December 2021

DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen) is a voluntary standard to assess the integrated evaluation of economic and environmental aspects as well as user comfort in buildings.

The 2020 DGNB assessment system covers key aspects of sustainable building with special focus on people, circular economy, design quality, the UN sustainable development goals, climate protection, and innovation. It includes environmental, economic, socio-cultural and functional aspects, technology, processes and site. The DGNB system comprises a variety of certification schemes for different building uses, for example office, residential, or education. The weighing of the criteria can vary based on the relevant building scheme.

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

DGNB Criteria Group	Assessment criteria and definition	Knauf Insulation Products contribution	Contributes towards
ENV 1.1.	**Life Cycle Impact Assessment** The objective of the assessment is to quantify and document the environmental performance of the building and compare the results against a defined benchmark. The scope includes the environmental impacts of production, use and end-of-life phases. The building LCA is based on the Life Cycle Energy Modelling (LCEM). Up to 40 points can be awarded if the proposed building's environmental impact is equal to that of the reference building. Up to 50 additional points can be awarded if the impacts are less than the reference building and up to 30 bonus points for climate neutrality. The preference should be given to product-specific EPD where the LCA fulfil EN 15804 requirements.	The Environmental Products Declarations (EPDs) [1] are product specific and 3rd party verified against EN 15804 through German IBU program operator or the International EPD System or INIES. Results of the different LCA indicators are directly available. Because of the high recycled content and the bio-based binder, Global Warming Potential is for example particularly low in comparison to other mineral wool products.	4.5-4.7%

[1] http://www.knaufinsulation.com/en/product-sustainability

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DGNB Criteria Group	Assessment criteria and definition	Knauf Insulation Products contribution	Contributes towards
ENV 1.2.	**Local Environmental Impact** This criterion is focusing on the VOCs content as well as the VOC emissions of the products. Some high risk material and product groups are individually checked and evaluated: halocarbons and partially halocarbons refrigerants and propellants; heavy metals; materials which fall under Biocidal Product Directive; hazardous material according to CLP regulation; organic solvents and plasticisers.	Products are free of halocarbon propellants. ECOSE is certified under Eurofins Indoor Comfort Gold[2] for low VOC emissions. ECOSE Technology products contain no ingredients listed on the REACH Authorization list, Restriction list or Substances of Very High Concern Candidate list[3]. They are inventoried to at least 0.01% by weight (100ppm) and certified DECLARE LBC Red List Free which means no harmful chemical substances[4]. Declare. Living Building Challenge Chemicals Red List Free Red List Free	9-9.5%
ENV 1.3	**Sustainable Resource Extraction** This criterion encourages use of products manufactured using raw materials extracted responsibly.	ISO 14001 certification is a supplier pre-requisite for the extracted raw materials[5] and secondary raw materials or preferred to virgin ones.	2.3-2.4%

[2] www.product-testing.eurofins.com
[3] Compliance letter statement to REACH can be requested for dedicated product's manufacturing plants
[4] See annex 2
[5] ISO 14001 suppliers' certificates can be delivered on demand.

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GLASS MINERAL WOOL WITH ECOSE® Technology

DGNB Criteria Group	Assessment criteria and definition	Knauf Insulation Products contribution	Contributes towards
ECO 1.1	**Life Cycle Cost** The aim is to reduce the building's total life cycle costs (LCC) to a minimum. The objective is to facilitate a comparison between different buildings with the same use. Costs incurred throughout the building's entire life cycle are covered within the scheme: construction, occupancy costs and dismantling and disposal costs.	Knauf Insulation solutions help to reduce the occupancy costs by lowering energy consumption and to limit maintenance costs. As due to durability of mineral wool, there is no need for replacement within the considered time period of 50 years building's life.	10-12.9%
ECO 2.1	**Flexibility and adaptability** The ease with which a building can be adapted to changing requirements helps raise user satisfaction; it can prolong the building's service life and lower costs through its life cycle. The space efficiency and adaptability is evaluated on the basis of a checklist including the structure as one of the indicator. In the structure, internal and partition walls have a major role.	The mineral wool that is for example utilized for partition wall can be re-used as the wool is flexible and the panels do not break.	7.5-.6%
SOC 1.1	**Thermal comfort** Thermal comfort makes an important contribution to an efficient and performance-enhancing working and living environment. This is evaluated through a checklist of qualitative and quantitative indicators (operative temperature/heating period, relative humidity/heating period, etc.).	The insulating properties of Knauf Insulation solutions (low thermal conductivity) and the technical information provided for construction are contributing to the increase of thermal comfort.	4.5-5.4%

