Ytong Multipor Mineral Insulation Boards

External thermal insulation composite system

YTONG multipor

Ytong Multipor in external thermal insulation composite system

Ytong Multipor: the sustainable external thermal insulation composite system

In external thermal insulation composite systems, Ytong Multipor mineral insulation boards provide reliable solutions..

System layout

- Ytong Multipor light mortar for gluing on
- Ytong Multipor mineral insulation board
- Ytong Multipor light mortar for reinforcement
- Reinforcement mesh

Plaster finishes

- Ytong Multipor light mortar (floated)
- System-compatible mineral-base finish plasters

Exterior walls are subject to major temperature variations and varying weather influences.
Thermal insulation composite systems applied on the outside reduce heat losses and lower building operating costs. This reduces emissions and provides an active contribution to protecting our environment.

Ytong Multipor in the external thermal insulation composite system is suitable for highly subdivided facades as well as insulating work on large surfaces. It provides a complete, monolithic, mineral-based system.
Xella Deutschland GmbH is an extraordinary member in the Professional Association for External Thermal Insulation Composite Systems (Fachverband Wärmedämm-Verbundsysteme e.V).

Ytong Multipor – the solid exterior insulation with stable shape ...

... for old and new buildings
Ytong Multipor mineral insulation boards are suitable as thermal insulation composite systems on solid subsurfaces for renovating facades and as thermal insulation on the exterior walls of new buildings. Cutting work of all types can be accomplished simply to fit exactly without special tools. Experienced workmen achieve high installation rates on large surfaces.
Universal application

... product and system approved by construction supervisory authorities
Ytong Multipor mineral insulation boards – a silicate insulating material.
With European Technical Approval ETA-05/0093.
Ytong Multipor is generally approved by construction authorities in external thermal insulation composite systems using one or two layers up to 300 mm.
Simply request!

... for facades without thermal bridges
The Ytong Multipor external thermal insulation composite system consists of a homogeneous insulating layer allowing construction of highly insulated exterior walls without gaps or thermal bridges.
Low energy costs
... sounds solid
When subjected to a "tapping test", the Ytong Multipor external thermal insulation composite system sounds like a solid wall and offers maximum quality, hard wearing thermal insulation.
Woodpecker-proof

... inhibiting effect to prevent formation of algae and mould
Ytong Multipor external thermal insulation composite system is biologically and microbiologically unobjectionable and has a natural inhibiting effect to prevent growth of algae, mould and micro-organisms.
Inhibits algae growth

... withstands high mechanical loads
Non-compressive Ytong Multipor mineral insulation boards give the entire external thermal insulation composite system particular stability.
Highly resistant

... to thermal stresses
Multipor external thermal insulation composite system reduces longitudinal changes in the structural parts resulting from thermal forces. Cracks which can usually occur in mixed masonry can be prevented. Even cracks in the facades on old buildings can be repaired.
Prevents formation of fissures
... variable surface finish
All approved plaster finishes in the external thermal insulation composite system, e.g. thin layer mineral-based finish plasters are suitable for finishing the surface. System suppliers offer a variety of colours for attractive facades to meet your personal preference.
Permanently attractive

... ecologically perfect
Ytong Multipor mineral insulation boards are classified as an "environmentally compatible construction product" by the Institute for Construction and Environment (Institut Bauen und Umwelt e.V.) (IBU e.V.)
EPD-XEL-2009212-D, completely recyclable and Naturplus quality symbol 0404-0812-0881 as biologically acceptable and recommendable for construction. Moreover, wastes and residues can be disposed of easily and economically as construction rubble.
Recyclable

Thermally insulating, non-combustible, open for vapour diffusion, solid and stable shape

Ytong Multipor external thermal insulation composite system

Exceptional material properties and simple processing make Ytong Multipor the optimum material for exterior insulation.

Ytong Multipor Mineral Insulation Boards

Minerally and ecologically, Ytong Multipor mineral insulation boards offer a new quality for thermal insulation:

- homogeneous
- high thermal insulation factor
- non-combustible
- stable shape, non-compressible
- open for vapour diffusion
- water repellent
- ecological

Production

Ytong Multipor mineral insulation boards are produced in an ecological and energy-saving process using the raw minerals lime, sand, cement and water under steam pressure.

