THERMOFLOC®
Intelligent Insulation System

MANUAL

Systematic insulation and renovation

Foreword

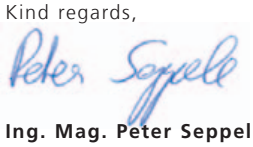
Dear Thermofloc customers,
dear business partners and interested readers!

These days proper insulation is of paramount importance. Only through careful management of our natural resources will we be able to preserve an intact environment for us and in particular for future generations.

We realized that already a long time ago. For more than 15 years we have been dealing intensively and successfully with the topic of cellulose insulation.
The increasing demand for our THERMOFLOC cellulose insulation material shows that we are on the right track – cellulose is the insulation material of the present and the future!
In 2010 we increased the production capacity of our factory by adding a second production line and bringing the entire production plant up to the state of the art.

Peter Seppele Gesellschaft m.b.H. is a tradition-conscious family-run business situated in Carinthia, whose roots can be traced back as far as to 1929.
During the past few years the company has managed to occupy an outstanding position on the European market for insulation material. What first began with the production and distribution of blow-in insulation material made of cellulose, over the years has developed into a modern and innovative overall concept.
Today THERMOFLOC offers well thought-out and successful systematic solutions which provide for a perfect indoor climate in any type of construction.
The complete system is composed of components perfectly adjusted to each other, from the technique of applying adhesive material to sheathing rolls for roofs and the blow-in insulation material. By means of various combinations, THERMOFLOC enables a perfect insulation for any kind of room – from the basement to the attic.