DGNB New Construction Buildings, 2020 International

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GLASS MINERAL WOOL WITH ECOSE® Technology

DGNB Criteria Group	Assessment criteria and definition	Knauf Insulation Products contribution	Contributes towards
SOC 1.2	**Indoor air quality** The aim of the criterion is to ensure that indoor air is of sufficient quality not to adversely affect users' health and well-being. The buildings must be with TVOC concentration lower than 3000 µg/m³ and a formaldehyde concentration lower than 120 µg/m³.	Glass Mineral Wool ECOSE products help to meet the requirements as the binder is bio-based and without added formaldehyde, certified Blue Angel[6] and Eurofins Gold[7] for Indoor Air Comfort, see annexe 1	3.6-4.5%
SOC 1.3	**Acoustic comfort** The objective of the criterion is to achieve room acoustic conditions which are appropriate for the intended use and which guarantee a sufficient level of user comfort.	Knauf Insulation products provide excellent sound absorption properties, they can influence significantly the reverberation time behaviour of a room.	Up to 2.9%
TEC 1.2	**Sound insulation** Evaluating the quality of sound insulation of building with the certificate or building components certificates required in the call for tenders. Inspection to determine compliance with the requirements specified in DIN 4109. The following indicators are considered: airborne sound insulation against other residential areas, footfall sound insulation, airborne sound insulation against external noise, insulation from sound from building services.	Knauf Insulation solutions are available to meet the highest noise reduction challenges; all sound protection levels can be met, see annex 4.	Up to 2.3%

[6] https://www.blauer-engel.de/en/s/knauf
[7] www.product-testing.eurofins.com

DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

DGNB Criteria Group	Assessment criteria and definition	Knauf Insulation Products contribution	Contributes towards
TEC 1.3	**Quality of the Building envelope** The objective of this criterion is to reduce space heating demand, achieve a high level of thermal comfort, and to prevent damages to the building fabric. The following indicators are included in the evaluation: Thermal transmittance coefficient U, Thermal bridges, air permeability class, amount of condensation, air exchange, solar heat protection.	Knauf Insulation solutions are available to meet requested thermal transmittance coefficients of external building components. Technical guidance are available to avoid thermal bridge and condensation and to reach adequate air permeability class.	2.6 – 3.3 %
TEC 1.6.	**Ease of Recovery and Recycling** The ease of dismantling and recycling of the building structure is evaluated on the basis of a checklist including the following indicators: ease of disassembly, scope of disassembly and recycling and disposal plan.	Knauf Insulation solutions are generally easily disassembled (filler material) and if the sorting has been done appropriately the mineral wool can be recycled (ceiling tiles, bricks…).	3-3.5 %
PRO 1.4.	**Sustainability aspects in tender phase** It has to be checked whether sustainability aspects are integrated into the tender and if the selection of companies commissioned is based on sustainability aspects (equality, conservation of climate and resources, adherence to human rights…)	Knauf Insulation has an integrated certificate QHSEE : ISO 9001/ ISO 14001/ ISO 45001 / ISO 50001, see annex 3. We publish yearly a CSR report and monitor our responsible supply chain. Knauf Insulation supports the Ten Principles of the United Nations Global Compact on human rights, labor, environment and anti-corruption, see annex 5.	1.6%

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GLASS MINERAL WOOL WITH ECOSE® Technology

