LEED VERSION 4.1

PRODUCT DATA FOR BUILDING CERTIFICATION

MINERAL PLUS / MINERAL WOOL 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! Refer to the table below to see how many points our products contribute in each category.

LEED - Credit Category code	Definition	Knauf Insulation Products contribution
EA: Energy and Atmosphere Optimize Energy Performance **18 points**	To achieve increasing levels of performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.	ECOSE Technology products help reducing energy demand through very high insulation efficiency (building envelop, partition walls, HVAC equipment, floors and ceilings).
MR: Materials and Resources Building Product Disclosure and Optimization – Environmental Product Declarations **2 points**	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 verified Environmental Product Declarations (EN 15804-EPDs) are **available online** for ECOSE Technology products[1]. ECO PLATFORM inies EPD® THE INTERNATIONAL EPD® SYSTEM
MR: Materials and Resources (MR) Building Product Disclosure and Optimization – Sourcing of Raw Materials **1 point**	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.	ECOSE Technology Products are manufactured with up to 80% of recycled content (pre-consumer and post-consumer waste)[2].
MR: Materials and Resources Building Product Disclosure and Optimization – Material Ingredients **1 point**	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.	ECOSE Technology products contain no ingredients listed on the REACH Authorization list, Restriction list or Substances of Very High Concern Candidate list . They are inventoried to at least 0.01% by weight (100ppm) and **certified DECLARE** LBC Red List Free which means no harmful chemical substances[3] Declare. Red List Free

[1] https://dopki.com/dopki
[2] See annex 1
[3] You can view our Declare certificates this link

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LEED - Credit Category code	Definition	Knauf Insulation Products contribution
EQ: Indoor Environmental Quality Low-Emitting Materials **3 points**	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.	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 Comfort Eurofins Gold**[4] and **Blue Angel**[5].
EQ: Indoor Environmental Quality Acoustic Performance **1 point**	To provide spaces that promote occupants' well-being, productivity and communication through effective acoustic design.	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[6].
EQ: Indoor Environmental Quality Thermal Comfort **1 point**	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.

[4] You can view our Eurofins Indoor Air Comfort Gold certificates via this link
[5] See https://www.blauer-engel.de/en/brand/knauf-insulation
[6] See annex 2 : Acoustic performance

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Annex 1: Materials and Resources: Sourcing of Raw Materials

Here below additional detailed information[1] 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 Mineral Plus/ Mineral Wool with Ecose Technology. In LEED, total recycled content is the sum of 100% post-consumer recycled content plus 50% of the pre-consumer recycled content.
Recycled content claims must conform to the definition ISO 14021-1999.

	Vise (Belgium)	Lannemezan (France)	Krupka (Czech Republic)	Bernburg (D)	Eskisehir (Tr)	Cwmbran (UK)	St Helens (UK)	Johor (Malaysia)
%pre-consumer waste content	8.1%	19.3%	18.6%	6.1%	8.1%	5.9%	0%	3.4%
% post-consumer waste content	56.9%	48,0%	50.0%	57.8%	73.2%	53.5%	70.3%	60.8%
Total recycled content (50% pre-consumer+100% post-consumer)	61.0%	57.7%	59.3%	60.9%	77.3%	56.5%	70.3%	62.4%
LEED MR 4	**contributes towards 2 points**							

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 outside 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.

1 Data from the year 2024

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Annex 2 : Acoustic performance

Acoustic performance is one of the essential criteria for determining sustainable and healthy buildings. It is typically defined in building certification systems by three key requirements:

- **Sound insulation**: capacity of a building element (and building system) to minimise sound transmission between interior spaces and reduce noise intrusion from the exterior. It should be maximised according to the building's location and the layout of interior spaces.
- **Building services noise**: level of noise within a room, produced by heating, ventilating and air-conditioning equipment. It should be kept below prescribed limits.
- **Reverberation time**: indicator of a room's capability to enable clear understanding of speech and prevent unwanted acoustic defects (such as echo).

Use of Mineral Wool as one of the key components of various building elements enables compliance with all the acoustic requirements.

Acoustic requirement	Benefits of Knauf Insulation Mineral Wool	Test reports
Sound insulation Design criteria expressed as minimum airborne and impact sound insulation index (STC, DnT,w or L'nT,w)	Mineral Wool increases the sound insulating capacity of basic building elements. It attributes to high noise reducing capacity of façade walls, roofs, interior partitions, floors and ceilings.	**Internal partitions** *60mm Mineral Wool 35* (Rw 63 dB) **Wall linings** *45mm Ultracoustic R* (Rw 67dB) **Floors** *15mm TP-ST* (ΔLw 20 dB)
Building services noise Design criteria expressed as maximum indoor ambient noise level (dB)	Owing to its porous structure, Mineral Wool achieves high levels of sound absorption making it an integral part of HVAC noise reducing devices (sound attenuators, duct liners, cross-talk attenuators).	Sound absorption *100mm TP 138 SP* (αw 1.00)
Reverberation time Design criteria expressed as maximum reverberation time (seconds) or minimum sound absorption coefficient (αw, NRC)	Sound absorbing nature of Mineral Wool aids in controlling the reverberation time of spaces. Mineral Wool is an integral element of acoustic panels and ceiling tiles; or added above ceiling level as highly efficient acoustic absorber.	**https://knauf.com/api/download-center/v1/assets/7a998d11-e3d5-4b22-9bd1-fc6848078e3a?download=true**

The human ear is capable of perceiving sounds between 0 and 130 dB, which defines the difference between a pleasant acoustic environment, discomfort, and even pain. Generally, the human ear cannot detect variances of 1–2 dB. The values below provide an indicative relation between dB and perceived changes in loudness.

Change in dB level	Change in loudness
1-2 dB	Unnoticeable
3 dB	Just noticeable
5 dB	Clearly noticeable
10 dB	Twice as loud (or quiet)
20 dB	Four time as loud (or quiet)