Kind regards,



Ing. Mag. Peter Seppele
Managing director

Pages

Pages

THERMOFLOC TECHNICAL CATALOGUE

Detailed overview of wall structures

Detailed overview of wall structures

Pages

Detailed overview of ceilings and floors

Insulation materials in comparison

Calls for tenders

European Technical Approval ETA

THERMOBLOW

Miscellaneous

THERMOFLOC

THERMOFLOC®
Intelligent Insulation System

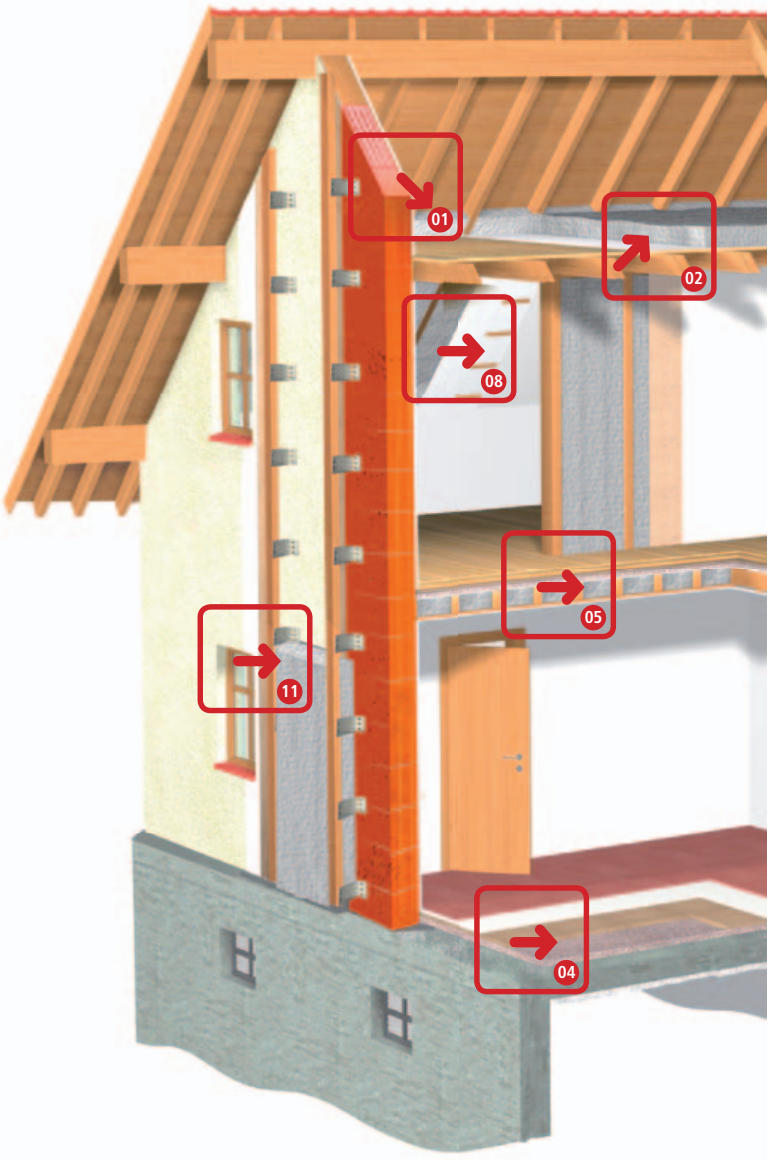
THERMOFLOC HOT-PAPER

MANUAL

THERMOFLOC Products

Hot Paper, the hot info for clever energy savers. The THERMOFLOC brand of Peter Seppele Gesellschaft m.b.H has developed over the past few years from being merely an insulation brand up to being an umbrella brand.

The THERMOFLOC complete insulation system made of perfectly matched components is based on many years of experience and is the product for practical solutions. Our sales partners guarantee the highest quality of workmanship and services across Europe and therefore play a crucial role in the positive development of the umbrella brand. The THERMOFLOC insulation system provides effective insulation solutions from the ground up for new building projects such as, for example, the low energy or passive house sector as well as for later renovation or insulation of existing buildings.



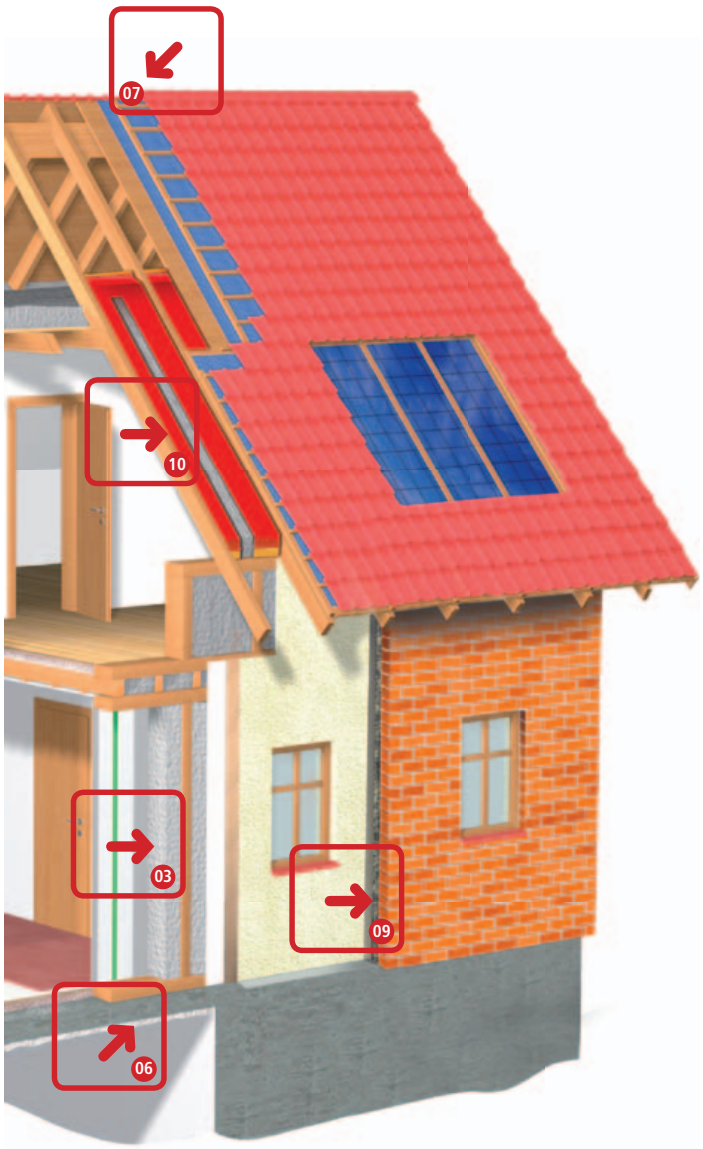
01) **THERMOFLOC blow-in insulation**
for insulating between the rafters in the roof

