Criteria and Definition</th>
<th>Knauf Insulation Products contribution</th>
<th>Contributes towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hea 02 Indoor air quality</td>
<td>Emissions from building products: the insulation materials are one of the 5 product types that needs to meet the emission limits. The following requirements are of application for insulation products: Formaldehyde ≤ 0.06 mg/m(^3); Total Volatile Organic Compounds ≤ 1.0 mg/m(^3); Carcinogens category 1A and B ≤ 0.001 mg/m(^3)</td>
<td>Rock Mineral Wool ECOSE products are in compliance with the higher category (A+) of the French labelling and with the requirements as without added formaldehyde and certified Eurofins Gold(^2) for Indoor Air Comfort, see annexe 1.</td>
<td>1 credit</td>
</tr>
<tr>
<td></td>
<td>Emissions from building products: the insulation materials are one of the 5 product types that could meet the emission limits for exemplary level emission criteria. The following requirements are of application: Formaldehyde ≤ 0.01 mg/m(^3); Total Volatile Organic Compounds ≤ 0.3 mg/m(^3); Total Semi-volatile Organic Compounds ≤ 0.1 mg/m(^3); Carcinogens category 1A and B ≤ 0.001 mg/m(^3)</td>
<td>Rock Mineral Wool ECOSE products are in compliance with the requirements for exemplary level as without added formaldehyde and certified Eurofins Gold for Indoor Air Comfort, see annexe 1.</td>
<td>1 credit exemplary level</td>
</tr>
<tr>
<td></td>
<td>Post-construction indoor air quality measurement: the total volatile organic compound and formaldehyde are measured and reported (thresholds for averaged formaldehyde concentration level ≤ 100µg/m(^3) over 30 minutes and for averaged TVOCs 300µg/m(^3) over 8 hours).</td>
<td>Rock Mineral Wool ECOSE products without added formaldehyde and certified Eurofins Gold for Indoor Air Comfort are helping to stay at a very low concentration level.</td>
<td>1 credit</td>
</tr>
<tr>
<td>Hea 04 Thermal comfort</td>
<td>To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants</td>
<td>Through the insulation level, insulation products contribute to the comfort level (heating and cooling) in accordance to ISO 7730:2005. Thermal modeling can be facilitated through Knauf Insulation expertise and available databases</td>
<td>1 credit</td>
</tr>
</tbody>
</table>

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\(^1\) Technical manual : SD 5075 – 1.0:2013  
\(^2\) www.product-testing.eurofins.com
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<td><strong>Hea 05</strong> Acoustic performance</td>
<td>To insure the building’s acoustic performance, including sound insulation, meets the appropriate standards for its purpose</td>
<td>Products performance aims to reduce indoor ambient noise level and reverberation times in order to comply with regulations or good practices standards.</td>
<td>1 credit</td>
</tr>
<tr>
<td><strong>Ene 01</strong> Reduction of energy use and carbon emissions</td>
<td>To recognize and encourage buildings designed to minimise operational energy demand, primary energy consumption and CO2 emissions.</td>
<td>Rock Mineral Wool ECOSE products help reducing the 3 parameters: operational energy demand, primary energy consumption and CO2 emissions through the improving of energy building performance (e.g. Uvalue) in accordance with EPBD best practices and ASHRAE standard 90.1-2013 or 90.2-2007 (as applicable).</td>
<td>15 credit</td>
</tr>
<tr>
<td><strong>Ene 04</strong> Low carbon design</td>
<td>To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.</td>
<td>Rock Mineral Wool ECOSE products contribute to implement passive design solutions that reduce building energy demand and associated carbon emissions.</td>
<td>1 credit</td>
</tr>
<tr>
<td><strong>Ene 05</strong> Energy efficiency cold storage</td>
<td>Energy efficient design, installation and commissioning: To encourage the installation of energy efficient refrigeration systems, therefore reducing operational greenhouse gas emissions. The building has been designed to minimize heat loads through high levels of insulation.</td>
<td>Rock Mineral Wool ECOSE products can contribute to high insulation efficiency in the design options.</td>
<td>1 credit</td>
</tr>
<tr>
<td><strong>Mat 01</strong> Life cycle impacts</td>
<td>To encourage the use of robust and appropriate life cycle assessment tools and specification of construction materials with a low environmental impact over the full life cycle of the building</td>
<td>The Environmental Products Declarations³ (EPDs) are available and 3rd party verified against EN 15804, this allows to maximise points through Mat 01 calculator and contribute to reach the target of 5 products (10 products for exemplary level) with EPDs for additional points (with confirmation of use on the construction site at Post-Construction Stage)</td>
<td>1 credit + 1 credit exemplary level</td>
</tr>
</tbody>
</table>