Annex 1: SOC 1.2 : Indoor Air Quality

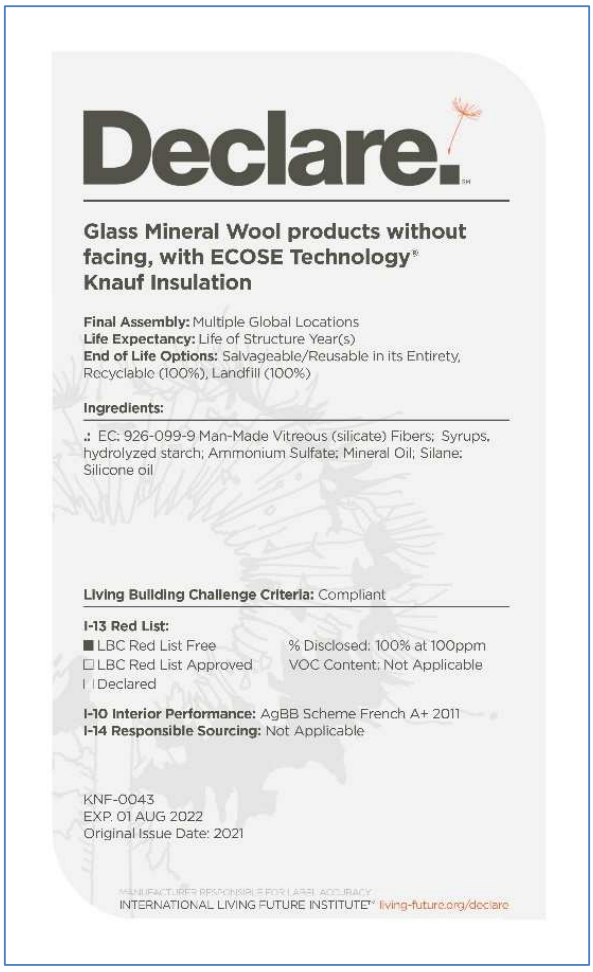
Here below the Eurofins Indoor Air Comfort Gold Certificate:

DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

Annex 2: DECLARE labels



Declare.

Glass Mineral Wool products without facing, with ECOSE Technology®
Knauf Insulation

Final Assembly: Multiple Global Locations
Life Expectancy: Life of Structure Year(s)
End of Life Options: Salvageable/Reusable in its Entirety, Recyclable (100%), Landfill (100%)

Ingredients:

.: EC: 926-099-9 Man-Made Vitreous (silicate) Fibers; Syrups, hydrolyzed starch; Ammonium Sulfate; Mineral Oil; Silane; Silicone oil

Living Building Challenge Criteria: Compliant

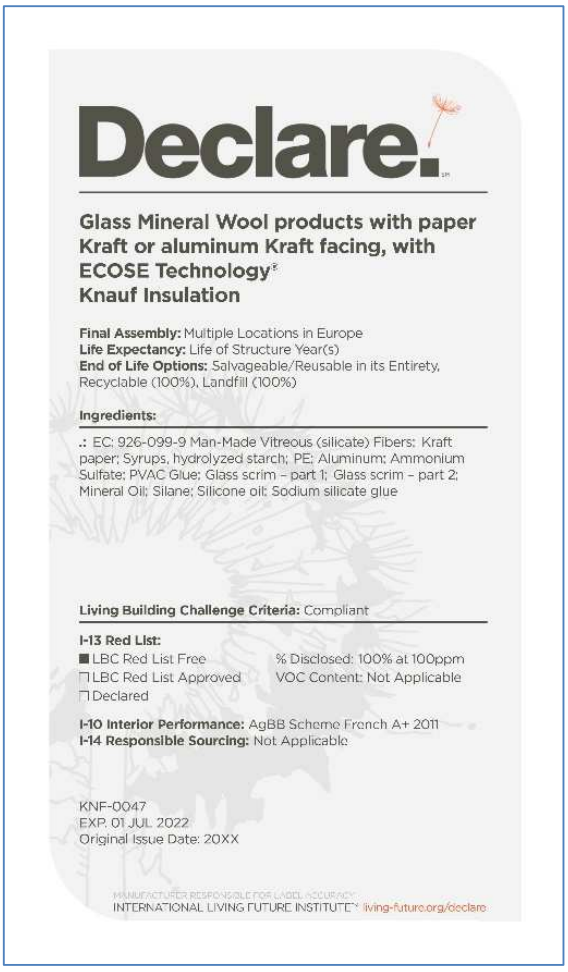
I-13 Red List:
■ LBC Red List Free
☐ LBC Red List Approved
☐ Declared

