LEED VERSION 4.1

PRODUCT DATA FOR BUILDING CERTIFICATION

WOOD WOOL – HERAKLITH

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!

LEED - Credit Category code	Definition	Knauf Insulation Products contribution
EA : Energy and Atmosphere Optimize Energy Performance Contributes towards: **18 points**	To achieve increasing levels of performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.	Heraklith 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 Contributes towards: **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 Heraklith homogeneous board, Heratekta and Tektalan[1]. ECO PLATFORM MRPI EPD® THE INTERNATIONAL EPD® SYSTEM
MR : Materials and Resources Building Product Disclosure and Optimization – Sourcing of Raw Materials Contributes towards: **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.	Heraklith Products are manufactured with up to 80% of wood-based materials certified following FSC or PEFC labels (remaining part is the binder)[2].
MR : Materials and Resources Building Product Disclosure and Optimization – Material Ingredients Contributes towards: **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.	Heraklith products contains no ingredients listed on the REACH Authorization list, Restriction list or Substances of Very High Concern Candidate list [3] Declare. Red List Free

[1] https://www.knaufinsulation.com/knowledge-centre/environmental-product-declarations-epd

[2] See annex 1

[3] Compliance letter statement regarding REACH can be delivered on request for dedicated product's manufacturing plants

LEED VERSION 4.1

PRODUCT DATA FOR BUILDING CERTIFICATION

WOOD WOOL – HERAKLITH

LEED - Credit Category code	Definition	Knauf Insulation Products contribution
EQ: Indoor Environmental Quality Low-Emitting Materials Contributes towards: **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.	Products are compliant with the German AgBB Testing and Evaluation Scheme and the higher category (A+) of the French labelling. They are **certified with Blue Angel** low air emission ecolabel (following RAL-UZ-132)[4].
EQ: Indoor Environmental Quality Indoor Air Quality Assessment Contributes towards: **2 points**	To establish better quality indoor air in the building after construction and during occupancy	The quality of the Heraklith products help to reach appropriate concentration level regarding formaldehyde and TVOCs during indoor air quality assessment.
EQ: Indoor Environmental Quality Acoustic Performance Contributes towards: **1 point**	To provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.	Products have high performance acoustic properties. They reduce HVAC background noise, increase sound insulation of building envelope, partitions, ceilings and aid in controlling reverberation time[5].
EQ: Indoor Environmental Quality Thermal Comfort Contributes towards: **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] See annex 2 and https://www.blauer-engel.de/en/s/knauf

[5] See annex 3 : Acoustic performance

LEED VERSION 4.1

PRODUCT DATA FOR BUILDING CERTIFICATION

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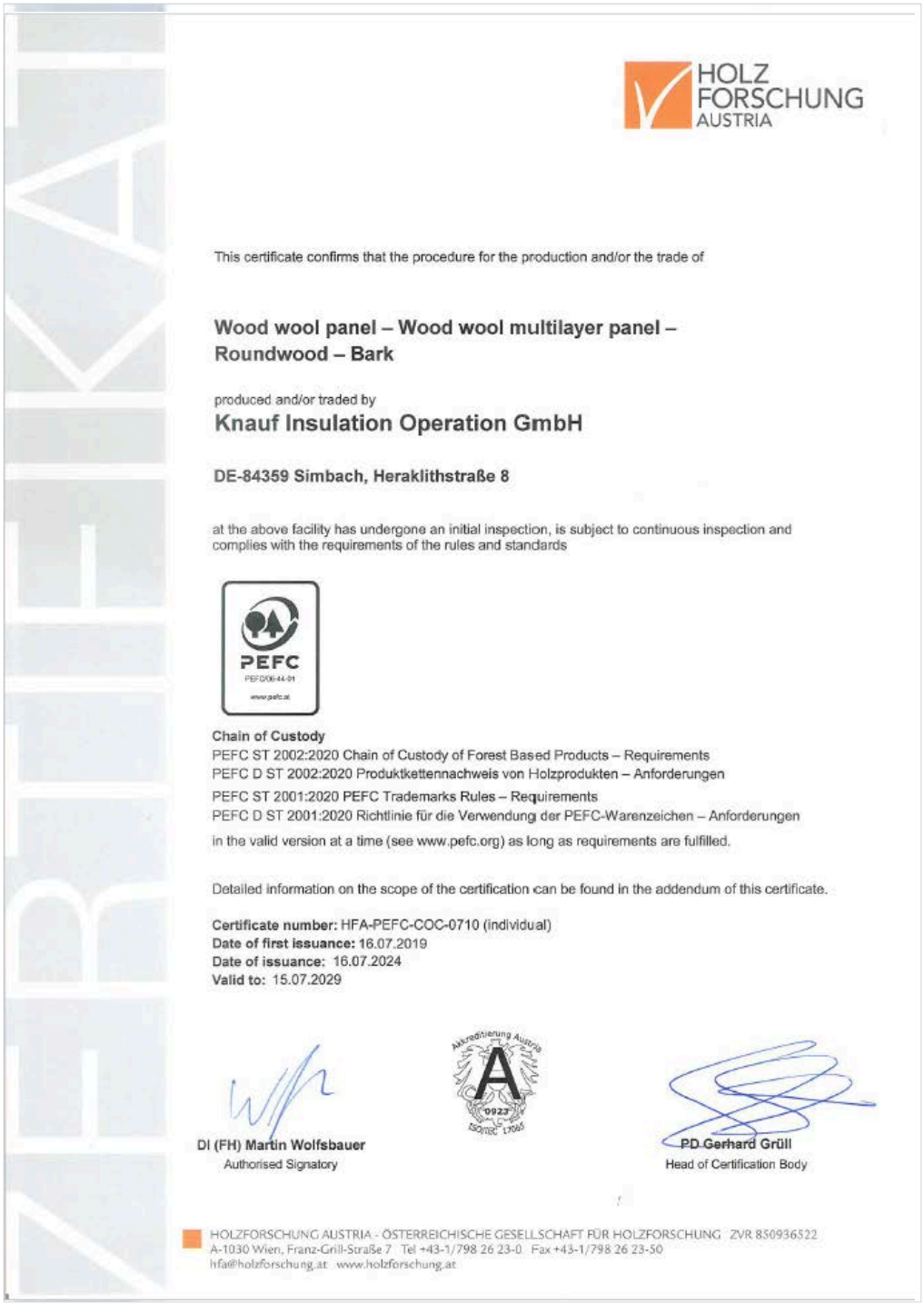
Annex 1: PEFC certificate for Simbach Plant and FSC certificate for Zalaegerszeg supplier