³ [https://ibu-epd.com/](https://ibu-epd.com/)

For additional information please contact Sustainability@knaufinsulation.com
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<td><strong>Mat 03</strong>&lt;br&gt;Responsible sourcing of construction products</td>
<td>To recognize and encourage the specification and procurement of responsibly sourced construction (RSC) products. Insulation products with more than 50% recycled content (BREEAM Guidance note18.v3.1 – 2018).</td>
<td>The key process is also covered by EMS (ISO 14001) which allows to meet the criterion of responsible sourced construction (RSC) products. see annexe 2</td>
<td>3 credit</td>
</tr>
<tr>
<td><strong>Mat 06</strong>&lt;br&gt;Material efficiency</td>
<td>To recognize and encourage measures to optimise material efficiency in order to minimise the environmental impact of material use and waste without compromising on structural stability, durability or service life of the building. This includes procuring materials with higher levels of recycled content.</td>
<td>Rock Mineral Wool ECOSE products contain up to 60% of recycled components and contribute therefore to minimise the environmental impact of insulation, see annexe 2.</td>
<td>1 credit</td>
</tr>
<tr>
<td><strong>Wst 01</strong>&lt;br&gt;Construction waste management</td>
<td>To promote resource efficiency via the effective and appropriate management of construction waste.</td>
<td>Packaging’s (wood and plastics) and products itself are recyclable. Products cut-offs can also be used to fill some remaining tiny holes on working site. Mineral wool waste can be reused or recycled no matter the age or type.</td>
<td>3 credit</td>
</tr>
<tr>
<td><strong>Wst 06</strong>&lt;br&gt;Functional adaptability</td>
<td>To recognize and encourage measures taken to accommodate future changes of uses of the building over its lifespan, this includes the use of products or systems which allow easy replacements.</td>
<td>Rock Mineral Wool ECOSE products and technical principle of implementations may allow easy replacements of each component (Outside and/or inside use) and facilitate future adaptations or insulation reuse.</td>
<td>1 credit</td>
</tr>
<tr>
<td><strong>Pol 02</strong>&lt;br&gt;(NOx emissions)</td>
<td>To contribute to a reduction in national NOx emission levels to the use of low emission heat source in the building</td>
<td>High insulation efficiency products can help reducing energy and NOx emissions for heat and hot water supply (i.e: Rock Mineral Wool Technical Solutions products).</td>
<td>3 credits</td>
</tr>
<tr>
<td><strong>Pol 05</strong>&lt;br&gt;Noise attenuation</td>
<td>To reduce the likelihood of noise, arising from fixed installations on the new development, affecting nearby noise-sensitive buildings.</td>
<td>Attenuation of noise by use of insulation mineral wool absorbers.</td>
<td>1 credit</td>
</tr>
</tbody>
</table>
Annexe 1 : Hea 02 – Indoor Air Quality

Here below the Eurofins Indoor Air Comfort Gold Certificate:
Appendix to Certificate

IACG-323-02-01-2018C

Knauf Insulation receives the Indoor Air Comfort Gold certificate with validity 18 January 2023 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>Untreated paper and aluminum faced Rock Mineral Wool with ECOSE® Technology</td>
<td>Nova Mand, Croatia, Nova Rama, Slovakia, Surakulica, Serbia, Queensferry, United Kingdom</td>
</tr>
</tbody>
</table>

The products in this group are based on identical or similar recipe 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.

Product Testing

For additional information please contact Sustainability@knaufinsulation.com
Annexe 2 : Mat 03 Responsible sourcing of Rock Mineral Wool with ECOSE

Here below additional detailed information by production site about waste introduced into the fabrication of the Rock mineral wool. ISO 14001 certifications of main raw materials suppliers (any quarried or mined mineral over 20% input) can be provided on demand.

