VERSION 02.2021

BREEAM RATING DATASHEET

KNAUF PLASTER MP 75

For BREEAM International New Construction 2016
Technical Manual: SD 233-2.0 : 2016

Verified by ARCADIS

KNAUF Blue
THINK GREEN. BUILD BLUE.

BREEAM
International New Construction 2016

Product data for certification
PLASTER KNAUF MP 75

BREEAM (Building Research Establishment Environmental Assessment Methodology) International New Construction is a voluntary certification that evaluates the high environmental performance of buildings, encouraging the integrated design process and the choice of healthy and sustainable materials.

With the help of independent assessors, BREEAM assess criteria covering a wide spectrum of topics in the following categories: Management, Health and wellbeing, Energy, Transport, Water, Materials, Waste, Land use and ecology, Pollution and Innovation.

Technical Manual: SD 233-2.0: 2016

Knauf products can facilitate obtaining BREEAM credits for different targets

PRODUCT DESCRIPTION

DESCRIPTION

Knauf MP 75 is a factory-mixed gypsum plaster, suitable as a finishing plaster for interior walls and ceilings. Knauf MP 75 corresponds to plaster group B4/50/2 according to EN 13279-1 and has ATG 1617.

COMPOSITION

Knauf MP 75 is a lightweight white powder plaster coating consisting of plaster ($CaSO4*½H2O$), hydrated lime, setting retarders, perlite and water retention agents.

PRODUCTION SITE

KNAUF ENGIS
Rue du Parc Industriel 1, B-4480 Engis
Latitude : 50.566202 | Longitude : 5.385493
ISO 9001 - OHSAS 18001

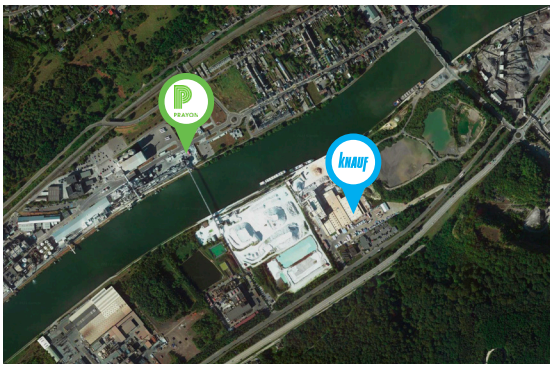
https://knauf.be/fr/produit/mp-75

PACKAGING

In 25 Kg bags (on pallets) or in bulk

MANAGEMENT		
BREEAM Credit Category code	**Assessment criteria**	**Knauf product contribution**
MAN 03 **Responsible construction practices**	PART 4 : MONITORING CONSTRUCTION SITE IMPACTS / SECOND MONITORING CREDIT : TRANSPORT OF CONSTRUCTION MATERIALS AND WASTE / **Criteria 18-19** (1 credit available): 18] Monitor and record data on the transport movements and impacts resulting from delivery of the majority construction materials to the site and construction waste from the site. 19] Using the collated data, report separately for materials and waste, the total transport-related carbon dioxide emissions ($kgCO_2$ eq)	Belgian production for a local market: The plaster factory is located in Engis (B-4480), near Liege, in direct proximity of the raw material source [100m from the plant]. With its logistics of silos and trucks combined with a wide range of spray machines, Knauf can deliver plaster in large quantities throughout Belgium with minimal transport impact. Depending localisation of the construction site, the transport of Knauf MP 75 plaster can be achieved by truck (directly from the plant to the site) or by ship (from the plant to the Port of Bruxelles) + by truck (from the Port to the site). **More information** https://knauf.be/fr/durabilite/transport-logistique