% Disclosed: 100% at 100ppm
VOC Content: Not Applicable

I-10 Interior Performance: AgBB Scheme French A+ 2011
I-14 Responsible Sourcing: Not Applicable

KNF-0043
EXP. 01 AUG 2022
Original Issue Date: 2021

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE® living-future.org/declare



Declare.

Glass Mineral Wool products with paper Kraft or aluminum Kraft facing, with ECOSE Technology®
Knauf Insulation

Final Assembly: Multiple Locations in Europe
Life Expectancy: Life of Structure Year(s)
End of Life Options: Salvageable/Reusable in its Entirety, Recyclable (100%), Landfill (100%)

Ingredients:

.: EC: 926-099-9 Man-Made Vitreous (silicate) Fibers; Kraft paper; Syrups, hydrolyzed starch; PE; Aluminum; Ammonium Sulfate; PVAC Glue; Glass scrim – part 1; Glass scrim – part 2; Mineral Oil; Silane; Silicone oil; Sodium silicate glue

Living Building Challenge Criteria: Compliant

I-13 Red List:
■ LBC Red List Free
☐ LBC Red List Approved
☐ Declared

% Disclosed: 100% at 100ppm
VOC Content: Not Applicable

I-10 Interior Performance: AgBB Scheme French A+ 2011
I-14 Responsible Sourcing: Not Applicable

KNF-0047
EXP. 01 JUL 2022
Original Issue Date: 20XX

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE® living-future.org/declare

https://declare.living-future.org/

DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

Annex 3: Knauf Insulation Group QHSEE certificates

Knauf Insulation is certified for all its production plants and corporate sites throughout the world following the below standards:

- Quality Management : ISO 9001: 2015
- Health and Safety Management: ISO 45001: 2018
- Environment Management: ISO 14001: 2015
- Energy Management: ISO 50001: 2011

TÜV NORD

CERTIFICATE

Management system as per
ISO 14001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KNAUF INSULATION S.P.R.L.
Rue de Maestricht 95
4600 Vise
Belgium

with the locations according to the annex

applies a management system in line with the above standard for the following scope

Design, development and production of insulation materials and systems

Certificate Registration No. 44 104 190742
Audit Report No. 3525 0612

Valid from 2019-12-23
Valid until 2022-12-22
Initial certification 2010-12-23

Certification Body
at TÜV NORD CERT GmbH

Essen, 2019-12-19

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.
Validity can be verified at https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12067-01-00

TÜV NORD

CERTIFICATE

Management system as per
ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KNAUF INSULATION S.P.R.L.
Rue de Maestricht 95
4600 Vise
Belgium

with the locations according to the annex

applies a management system in line with the above standard for the following scope

Design, development and production of insulation materials and systems

Certificate Registration No. 44 100 190742
Audit Report No. 3524 5466

Valid from 2019-12-23
Valid until 2022-12-22
Initial certification 2010-12-23

Certification Body
at TÜV NORD CERT GmbH

Essen, 2019-12-19

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.
Validity can be verified at https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12067-01-00

DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

TÜV NORD

CERTIFICATE

Management system as per
DIN ISO 45001:2018

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KNAUF INSULATION S.P.R.L.
Rue de Maestricht 95
4600 Vise
Belgium

with the locations according to the annex

applies a management system in line with the above standard for the following scope

Design, development and production of insulation materials and systems

Certificate Registration No. 44 126 190742
Audit Report No. 3524 5468

Valid from 2019-12-23
Valid until 2022-12-22
Initial certification 2010-12-23

Certification Body
at TÜV NORD CERT GmbH

Essen, 2019-12-19

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.
Validity can be verified at https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-00