Ytong Multipor Light Mortar

for gluing, reinforcement and plastering

- natural white
- easy processing
- high adhesive force
- good stability
- high yield (30 l/20 kg)
- water repellent
- open for vapour diffusion
- frost-resistant
- non-combustible

Delivery and processing instructions:

- Storage: store dry on pallet, up to 12 months
- Delivery form: 20 kg/sack
- Processing time: approx. 1.5 h
- Ambient temperature: ≥ 5 °C

Ytong Multipor Repair Mortar

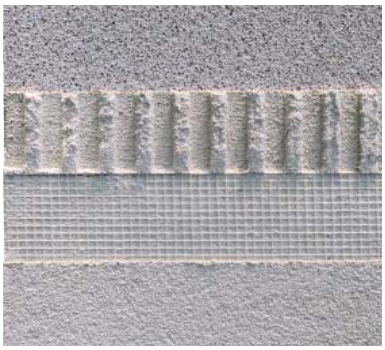
For repairs and filling damaged points

Anchors

Can be fastened mechanically with approved anchors, according to specifications of system partner

Plaster finishes

The following finish plasters are suitable and system-compatible with the external thermal insulation



composite system structure with Ytong Multipor light mortar:

- Thin-layer mineral-based finish plasters according to EN 998-1
- Organic constituents not greater than < 2 % by weight
- Capillary water absorption $w \leq 0.2$ kg/m² $min.^{0,5}$, corresponding to classification W2 according to EN 998-1
- Water vapour diffusion resistance coefficient $\mu \leq 30$
- Dynamic E modulus in system structure with Ytong Multipor light mortar between 1500 and 2000 N/mm²

Technical Data		
	Ytong Multipor mineral insulation board	**Ytong Multipor light mortar**
Approval	European Technical Approval ETA-05/0093 General Construction Supervisory Approval Z-23.11-1501	
Areas of application	External thermal insulation composite system from system partners (WAP DIN E 4108-10)	
Density	approx. 115 kg/m³	
Thermal conductivity	λ = 0.045 W/mK	$\lambda_{10, dry}$ = 0.18 W/mK
Water vapour diffusion resistance coefficient	μ = 3/5 open for vapour diffusion	μ = ≤ 10
Fire classification	Non-combustible - fire classification A1 according to DIN EN 13501-1	A2 – non-combustible
Compressive strenght	Average ≥ 300 kPa	CS II – 1.5 – 5.0 N/mm²
Bending strength	≥ 80 kPa	

Board Formats/Quantities	
Length x Width 600 x 390 mm	
Thicknesses	**m²/pallet**
80 mm	21,06
100 mm	16,85
120 mm	14,04
140 mm	11,23
160 mm	9,83
180 mm	8,42
200 mm	8,42

Special dimenstions available on request

External thermal insulation composite system with Ytong Multipor: glue on – plaster over: insulated!

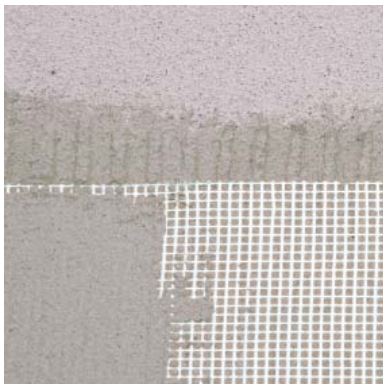
Mixing light mortar. 20 kg mixed with 8 l of water (mark on measuring bucket) yields approx. 30 l of adhesive mortar.

Apply over full surface with toothed trowel (10 or 12 mm teeth) results in adhesive surface of at least 70 %.

Base height of light mortar approx. 8–10 mm. This allows irregularities up to 5 mm in the subsurface to be compensated.

Press insulation board on to wall surface and slide against adjacent board.

Ytong Multipor insulation boards must be fastened additionally with suitable anchors.

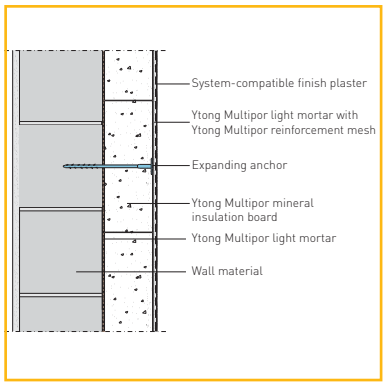


Work reinforcement mesh into Ytong Multipor light mortar.

Easy to adapt

Quick adaptation to irregularities and attachments.

System cross-section



Ytong Multipor external thermal insulation composite system components.

Thermal and acoustic insulation for protection against fire and moisture

Thermal insulation

Ytong Multipor mineral insulation boards consist of 100 % homogeneous material with a heat conductivity of 0.045 W/mK.