MATERIALS

BREEAM Credit Category code	Assessment criteria	Knauf product contribution
MAT 01 **Life cycle impacts**	**Criteria 1 to 4** (1 to 5 credits available): - The project uses a life cycle assessment (LCA) tool to measure the life cycle environmental impact of the building elements. - The score is determined using the MAT01 calculator, based on the robustness of the LCA tool used and the scope of the elements considered.	Knauf plaster products are of the highest quality and with high regard to environmental protection. Knauf products and systems stand for sustainable construction that enables energy-efficient and healthy living and working. Knauf relies largely on synthetic gypsum in order to protect natural gypsum resources as far as possible. In particular, synthetic gypsum is created as a by-product of a chemical company located next to our belgian plant. The production processes are checked with regard to their energy efficiency. Gypsum is an indefinitely recyclable material.
	Criteria 5_EPD (1 credit available): - Where a range of at least five products specified at Design Stage and installed by Post-Construction Stage are covered by verified Environmental Product Declarations (EPD).	The Knauf MP75 plaster [Material category 6 - according to MAT 03 Responsible sourcing of construction products] is covered by a verified Environmental Product Declaration [EPD]. **Evidences** https://knauf.be/fr/durabilite/EPD
	Criteria 6-7_Exemplary level (Innovation) (1 additional credit): - Depending on the score of the calculator MAT01 - Where a range of at least 10 products specified at Design Stage and installed by Post-Construction Stage are covered by verified manufacturer specific Environmental Product Declarations (EPD)	
MAT 03 **Responsible sourcing of construction products**	**Criteria 2 to 4_Sustainable procurement plan** (1 credit available) By the end of concept design stage, the developer has a documented policy that sets out procurement requirements for all suppliers relating to the responsible sourcing of construction products. The documented policy and procedure must encourage the specification of products with responsible sourcing certification over similar products without certification.	The Knauf MP75 plaster is mainly manufactured from by-products coming from a local industrial partner (< 1km). This raw material needs no extraction process and has a nearly zero effect environmental effect (in accordance with our third part verified EPD). 
	Criteria 5_Responsible sourcing of construction products (Up to 3 credits) The available responsible sourcing credits can be awarded where the applicable construction products are responsibly sourced in accordance with the BREEAM methodology.	

HEALTH & WELLBEING

BREEAM Credit Category code	Assessment criteria	Knauf product contribution
HEA 02 **Indoor air quality**	**Criteria 10_Emissions from building products** (1 credit available): - At least four of the five product types listed in Table 17 meet the emission limits, testing requirements and any additional requirements listed in Table 17. - The products must be tested in laboratories according to standards of the Table 17.	The Knauf MP75 plaster helps to provide healthy internal environements. Our sealants meet the emission limits, testing requirements and any additionnal requirements listed in Table 17. **Evidence** See appendix 1 : Analysis report from the Wessling laboratory: ULY17-001603-1
	Criteria 11-17_Post-construction indoor air quality measurement (1 credit available): - Testing performed in accordance with ISO 16000-2-3-5-6 et ISO 16017-1: - The formaldehyde concentration is < 100 µg/m³ (over 30 min), - The total volatile organic compound (TVOC) concentration is < 300 µg/m³ (après 8h), Where levels are exceeding these limits, measures will be undertaken to reduce the TVOC and formaldehyde levels to within the above limits.	
	Criteria 21_Exemplary level (Innovation) (1 additional credit): At least four of the five product types listed in Table 18 meet the emission limits, testing requirements and any additional requirements listed in Table 18.	The Knauf MP75 plaster meets the testing requirement and all the emission limits : the formaldehyde concentration, the total volatile organic compound concentration , the total semi-volatile organic compounds concentration, the carcinogens 1A and 1B concentration.
	Criteria 23_Exemplary level (Innovation) (1 additional credit): All product types meet the emission limits, testing requirements and any additional requirements listed in Table 18.	**Evidence** See appendix 1 : Analysis report from the Wessling laboratory: ULY17-001603-1
HEA 04 **Thermal comfort**	**Criteria 1 to 8** (2 credits available): - Termal modelling - Adaptability for a projected climate change scenario. To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building. - Thermal modelling has been carried out using the predicted mean vote (PMV) and predicted percentage of dissatisfied (PPD) indices in accordance with ISO 7730:2005 taking full account of seasonal variations. Thermal comfort levels in occupied spaces meet the Category B requirements set out in Table A.1 of Annex A of ISO 7730:2005_1 credit -- The thermal modelling demonstrates that the thermal comfort levels are achieved for a projected climate change environment_1 crédit	The Knauf MP75 plaster helps to provide an appropriate thermal confort level in the building. With a water vapour diffusion resistance Mµ of 10 (EN 12524) our plaster is vapour permeable and allowpermeable and allow the wall to breathe and regulate its moisture. Furthermore, Knauf MP75 is airtigh and contribue to the thermal performance of the walls. The presence of gypsum plasters in a dwelling is synonymous with pleasant climate and comfort. **Evidence** See appendix 2 : BBRI (belgian building Research Institute) study NIT 255 - December 2015
HEA 05 **Acoustic performance**	**Criteria 2 to 6** (1 credit available - Building type dependent) To ensure the building's acoustic performance, including sound insulation meets the appropriate standards for its purpose / Indoor ambient noise and sound insulation. **Criteria 8 to 10** (up to 4 credits available - Building type dependent) To ensure the building's acoustic performance, including sound insulation meets the appropriate standards for its purpose / Acoustic performances standards for residential buildings and long term stay residential institutions.	The Knauf MP75 plaster participate in the airtightness of the wall/ceilling and contribue to improve its acoustic insulation. Based on laboratory tests, the application of 10mm plaster on (at least) one side of a wall give an average improvement of 13 dB [Rw (C;Ctr)] for a standard 140mm hollow concrete block. **Evidence** See appendix 3 : BBRI [belgian building Research Institute] Acoustic tests report - nov. 2010