HOLZ FORSCHUNG AUSTRIA

This certificate confirms that the procedure for the production and/or the trade of

Wood wool panel – Wood wool multilayer panel – Roundwood – Bark

produced and/or traded by

Knauf Insulation Operation GmbH

DE-84359 Simbach, Heraklithstraße 8

at the above facility has undergone an initial inspection, is subject to continuous inspection and complies with the requirements of the rules and standards

PEFC

Chain of Custody
PEFC ST 2002:2020 Chain of Custody of Forest Based Products – Requirements
PEFC D ST 2002:2020 Produktkettennachweis von Holzprodukten – Anforderungen
PEFC ST 2001:2020 PEFC Trademarks Rules – Requirements
PEFC D ST 2001:2020 Richtlinie für die Verwendung der PEFC-Warenzeichen – Anforderungen
in the valid version at a time (see www.pefc.org) as long as requirements are fulfilled.

Detailed information on the scope of the certification can be found in the addendum of this certificate.

Certificate number: HFA-PEFC-COC-0710 (individual)
Date of first issuance: 16.07.2019
Date of issuance: 16.07.2024
Valid to: 15.07.2029

DI (FH) Martin Wolfsbauer
Authorised Signatory

PD Gerhard Grüll
Head of Certification Body

HOLZFORSCHUNG AUSTRIA - ÖSTERREICHISCHE GESELLSCHAFT FÜR HOLZFORSCHUNG ZVR 850936522
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hfa@holzforschung.at www.holzforschung.at