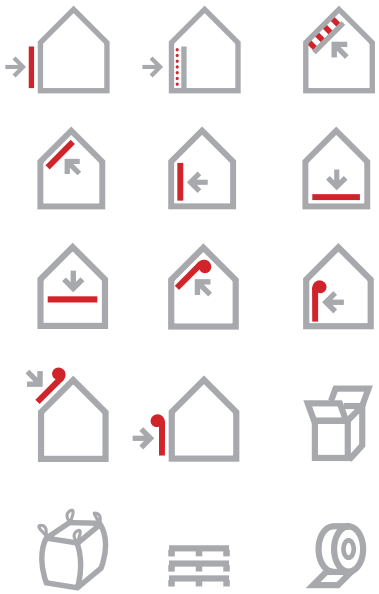
02) **THERMOFLOC blow-in insulation**
blown on as an open layer to insulate ceilings on the top stories of buildings

03) **THERMOFLOC blow-in insulation**
for insulating outer walls

04) **THERMOFLOC insulation pellets**
as a supporting floor substructure

THERMOFLOC Insulation System - pleasantly cool in the summer & cosy warm in the winter. For optimum comfort.





05) **THERMOFLOC floor filling**
for insulating hollow spaces in intermediate ceilings

06) **THERMOFLOC blow-in insulation**
sprayed onto the underside of cellar ceilings

07) **THERMOFLOC sheathing roll**
for the roof and walls

08) **THERMOFLOC vapour-proof lining**

09) **TFPearls**
blow-in insulation for cavity walling

10) **THERMOFLOC Thermobag**
thermal renovation of roof structures

11) **THERMOFLOC VECTOR facade system**

Blow-in Insulation

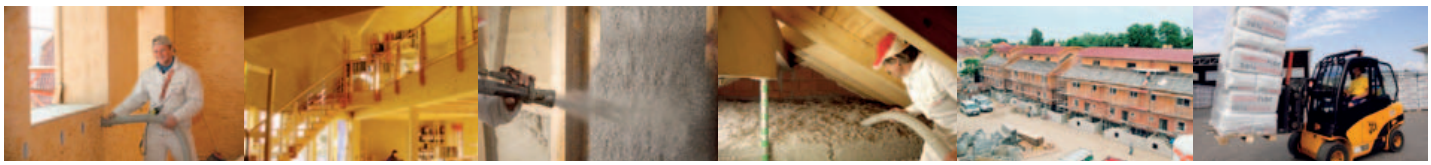
The most important areas of application

- the roof (steep roof, pent roof, hipped roof, flat roof)
- the outer wall and inner wall
- the ceiling on the top storey

Used in both new buildings and in the renovation of old buildings, THERMOFLOC Blow-in Insulation has been proving its worth for decades.

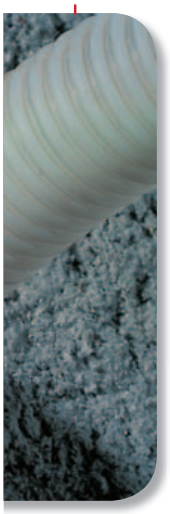
New products and areas of application

- THERMOFLOC insulation bag for later roof renovation
- TFPEARLS for insulation of hung facades
- Vector facade system for WDV system with blow-in insulation



THERMOFLOC Insulation System - effectively lowers energy costs

:: Roof insulation
:: Wall insulation
:: Floor insulation



THERMOFLOC BLOW-IN INSULATION

THERMOFLOC Blow-in insulation made of cellulose fibres has many important product features which enable efficient insulation for reducing energy costs, while including ecological considerations as well. The blow-in insulation obtained from newspapers is characterised in particular by the fact that both in the cold as well as warm seasons, it insulates optimally and hence considerably reduces energy costs for heating in the winter and for air-conditioning in the summer. Building projects are being conducted in 21 European countries with natural THERMOFLOC fibres, and every day the number of builders who are convinced of the benefits of a Thermofloc insulation system increases.