ENERGY

BREEAM Credit Category code	Assessment criteria	Knauf product contribution
ENE 01 **Reduction of energy use and carbon emissions**	**Criteria 1 to 6** (up to 15 credits available) To recognise and encourage buildings designed to minimise operational Energy demand, Primary energy consumption and CO_2 emissions.	The Knauf MP75 plaster participate in the airtightness of the wall/ceilling and contribue to reduce the losses through infiltration or exfiltration. **Evidence** See appendix 2 : BBRI (belgian building Research Institute) study NIT 255 - December 2015

WASTE

BREEAM Credit Category code	Assessment criteria	Knauf product contribution
WST 01 **Construction waste management**	**Construction waste reduction** **Criteria 1 to 6** (1 credit available): Pre-demolition audit, procedures and monitoring are in place to minimise non-hazardous and hazardous waste in line with appropriate targets sets.	The Knauf MP75 can be delivered in silos of approx. 24-30 Tonnes, in order to avoid the presence of wood pallets, bags or plastic packaging on the building site.
	Construction waste reduction **Criteria 7 to 8** (1 credit available): Procedures are in place for sorting, reusing and recycling construction waste into at least five defined waste groups through a licensed external contractor.	Knauf provide a service of specific containers to collect our Knauf gypsum wastes during the construction time. Gypsum is an indefinitely recyclable material. That is why we are able to pick this waste up and to recyle it for our own needs. An official collecting report is provided by the service provider. **More information** https://knauf.be/fr/container
	Diversion of ressources from landfill **Criteria 9 to 11** (1 crédit available) A significant quantity of non-hazardous construction and demolition waste generated by the project has been diverted from landfill.	
	Criteria 13_Exemplary level (Innovation)_1 additional credit: The rate for diversion from landfill is ≥ 35% improvement over national rate The score is assessed with the WST01 calculator.	