TÜV NORD

CERTIFICATE

for the Energy Management System as per
ISO 50001 : 2011

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KNAUF INSULATION S.P.R.L.
Rue de Maestricht 95
4600 Vise
Belgium

with the locations according to the annex

applies a management system in line with the above standard for the following scope

Design, development and production of insulation materials and systems

Certificate Registration No. 44 764 190742
Audit Report No. 3525 0669

Valid from 2019-12-16
Valid until 2022-12-15
Initial certification 2013-12-17

Certification Body
at TÜV NORD CERT GmbH

Essen, 2019-12-13

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.
Validity can be verified at https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-00

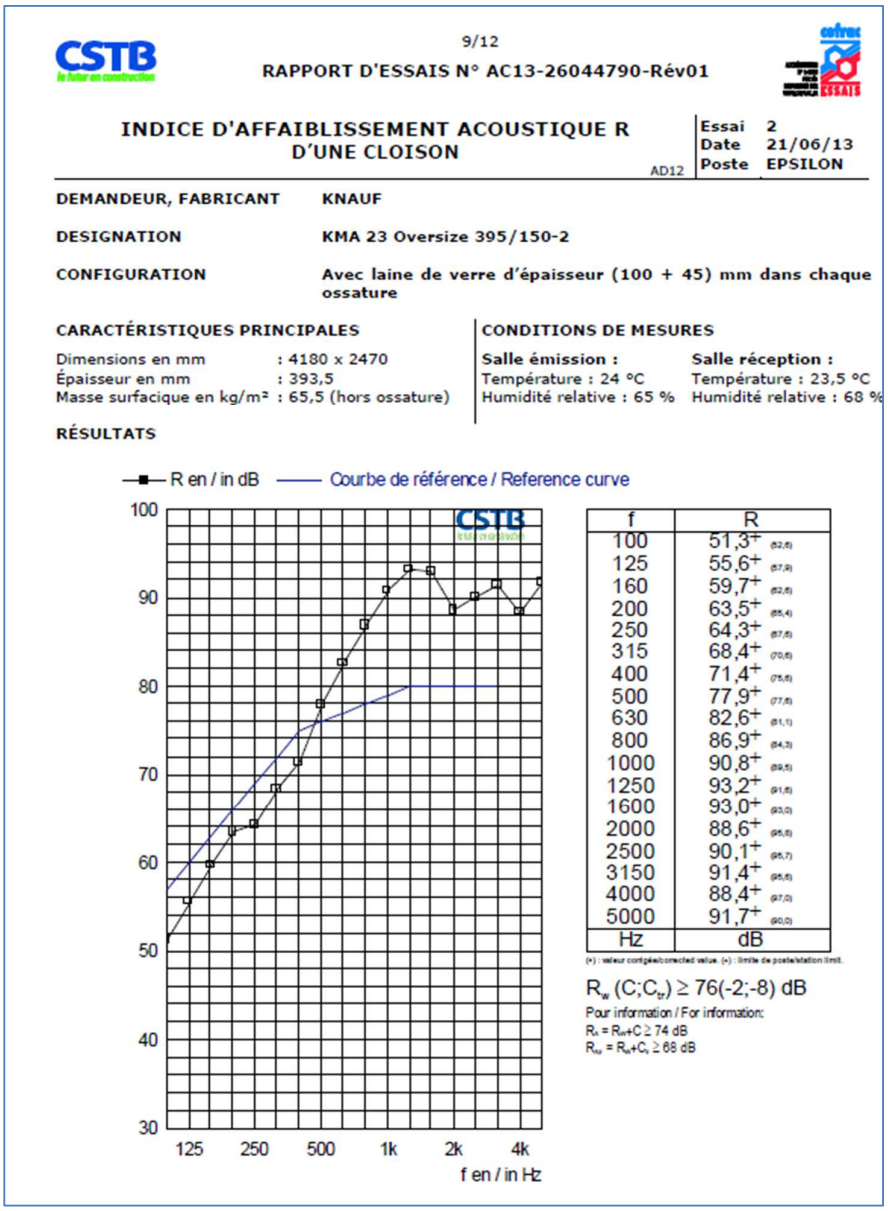
DGNB New Construction Buildings, 2020 International

PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

Annex 4: Sound transmission and absorption examples

STC_c in North America is the composite *Sound Transmissions Class* and is equivalent to R_w *Sound Reduction Index* in Europe. *α* coefficient is the coefficient for *sound absorption*.