Insulation expert info: www.thermofloc.com

Blow-in Insulation

THERMOFLOC is installed by means of specially equipped blowing machines. The insulation is pumped into hoses under air pressure and transported further into the hollow spaces of the building components where it is compressed in accordance with the material handling instructions to produce an uninterrupted, complete insulation layer.

The special handling technique has considerable advantages both for the person installing the insulation as well as for the builder. The builder benefits through having an uninterrupted insulation layer that is free of thermal bridges. Old roofs can be insulated later without removing the roof tiles.

Through the creation of an insulation layer that is open to diffusion, the builder can enjoy an ecologically compatible, cosy atmosphere in his living area.

With THERMOFLOC Insulation System – ecological & comfortable

:: Roof insulation
:: Wall insulation
:: Floor insulation

The worker can create a layer of between 20 and 500 mm from one single product, due to which there is no need to keep different insulation sizes in storage (as in the case of insulation panels and insulation felts). The compression ratio of the insulation thereby lies between 25 kg/m³ and 65 kg/m³, according to the area of application.

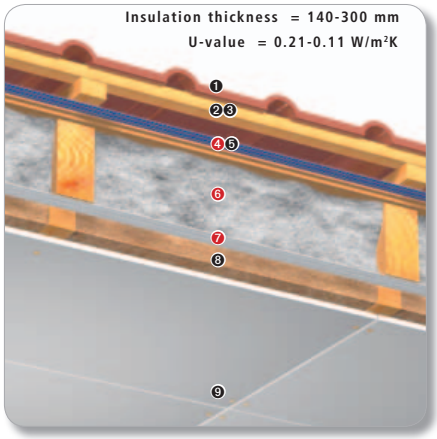
There is practically no waste, as only the exact amount of insulation that is necessary for a particular construction is blown into the building component. Furthermore, it simplifies building site logistics, as the insulation materials in the building no longer have to be transported by hand.

Thanks to the blow-in technique, all higher parts of the building (multi-storey buildings) can be filled with no problem. This saves time and speeds up the execution of the project.

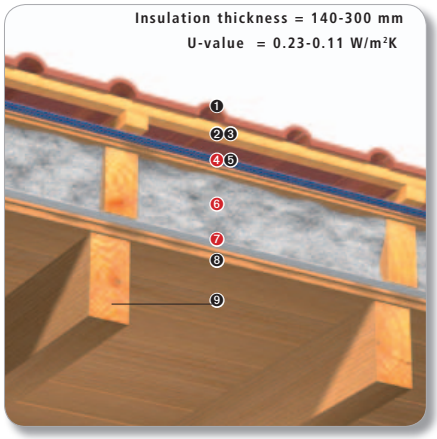
THERMOFLOC Blow-in Insulation	
Approval and monitoring	ETA-05/0186, CE number
Components	Newspapers, with borates as preservative agents
Thermal co-efficient	λ_D = 0,039 W/m²K
Water vapour diffusion resistance factor	μ = 1
Water absorption	10 cm Insulation thickness/14,5 kg /m² see ETA page 76
Flow resistance	6.1 kPa s/m²
Fire classification as per EN 13501-1	B-s2,d0
Resistance to mould	Class 0
Metallic corrosion	No potential for metallic corrosion
Harmlessness to health	Free of hazardous substances as defined by ETA-05/0186

