

## LEED version 4

### PRODUCT DATA FOR COMPLIANCE

### MINERAL PLUS

**LEEDv4** (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 MINERAL PLUS** products can put you on the right track for the highest result for certification!

LEED Credit Category code	Definition	Knauf Insulation MINERAL PLUS Products contribution	Contributes towards
<b>Energy and Atmosphere (EA)</b> Optimize Energy Performance 	To achieve increasing levels of performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.	MINERAL PLUS products help reducing energy demand through very high insulation efficiency.	<b>20 points</b>
<b>Materials and Resources ( MR)</b> Building Product Disclosure and Optimization – Environmental Product Declarations 	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.	Third party certified EN 15804 Product-specific Type III Environmental Product Declarations (EPDs) including external verification are available on line <sup>1</sup> .	<b>2 points</b>
<b>Materials and Resources ( MR)</b> Building Product Disclosure and Optimization – Sourcing of Raw Materials	To reward project including products verified to be extracted or sourced in a responsible manner.	Mineral Plus Products are manufactured with up to 80% of recycled content (pre and post-consumer) <sup>2</sup> .	<b>1 point</b>

<sup>1</sup> <http://www.knaufinsulation.com/en/environmental-product-declaration-epd>

<sup>2</sup> See annexe1

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LEED Credit Category code	Definition	Knauf Insulation MINERAL PLUS Products contribution	Contributes towards
<b>Materials and Resources ( MR)</b> Building Product Disclosure and Optimization – Material Ingredients	To reward project for which the products chemical ingredients are inventoried.	MINERAL PLUS products contains no ingredients listed on the REACH Authorization or Candidate list or Substances of Very High Concern list. Evidence is available on line <sup>3</sup> .	<b>1 point</b>
<b>Indoor Environmental Quality (EQ)</b> Low-Emitting Materials 	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.	The MINERAL PLUS products are manufactured with the ECOSE binder which contains no added formaldehyde. They are compliant with the German AgBB Testing and Evaluation Scheme, the higher category (A+) of the French labelling and the Indoor Air Comfort <sup>4</sup> Eurofins Gold. 	<b>3 points</b>
<b>Indoor Environmental Quality (EQ)</b> Acoustic Performance	To provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.	MINERAL PLUS products have high performance acoustic properties <sup>5</sup> .	<b>2 points</b>
<b>Indoor Environmental Quality (EQ)</b> Thermal Comfort	To promote occupants productivity, comfort, and well-being by providing quality thermal comfort.	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.	<b>1 point</b>

<sup>3</sup> <http://www.knaufinsulation.com/en/sustainable-buildings-and-green-building-rating-systems>

<sup>4</sup> [www.product-testing.eurofins.com](http://www.product-testing.eurofins.com) and certificate in annexe 2

<sup>5</sup> See annexe 3

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

Here enclosed additional detailed information about pre-consumer waste (reintroduction of manufacturing scrap back into the manufacturing process) and post-consumer waste (produced by the end consumer) use in the fabrication of the ECOSE technology mineral wool.

In LEED, total recycled content is the sum of post-consumer recycled content plus one-half the pre-consumer recycled content based on cost.

	Visé (B)	Lannemezan (Fr)	Krupka (Cz)	Eskisehir (TR)	Bernburg (D)
%pre-consumer waste content	47%	34.5%	23.4%	38%	20%
% post-consumer waste content	32%	40.5%	56.6%	40%	31%
<b>Total recycled content within LEEDv4 formulation</b>	<b>55.5%</b>	<b>57.8</b>	<b>68.3%</b>	<b>59%</b>	<b>41%</b>
<b>LEED MR 4</b>	<b>contributes towards 2 points</b>				

Recycled content claims for products 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, ect). 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.