LEED VERSION 4.1

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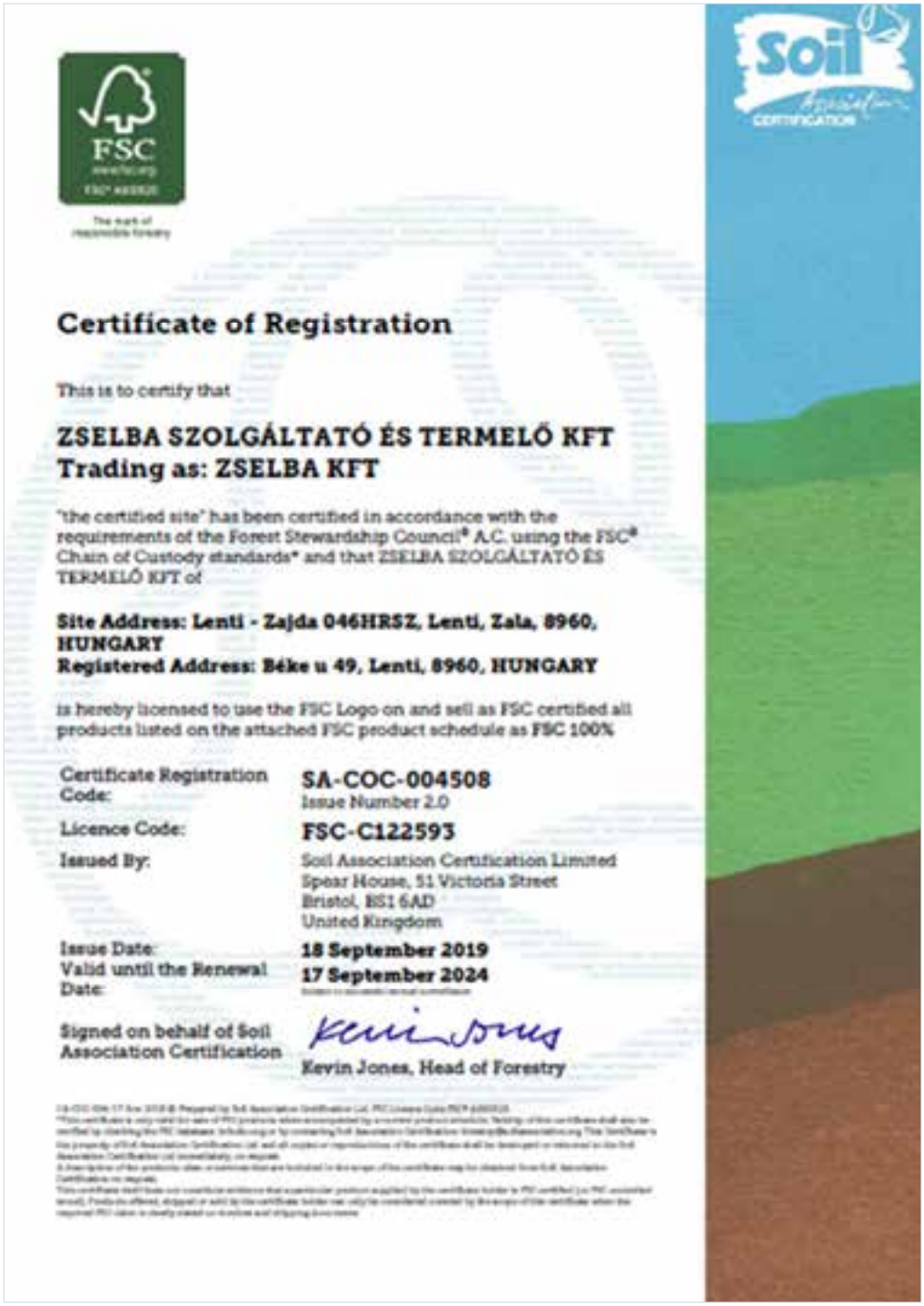
WOOD WOOL – HERAKLITH



FSC

The mark of responsible forestry

Certificate of Registration

This is to certify that

ZSELBA SZOLGÁLTATÓ ÉS TERMELŐ KFT
Trading as: ZSELBA KFT

"the certified site" has been certified in accordance with the requirements of the Forest Stewardship Council® A.C. using the FSC® Chain of Custody standards* and that ZSELBA SZOLGÁLTATÓ ÉS TERMELŐ KFT of

Site Address: Lenti - Zajda 046HRSZ, Lenti, Zala, 8960, HUNGARY
Registered Address: Béke u 49, Lenti, 8960, HUNGARY

is hereby licensed to use the FSC Logo on and sell as FSC certified all products listed on the attached FSC product schedule as **FSC 100%**

Certificate Registration Code:	**SA-COC-004508** Issue Number 2.0
Licence Code:	**FSC-C122593**
Issued By:	Soil Association Certification Limited Spear House, 51 Victoria Street Bristol, BS1 6AD United Kingdom
Issue Date:	**18 September 2019**
Valid until the Renewal Date:	**17 September 2024**
Signed on behalf of Soil Association Certification	Kevin Jones, Head of Forestry

Soil Association CERTIFICATION

LEED VERSION 4.1

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WOOD WOOL – HERAKLITH

Annex 2: Blue Angel Requirements and certificate.

From document:"Basic Criteria for Award of the Environmental Label; Low-Emission Thermal Insulation Material and Suspended Ceilings for Use in Buildings RAL-UZ 132".

The product shall not exceed the emission values listed in Table 1 in the test chamber in conformity with the „Health risk assessment process for emissions of volatile organic compounds (VOC) from building products" developed by the Committee for Health-related Evaluation of Building Products.

Table 1: Emission Values

Substance	Requirements Final Value 28 Days
Total organic compounds within the retention range C_6-C_{16} (TVOC)	≤ 100 µg/m³
Total organic compounds within the retention range C_{16}-C_{22} (STVOC)	≤ 20 µg/m³
C substances [12]	≤ 1 µg/m³ per single value
Total VOC without LIC [13,14]	≤ 50 µg/m³
R value	≤ 1
Formaldehyde	≤ 0.05 ppm

LEED VERSION 4.1

PRODUCT DATA FOR BUILDING CERTIFICATION

WOOD WOOL – HERAKLITH

Annex 3 : 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)