Additional environmental information

CERTIFICATIONS OF THE KNAUF PRODUCT

Certifications of the Knauf product	National Technical Approval	OK
	Blauer Engel	-
	Eurofins (indoor air comfort)	-
	PEP (ISO 14021)	-
	EPD (ISO/TR 14025)	OK
	IBR	OK
	C2C	-

Certifications of the Knauf factory	ISO 14001 (Environment)	-
	ISO 9001 (Quality)	OK
	ISO 45001 (Health & Security)	OK

LIST OF EVIDENCES

1. Verified Environnemental Product Declaration (EPD)	MAT 01	https://knauf.be/durabilite/EPD
2. Analysis report from the Wessling laboratory	HEA 02	Appendix 01
3. Airtightness test report - dec. 2015	HEA 04 - ENE 01	Appendix 02
4. Acoustic test report - nov. 2010	HEA 05	Appendix 03
5. National technical approval	-	https://knauf.be/produit/mp-75
6. Institut für Baubiologie Rosenheim Gmbh (IBR) Certificate of Award	-	https://knauf.be/durabilite/IBR
7. ISO 9001 certificate	-	https://knauf.be/fr/durabilite/certifications-iso
8. ISO45001 certificate	-	https://knauf.be/fr/durabilite/certifications-iso

Contact us

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Knauf Rue du Parc Industriel 1, B-4480 Engis

WESSLING
Quality of Life

BREEAM CERTIFICATE

Customer :

N. et B. Knauf & Cie
Rue du Parc Industriel 1
4480 ENGIS – BELGIUM

Product :

MP 75

Sample Nr. : 16-201318-01
Test report Nr. : ULY17-001603-1
Testing period : 09/01/17 – 28/02/17
Tested by : Laboratoires Wessling
Assessment criteria according to Hea 02 Indoor air quality (all buildings)
Emission from building product

Table 17 : Emission criteria by product type

Product type	Formaldehyde	TVOC	Carcinogens 1A and 1B	Testing Requirement	Additional requirements
MP 75	< 0,003 mg/m³	< 0,120 mg/m³	≤ 0,001 mg/m³	ISO 16000-9	N/A
Interior adhesives and sealants (including flooring adhesives)	≤ 0,06 mg/m³	≤ 1,0 mg/m³	≤ 0,001 mg/m³	ISO 16000-9	N/A
Conclusion	PASS	PASS	PASS	PASS	N/A

Table 18 : Exemplary level emission by product type

Product type	Formaldehyde	TVOC	TSVOC	Carcinogens 1A and 1B	Testing Requirement	Additional requirements
MP 75	< 0,003 mg/m³	< 0,120 mg/m³	< 0,025 mg/m³	≤ 0,001 mg/m³	ISO 16000-9	N/A
Interior adhesives and sealants (including flooring adhesives)	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0,1 mg/m³	≤ 0,001 mg/m3	ISO 16000-9	N/A
Conclusion	PASS	PASS	PASS	PASS	PASS	N/A

TVOC : Total volatile organic compounds (C6 – C16)

TSVOC : Total semi-volatile organic compounds (C17-C22)

Carcinogens 1A and 1B : listed as carcinogenic VOCs in Annex G.2 of prEN 16516 (draft)

Subject: Airtightness of Knauf gypsum plasters

The scientific paper of the BBRI [bearing the reference: NIT 255 - December 2015 - "The airtightness of buildings", part 5, chapter 5.1.1 interior renderings], states that:

To date, most bare masonry walls have an insufficient level of airtightness. Indeed, the porosity of the blocks, their joints and the connections of the masonry with the other elements of the building are all sources of air leakage. The application of a rendering gives the required qualities to the wall. It should be noted that the presence of defects (cracks, thin plaster or poorly applied plaster) can have a significant impact on the overall performance of the building, if the surface area of the plastered walls is large.

Table 11 gives an order of magnitude of the air permeability of different types of masonry, thus highlighting the importance of plaster. The influence of the plaster on the air permeability will depend on its application, grain size, degree of finish (smoothing rate) and drying. As a reminder, a material with an air permeability of less than 0.1 $m^3/(h.m^2)$ under a pressure difference of 50 Pa is considered airtight.

While most plasters have sufficient performance to act as an air barrier, thin plasters (less than 8 mm thick) should be kept in check. The latter, which are more sensitive to temperature and humidity variations, can in fact be the source of micro-cracks and cracks. This risk remains moderate when the drying process can be slow. In any case, if the building must offer high airtightness performance, the designer will be cautious when a thin plaster is to be applied to a masonry substrate.