<table>
<thead>
<tr>
<th>Material Category</th>
<th>Key Process</th>
<th>Key Supply Chain Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>Insulation manufacture</td>
<td>Main polymer production, e.g. Polystyrene, MDI, Phenolic resin or equivalent</td>
</tr>
<tr>
<td>Foam Insulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stone wool, glass &amp; cellular glass made using &lt; 50% recycled input</td>
<td>Product manufacture</td>
<td>Any quarried or mined mineral over 20% of input</td>
</tr>
<tr>
<td>Wool</td>
<td>Product manufacture</td>
<td>Wool scouring</td>
</tr>
<tr>
<td>Products using &gt; 50% recycled content</td>
<td>Product manufacture</td>
<td>Recycled content by default</td>
</tr>
<tr>
<td>except those using timber</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% external waste content (slags and offcuts return from customers)  
- Novi Marof (Croatia): --  
- Sankt Egidien (Germany): --  
- Nová Baňa (Slovakia): 29%  
- Skofja Loka (Slovenia): 14%  
- Surdulica (Serbia): --

% internal waste content (materials from production lines with further processing into briquettes before it is used)  
- Novi Marof (Croatia): 32%  
- Sankt Egidien (Germany): 9%  
- Nová Baňa (Slovakia): 18%  
- Skofja Loka (Slovenia): 34%  
- Surdulica (Serbia): 29%

% internal waste content (edge trim from production lines with shredding before it is re-input)  
- Novi Marof (Croatia): 16%  
- Sankt Egidien (Germany): 16%  
- Nová Baňa (Slovakia): 16%  
- Skofja Loka (Slovenia): 16%  
- Surdulica (Serbia): 16%

Total recycled content  
- Novi Marof (Croatia): 48%  
- Sankt Egidien (Germany): 25%  
- Nová Baňa (Slovakia): 63%  
- Skofja Loka (Slovenia): 64%  
- Surdulica (Serbia): 45%

BREEAM Mat 04 contributes towards 1 credit

On the next page, please find the ISO 14001 certificate for Key Process.

4 Most recent data 2018

For additional information please contact Sustainability@knaufinsulation.com
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ISO 14001:2015
Scope of certification

Certification cycle start date: 23 December 2016
Subject to the continued satisfactory operation of the organization’s Management System, this certificate expires on: 22 December 2019
Original certification date: 23 December 2010
Certificate no.: BE010259  Version: 1  Revision date: 15 December 2016

Further clarifications regarding the scope of this certificate and the applicability of the Management System requirements may be obtained by consulting the organization. To check this certificate validity, please call +32 (0)3 247 94 00.

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For additional information please contact Sustainability@knaufinsulation.com
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Appendix

KNAUF INSULATION SPRRL
This certificate concerns below mentioned sites
D-09356 St. Egidien, Bahnhofstrasse 25, Germany
SK-968 14 Nová Baňa, Železničný rai 24, Slovakia
Knauf Insulation d.o.o., 17500 Srdulica, Naseje Belo Polje 1b, Serbia
SLO-4220 Skofja Loka, Trata 32, Slovenia
Chemistry Ln, Queensferry, Flintshire, CH5 2DA, United Kingdom
Whitnash 1, 06406 Bamberg, Saale, Germany
D-84359 Simbach-am-Inn, Hernalstrasse 8, Germany
H-9524 Altonaerweg 19 (Zalaegerszeg), Iparteleo, Hungary
NL-4903 RM Creerhout, Florinstraat 2, Netherlands
Portfield Works, A4051, Croesyceiliog, Cwmbran, NP44 2YQ, United Kingdom
4117 42 Krupska, Industrial Park Krupska, Pod Dolin drahou 110, Czech Republic
Stafford Road, St Helens, Merseyside, WA10 3NS, United Kingdom
Industriehaup St, Estate 2, Sujinka, Moscow Region, 143900, Russia Federation
501 Voie Napoleon III 65300 Lamnemnam, France
400 East Walker, Shelbyville Plant 1, IN 46176, United States
1 Knaufl, 1 Shelbyville Plant 3, IN 46176, United States
3100 Ashley Rd, Shasta Lake, CA 96019, United States
3802 43rd Street SW, AL 36883 Lanett, United States
Kamchatka Bk 198, Tyumen 625034, Russian Federation
75, Yil Mahallesi 1 Cadde 1/R, Kıpsız Organize Sanayi, 26250 Esikpehir, Turkey
1600E North St, MI 49224 Albion, United States
Knauf Insulation d.o.o. Novi Marof, Varazdinska 140 Croatia
Knauf Insulation Customized Solutions d.o.o., Vipavska 4L, SI-5270, Ajdovščina Slovenia
4812 Tabler Station Rd, Inwood, WV 25428, United States

Certificate no.: BE910259 Version: 1 Revision date: 15 December 2016

Signed on behalf of BVCH SAS - UK Branch

Certification body address: 66 Peascoat Street, London, E1 8HG, United Kingdom
Local Office: Mechelaartweg 159-156 - B-2018 – Antwerp, Belgium

Further clarifications regarding the scope of this certificate and the applicability of the Management System requirements may be obtained by consulting the organization,
To check this certificate validity, please call +32 (03) 247 94 60.

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