CSTB

9/12

RAPPORT D'ESSAIS N° AC13-26044790-Rév01

INDICE D'AFFAIBLISSEMENT ACOUSTIQUE R D'UNE CLOISON

AD12

Essai 2
Date 21/06/13
Poste EPSILON

DEMANDEUR, FABRICANT: KNAUF

DESIGNATION: KMA 23 Oversize 395/150-2

CONFIGURATION: Avec laine de verre d'épaisseur (100 + 45) mm dans chaque ossature

CARACTÉRISTIQUES PRINCIPALES

Dimensions en mm : 4180 x 2470
Épaisseur en mm : 393,5
Masse surfacique en kg/m² : 65,5 (hors ossature)

CONDITIONS DE MESURES

Salle émission : Température : 24 °C Humidité relative : 65 %
Salle réception : Température : 23,5 °C Humidité relative : 68 %

RÉSULTATS

R en / in dB — Courbe de référence / Reference curve

f	R
100	51,3+ (52,6)
125	55,6+ (57,9)
160	59,7+ (62,6)
200	63,5+ (65,4)
250	64,3+ (67,6)
315	68,4+ (70,6)
400	71,4+ (75,6)
500	77,9+ (77,6)
630	82,6+ (81,1)
800	86,9+ (84,3)
1000	90,8+ (89,5)
1250	93,2+ (91,6)
1600	93,0+ (93,0)
2000	88,6+ (95,6)
2500	90,1+ (95,7)
3150	91,4+ (95,6)
4000	88,4+ (97,0)
5000	91,7+ (90,0)
Hz	dB

(+) : valeur corrigée/corrected value. (+) : limite de poste/station limit.

R_w (C;C_{tr}) ≥ 76(-2;-8) dB

Pour information / For information:
R_A = R_w+C ≥ 74 dB
R_w = R_w+C_{tr} ≥ 68 dB

December 2021

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PRODUCT DATA FOR CERTIFICATION

GLASS MINERAL WOOL WITH ECOSE® Technology

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM ACCORDING TO CSN EN ISO 354

Registration no.: **A-604**

Product: **Mineral insulation with ECOSE Technology (IPB 037) – thickness 50 mm**

Specimen description: The sample consist of 12 boards 1350 mm × 625 mm in the test room K4. The boards were produced on the basis of glass fibres with ECOSE technology. They are planned for thermal, sound and anti fire insulation. The specimen was laid freely on a floor and confined to specimen height.

Specimen size: 2,50 m × 4,05 m

Manufacturer: KNAUF INSULATION spol. s r.o. Bucharova 2641, 158 00 Praha 5

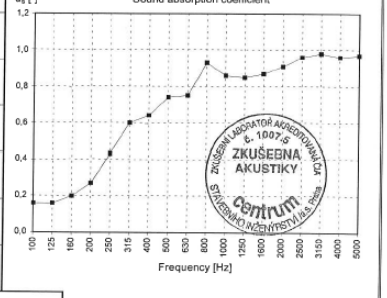
Test room: K4
Room volume: 80,25 m³
Air temperature: 23,0 °C
Relative humidity:: 46 %

Date of test: August 14, 2012
Fabrication date: August 14, 2012

Reverberation method measurement results according to CSN EN ISO 354 and CSN EN ISO 11654

Sound absorption coefficient α_s in 1/3 octave bands and weighed sound absorption coefficient α_w:

Frequency [Hz]	α_s [-]
100	0,16
125	0,16
160	0,20
200	0,27
250	0,43
315	0,60
400	0,64
500	0,74
630	0,75
800	0,93
1000	0,86
1250	0,85
1600	0,87
2000	0,91
2500	0,96
3150	0,98
4000	0,96
5000	0,97



Evaluation according to CSN EN ISO 11654:
α_w = 0,70 (H)