In this way, the plastering not only plays a finishing role, but also fulfils an essential function for the energy performance of the building. When aiming for high performance, especially in the case of highly air-permeable masonry, it is important to ensure the continuity of the rendering, especially in places where there usually is no plaster (...).

In practice, especially the architectural details (connections between various components, penetrations in the building envelope ...) are crucial for the airtightness. The necessary attention must be given to the design and implementation of the architectural detail.

Table 11 Order of magnitude of the air permeability of masonry under a pressure difference of 50 Pa.

Concrete masonry	Terracotta brickwork	Plastered brickwork
From 1 to 35 m^3 / ($h.m^2$)	From 0.2 to 50m^3 / ($h.m^2$) Higher values correspond to smaller blocs or bricks, which induce a larger joint area.	0.02 to 0.15m^3 / ($h.m^2$) These values depend in particular on the type of plaster, its thickness and its drying.

Raf De Haes
Technical Director

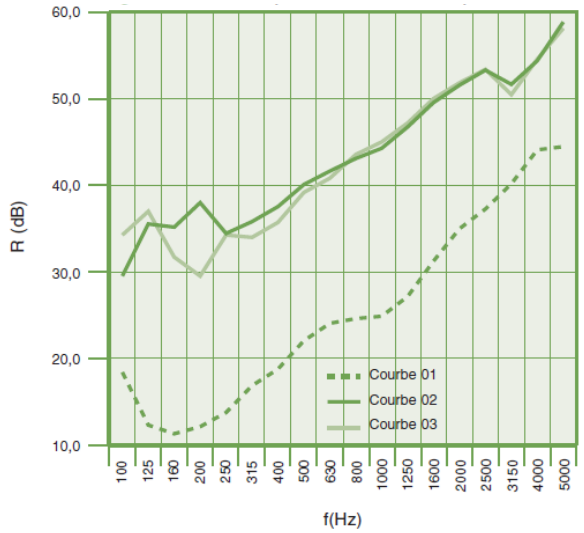
Subject: Acoustic performance of Knauf gypsum plasters

Within the scope of a scientific study, the BBRI [The Belgian Building Research Institute - "Influence de la finition des murs maçonnés sur leurs propriétés acoustiques" - Les Dossiers du CSTC - Booklet n° 7 - 2nd quarter 2004] states in its conclusion that:

"The presence of a finishing plaster, on at least one of the two sides of the masonry wall, will indeed ensure the airtightness of the wall, a prerequisite for its good acoustic insulation. The influence of a plaster on the sound insulation of a masonry wall will therefore be all the more significant as the type of block used is porous. (…) "

The studied wall is made of lightweight concrete blocks with an approximate density of 870 kg/m³ and a thickness of 140 mm. Three measurements of the weighted sound reduction index R_w were undertaken: the first on the unplastered wall, the second on the wall with plaster on both sides, and the last on the wall plastered on one single side.

Fig. 2: Influence of the presence of gypsum plaster.



Test description	R_w (dB)	$R_w + C$	$R_w + C_{tr}$
Curve 01 : 140 mm lightweight concrete block wall unplastered	25	24	21
Curve 02 : the same, plaster on both sides	44	44	41
Curve 03 : the same, plaster on one side	43	42	39

The test results (see figure 2) show that the presence of plaster on at least one side can improve the sound reduction by up to 18 dB. Indeed, the weighted sound reduction index increases from 25 dB to 43 dB, in the case of this type of lightweight concrete masonry.