Minimum energy losses

Thermal resistance R (m²K)/W	
Thickness	(m²K)/W
80 mm	1,78
100 mm	2,22
120 mm	2,67
140 mm	3,11
160 mm	3,56
180 mm	4,00
200 mm	4,44

Thermal insulation in summer

Primarily the mass of structures pointing toward the inside as well as the percentage of window area in the exterior structures are decisive for the thermal insulation in summer. Here, external thermal insulation composite systems attached to the outside play only a subordinate role. If the insulating material in the external thermal insulation composite system is calculated by itself, the heat storage capacity of Ytong Multipor is relatively high due to its density (115 kg/m³) at the same insulation thickness.

Stores heat

Protection against moisture

Ytong Multipor is treated to ensure that it is water repellent inside and out. Short rain showers and bad weather periods are no problem at all. Ytong Multipor mineral insulation boards contain only 5 % solids and are open for vapour diffusion. Ytong Multipor does not experience any mentionable loss in strength in the wet state.

Moreover, this mineral insulating material with its good thermal insulating and diffusion characteristics also ensures a pleasant room climate with balanced temperature and humidity.

System open for vapour diffusion

Fire protection

Ytong Multipor mineral insulation boards are classified as non-combustible in construction material class A1 and the associated Ytong Multipor light mortar ensures absolute safety in the event of a fire. This insulating material does not develop any toxic gases or smoke even at the highest temperatures. This is a true advantage for vital rescue measures in the event of a fire.

non-combustible

Acoustic insulation

In spite of their high porosity of 95 % by volume, Ytong Multipor mineral insulation boards do not have any negative effect for acoustic insulation. The acoustic insulation requirements specified in DIN 4109 were determined using the acoustic insulation value R_w. In contrast to most external thermal insulation composite systems which decrease the value by up to 5 dB, it is maintained by Ytong Multipor. Since thermal insulation composite systems are usually used as thermal insulation on exterior walls, the acoustic insulating properties usually pertain to low frequency traffic noise.

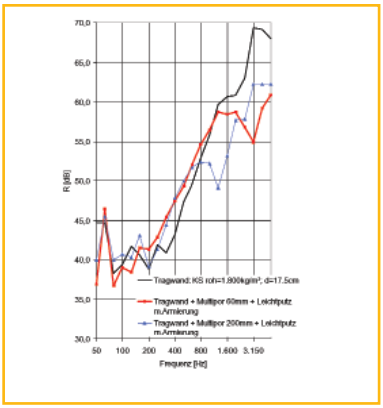
The acoustic insulating factor for the overall construction is distinguished by the weighted acoustic insulation value R_w. Here, the high rigidity of Ytong Multipor ensures good values.

Good acoustic insulation

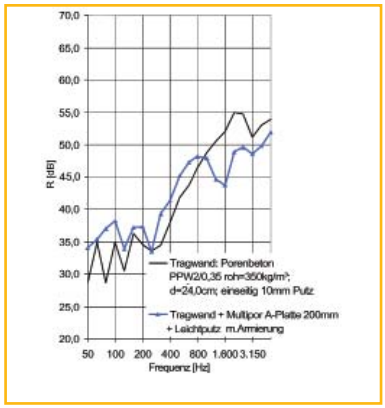
Acoustic insulation and U values for Ytong Multipor in external thermal insulation composite system

Test results from acoustic measurements on IBP	
Wall structure	**Acoustic insulation value** [1]
Silka lime sandstone	R_w
d = 17.5 cm, ρ = 1800 kg/m³	52 dB
Silka + 6 cm Ytong Multipor	54 dB (+2) [2]
Silka + 20 cm Ytong Multipor	52 dB (+2) [2]
Ytong	
d = 24.0 cm, ρ = 350 kg/m³	46 dB
Ytong + 20 cm Ytong Multipor	4,44

[1] Individual value
[2] Value in parenthesis: Difference in comparison to uninsulated wall alone