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**Annexe 2: Indoor Environmental Quality - Low-Emitting Materials**

Here below, Results of Eurofins Indoor Air Comfort Gold Certificate for Mineral Plus products:

 <p><b>Product Testing</b></p> <p>Knauf Insulation sprl Rue de Maestricht 95 4600 VISE BELGIUM</p>	  <p>Eurofins Product Testing A/S Smedeskovvej 38 8464 Galten Denmark VOC@eurofins.com www.eurofins.com/VOC-testing</p>																																				
<p><b>VOC TEST REPORT</b> <b>Indoor Air Comfort GOLD®</b> 14 April 2016</p>																																					
<p><b>1 Sample Information</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Sample name</td> <td>Mineral Plus</td> </tr> <tr> <td>Batch no.</td> <td>-</td> </tr> <tr> <td>Production date</td> <td>27 January 2016</td> </tr> <tr> <td>Product type</td> <td>Mineral wool</td> </tr> <tr> <td>Sample reception</td> <td>17/02/2016</td> </tr> </table>		Sample name	Mineral Plus	Batch no.	-	Production date	27 January 2016	Product type	Mineral wool	Sample reception	17/02/2016																										
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<p><b>2 Brief Evaluation of the Results</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Regulation or protocol</th> <th style="text-align: left;">Conclusion</th> <th style="text-align: left;">Version of regulation or protocol</th> </tr> </thead> <tbody> <tr> <td>French VOC Regulation</td> <td style="text-align: center;"></td> <td>Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)</td> </tr> <tr> <td>French CMR components</td> <td>Pass</td> <td>Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)</td> </tr> <tr> <td>AgBB</td> <td>Pass</td> <td>AgBB of February 2015, DIBt of October 2010</td> </tr> <tr> <td>Belgian Regulation</td> <td>Pass</td> <td>Royal decree of May 2015 (C-2014/24239)</td> </tr> <tr> <td>EMICODE</td> <td>EC 1 PLUS</td> <td>November 2015</td> </tr> <tr> <td>Indoor Air Comfort®</td> <td>Pass</td> <td>Indoor Air Comfort 5.3a of March 2015</td> </tr> <tr> <td>Indoor Air Comfort GOLD®</td> <td>Pass</td> <td>Indoor Air Comfort GOLD 5.3a of March 2015</td> </tr> <tr> <td>EN 717-1<sup>§</sup></td> <td>E1</td> <td>2004</td> </tr> <tr> <td>Blue Angel (RAL UZ 132)</td> <td>Pass</td> <td>Low-Emission Thermal Insulation Material and Suspended Ceilings for Use in Buildings, October 2010</td> </tr> <tr> <td>BREEAM International</td> <td>Compliant</td> <td>GN22: BREEAM Recognised Schemes for VOC Emissions from Building Products</td> </tr> <tr> <td>LEED v4 (outside U.S.)</td> <td>Compliant</td> <td>LEED v4 for Building Design and Construction (April, 2015)</td> </tr> </tbody> </table> <p><small>Full details based on the testing and direct comparison with limit values is available in the following pages</small></p>		Regulation or protocol	Conclusion	Version of regulation or protocol	French VOC Regulation		Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)	French CMR components	Pass	Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)	AgBB	Pass	AgBB of February 2015, DIBt of October 2010	Belgian Regulation	Pass	Royal decree of May 2015 (C-2014/24239)	EMICODE	EC 1 PLUS	November 2015	Indoor Air Comfort®	Pass	Indoor Air Comfort 5.3a of March 2015	Indoor Air Comfort GOLD®	Pass	Indoor Air Comfort GOLD 5.3a of March 2015	EN 717-1 <sup>§</sup>	E1	2004	Blue Angel (RAL UZ 132)	Pass	Low-Emission Thermal Insulation Material and Suspended Ceilings for Use in Buildings, October 2010	BREEAM International	Compliant	GN22: BREEAM Recognised Schemes for VOC Emissions from Building Products	LEED v4 (outside U.S.)	Compliant	LEED v4 for Building Design and Construction (April, 2015)
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<p style="text-align: center;"></p> <p>Janne R. Norup Chemist</p>	<p style="text-align: center;"></p> <p>Thomas Bjerring Analytical Service Manager</p>																																				
<p><small>The results are only valid for the tested sample(s). This report may only be copied or reprinted in its entirety, parts of it only with a written acceptance by Eurofins.</small></p> <p>392-2016-00069603_A_EN <span style="float: right;">Page 1 of 19</span></p>																																					

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#### **Annexe 3: Sound reduction index example for 60 mm thickness product**

The test specimen consists of a “Knauf W112” plasterboard wall with a 75 mm single metal frame, “Knauf Diamant” double-layer cladding and internal insulation 60mm Mineral Plus with Ecosse® Technology Knauf Insulation with a nominal thickness of 60 mm.