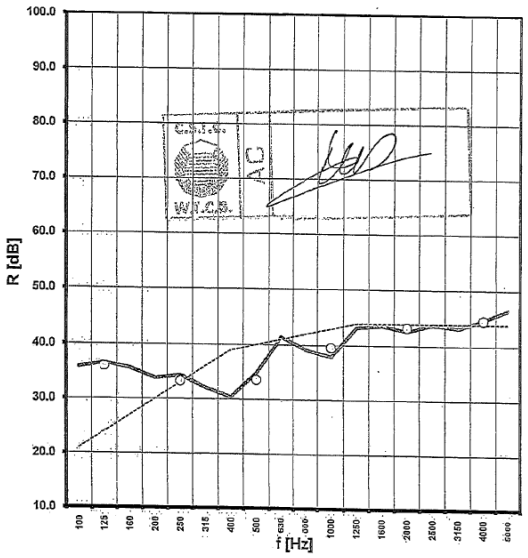
In addition, an acoustic test program carried out in the BBRI laboratories provides us with similar results.
The tests were carried out on a masonry made of hollow concrete blocks measuring 390x140x190 mm and with a density of 1380 Kg/m³ supplied by the company ROOSENS Bétons (B-7170).

Based on the test report Nr. AC 5226 (25-11-2010), we know that the weighted sound reduction index of the wall without plaster is: **R_w (C; C_{tr}) = 40 (-1;-3) dB**

f (Hz)	R (dB) 1/3oct	oct
50		
63		
80		
100	35.8	
125	36.5	35.9
160	35.6	
200	33.8	
250	34.3	33.3
315	32.1	
400	30.4	
500	34.8	33.6
630	41.5	
800	39.2	
1000	37.9	39.6
1250	43.3	
1600	43.7	
2000	42.7	43.4
2500	43.9	
3150	43.3	
4000	44.8	44.7
5000	46.7	

R_w (C;C_{tr}) = 40 (-1;-3) dB

$C_{50\text{-}3150}$= -
$C_{50\text{-}5000}$= -
$C_{100\text{-}5000}$= -
$C_{tr,50\text{-}3150}$= -
$C_{tr,50\text{-}5000}$= -
$C_{tr,100\text{-}5000}$= -

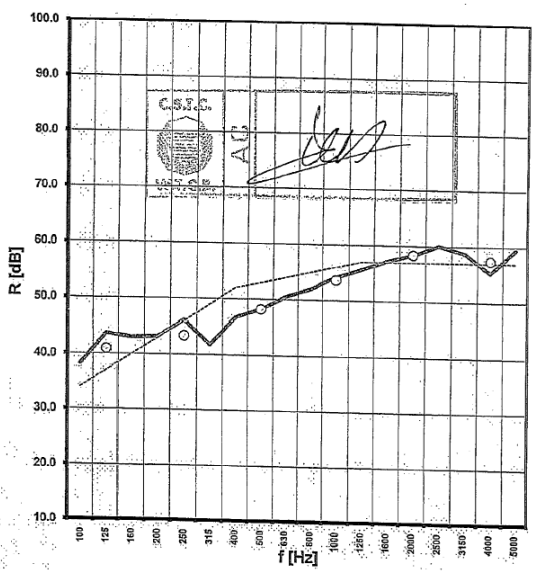


Whilst according to test report No. AC 5228 (25-11-2010), the weighted sound reduction index of the wall with a single-sided gypsum plaster is**: R_w (C; C_{tr}) = 53 (-1;-4) dB**

f (Hz)	R (dB) 1/3oct	oct
50		
63		
80		
100	38.3	
125	43.8	41.0
160	43.1	
200	43.3	
250	46.2	43.5
315	41.9	
400	46.8	
500	48.3	48.3
630	50.5	
800	52.0	
1000	54.2	53.7
1250	55.7	
1600	57.2	
2000	58.4	58.4
2500	60.1	
3150	58.8	
4000	55.3	57.5
5000	59.5	

R_w (C;C_{tr}) = 53 (-1;-4) dB

$C_{50\text{-}3150}$= -
$C_{50\text{-}5000}$= -
$C_{100\text{-}5000}$= -
$C_{tr,50\text{-}3150}$= -
$C_{tr,50\text{-}5000}$= -
$C_{tr,100\text{-}5000}$= -



We can safely conclude that the improvement provided by a single layer of 10mm plaster is 13 dB for this type of heavy concrete wall (14 dB for a double layer of plaster).

Raf De Haes
Technical Director