Acoustic insulation value for Ytong Multipor on Silka wall



Acoustic insulation value for Ytong Multipor on Ytong wall

Construction material	Wall thickness	Density class	Thermal conductivity	U value uninsulated wall	Insulation thickness in cm						
					8	10	12	14	16	18	20
					U value with Ytong Multipor						
	(cm)	(kg/dm³)	(W/mK)	(W/m²K)	(W/m²K)*						
Standard concrete, to DIN 1045	24.0	2.1	2..4	3.52	0.48	0.40	**0.34**	**0.29**	**0.26**	**0.23**	**0.21**
Silka-R(P) Flat blocks, nach DIN 106	15.0	2.0	1.1	3.26	0.48	0.40	**0.34**	**0.29**	**0.26**	**0.23**	**0.21**
Silka-R(P) Flat blocks, nach DIN 106	17.5	2.0	1.1	3.04	0.47	0.39	**0.33**	**0.29**	**0.26**	**0.23**	**0.21**
Silka-R(P) Flat blocks, nach DIN 106	20.0	1.8	0.99	2.69	0.47	0.39	**0.33**	**0.29**	**0.26**	**0.23**	**0.21**
Silka-R(P) Flat blocks, nach DIN 106	24.0	1.8	0.99	2.42	0.46	0.38	**0.33**	**0.29**	**0.25**	**0.23**	**0.21**
Solid/hollow brick solid blocks	24.0	2.0	0.96	2.38	0.46	0.38	**0.32**	**0.28**	**0.25**	**0.23**	**0.21**
Solid blocks (Vbl) LB, to DIN 18152	24.0	1.8	0.87	2.24	0.45	0.38	**0.32**	**0.28**	**0.25**	**0.22**	**0.20**
Cinder blocks, to DIN 398	24.0	2.0	0.76	2.06	0.44	0.37	**0.32**	**0.28**	**0.25**	**0.22**	**0.20**
Solid blocks (V) LB, to DIN 18152	24.0	1.6	0.74	2.02	0.44	0.37	**0.32**	**0.28**	**0.25**	**0.22**	**0.20**
Silka-R(P) Flat blocks, nach DIN 106	24.0	1.4	0.70	1.95	0.44	0.37	**0.31**	**0.28**	**0.25**	**0.22**	**0.20**
Solid bricks, old building	38.0	2.0	1.05	1.88	0.43	0.36	**0.31**	**0.27**	**0.24**	**0.22**	**0.20**
Hollow blocks LB, to DIN 18151	24.0	1.0	0.64	1.83	0.43	0.36	**0.31**	**0.27**	**0.24**	**0.22**	**0.20**
Solid/hollow brick solid blocks	24.0	1.2	0.50	1.54	0.41	**0.35**	**0.30**	**0.27**	**0.24**	**0.21**	**0.20**
Cinder blocks, to DIN 398	24.0	1.0	0.47	1.47	0.41	**0.34**	**0.30**	**0.26**	**0.24**	**0.21**	**0.20**
LHlz A+B, to DIN 105/2	24.0	0.8	0.39	1.27	0.39	**0.33**	**0.29**	**0.26**	**0.23**	**0.21**	**0.19**
Solid blocks (Vbl) LB, to DIN 18152	24.0	0.8	0.39	1.27	0.39	**0.33**	**0.29**	**0.26**	**0.23**	**0.21**	**0.19**
Solid blocks (V) LB, to DIN 18152	24.0	0.5	0.32	1.09	0.37	**0.32**	**0.28**	**0.25**	**0.22**	**0.20**	**0.19**
LHlz W, to DIN 105/2	24.0	0.7	0.3	1.03	0.36	**0.31**	**0.27**	**0.25**	**0.22**	**0.20**	**0.19**
Hollow blocks LB, to DIN 18152	24.0	0.5	0.29	1.00	0.36	**0.31**	**0.27**	**0.24**	**0.22**	**0.20**	**0.18**
Ytong, to DIN 4065	24.0	0.8	0.29	1.00	0.36	**0.31**	**0.27**	**0.24**	**0.22**	**0.20**	**0.18**
Ytong, to DIN 4065	24.0	0.5	0.22	0.79	**0.33**	**0.29**	**0.25**	**0.23**	**0.21**	**0.19**	**0.18**
LHlz T, to approval	30.0	0.8	0.21	0.63	**0.30**	**0.26**	**0.23**	**0.21**	**0.19**	**0.18**	**0.17**
LHlz T18, to approval	36.5	0.8	0.18	0.46	**0.25**	**0.23**	**0.21**	**0.19**	**0.19**	**0.16**	**0.15**
Ytong, to DIN 4065	24.0	0.5	0.12	0.46	**0.25**	**0.23**	**0.21**	**0.19**	**0.19**	**0.16**	**0.15**

* The plaster layers were not taken into consideration in calculating the U values.

Thermal bridge catalogue www.multipor.de

U value for old building ‹ 0.35 (W/m²k) **U value for low energy house ‹ 0.22 (W/m²k)**

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