Specimen area: 10,12 m²
Basic weight: - kg/m²

Specimen thickness: 50 mm
Air gap thickness: -

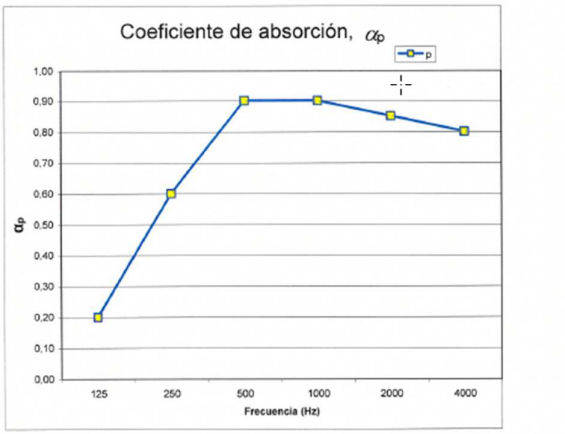
Centrum stavebního inzenyrství a.s. (Centre of Building Engineering)– Acoustic Test Laboratory
Test Laboratory accredited by CAI, No. 1007.5
Prazska 16, 102 21 Prague 10 – Hostivar
phone: 281017111, 281017491 fax: 271751128
e-mail: meller@csias.cz

Date: August 20, 2012
Test Laboratory Chief:
Ing. M. Meller, CSc

Protokol o zkoušce č. 7 2 1 - 1 0
Strana 6 / 8

Lugar de medida: Cámara reverberante normalizada de AUDIOTEC. Parc. 28 y 30. Parque Tecnológico de Boecillo. Valladolid. España.
Ensayo realizado: Medición de la absorción acústica en cámara reverberante.
Cliente: KNAUF INSULATION
C/ La Selva, 2. 08820. El Prat de Llobregat (Barcelona)
Fecha: 30 de Enero de 2010.
Composición de la muestra: Lana Mineral Natural ULTRACOUSTIC de 60 mm de espesor y Rd = 1,60 m2.K/W.
Superficie muestra: 11,7 m². **Volumen cámara:** 202,12 m³.
Norma: UNE-EN ISO 354:2004.

Frec(Hz)	125	250	500	1000	2000	4000	α_w = 0,85
α_p	0,20	0,60	0,90	0,90	0,85	0,80	



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GLASS MINERAL WOOL WITH ECOSE® Technology

Annex 5: United Nations Global Compact

Visé, the 26th of August 2020

H.E. António Guterres
Secretary-General
United Nations
New York, NY 10017
USA

Dear Mr. Secretary-General,

I am pleased to confirm that *Knauf Insulation* supports the Ten Principles of the United Nations Global Compact on human rights, labour, environment and anti-corruption. With this communication, we express our intent to implement those principles. We are committed to making the UN Global Compact and its principles part of the strategy, culture and day-to-day operations of our company, and to engaging in collaborative projects which advance the broader development goals of the United Nations, particularly the Sustainable Development Goals.
Knauf Insulation will make a clear statement of this commitment to our stakeholders and the general public.

We recognize that a key requirement for participation in the UN Global Compact is the annual submission of a Communication on Progress (COP) that describes our company's efforts to implement the Ten Principles. We support public accountability and transparency, and therefore commit to report on progress within *one year* of joining the UN Global Compact, and *annually* thereafter according to the UN Global Compact COP policy. This includes:

- A statement signed by the chief executive expressing continued support for the UN Global Compact and renewing our ongoing commitment to the initiative and its principles. This is *separate* from our initial letter of commitment to join the UN Global Compact.
- A description of practical actions (i.e., disclosure of any relevant policies, procedures, activities) that the company has taken (or plans to undertake) to implement the UN Global Compact principles in each of the four issue areas (human rights, labour, environment, anti-corruption).
- A measurement of outcomes (i.e., the degree to which targets/performance indicators were met, or other qualitative or quantitative measurements of results).

Sincerely yours,

Jean-Claude Carlin
Member of the Knauf Group Management Committee
Insulation Europe / Middle East / Asia

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