Blow-in Insulation

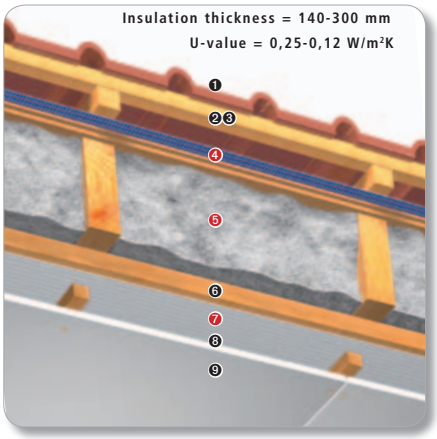
ROOF



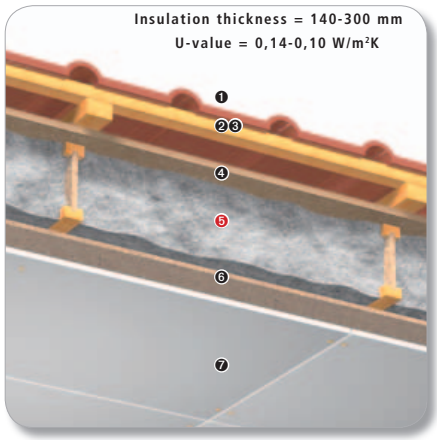
Roof system D1
❶ Roof covering
❷ Roof lathing
❸ Counter lathing
❹ THERMOFLOC roof sheathing rolls
❺ Roof sheathing
❻ Rafters/THERMOFLOC blow-in insulation
❼ THERMOFLOC vapour-proof lining
❽ Lathing
❾ Plasterboard



Roof system D5
❶ Roof covering
❷ Roof lathing
❸ Counter lathing
❹ THERMOFLOC roof sheathing rolls
❺ Roof sheathing
❻ On edge/THERMOFLOC blow-in insulation
❼ THERMOFLOC vapour-proof lining
❽ Fireproof sheathing
❾ Rafters visible



Roof system D2
❶ Roof covering
❷ Roof lathing
❸ Counter lathing
❹ THERMOFLOC roof sheathing rolls
❺ Rafters/THERMOFLOC blow-in insulation
❻ Lathing 2-6 cm
❼ THERMOFLOC vapour-proof lining
❽ Lathing, installation level
❾ Plasterboard

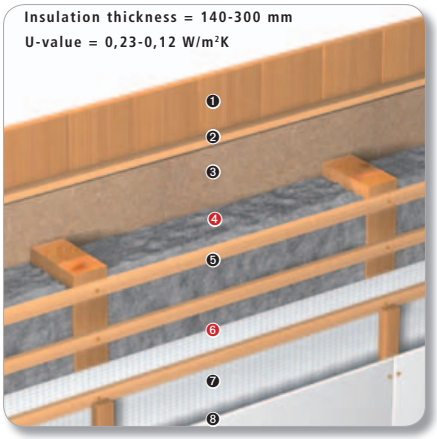


Roof system D7
❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ Bitumen soft fibreboard
❺ Double web T-Beam/THERMOFLOC Blow-in insulation
❻ OSB/Plywood
❼ Plasterboard

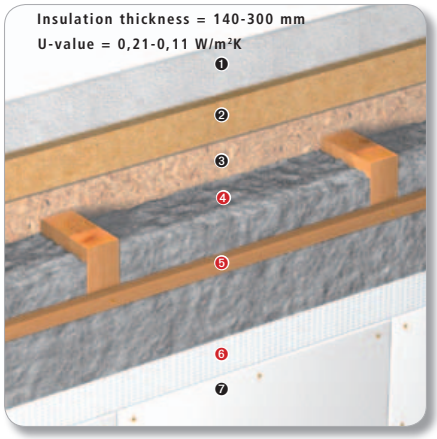
THERMOFLOC Insulation System

- Better insulated, point for point
:: Roof insulation
:: Wall insulation
:: Floor insulation

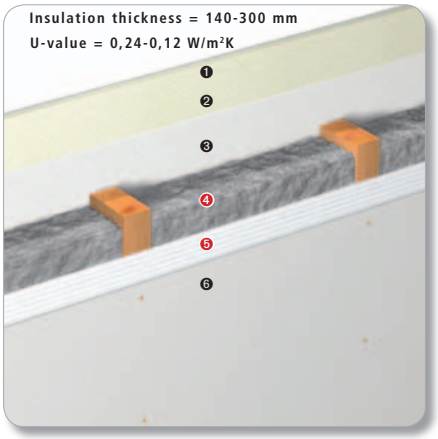
WALL



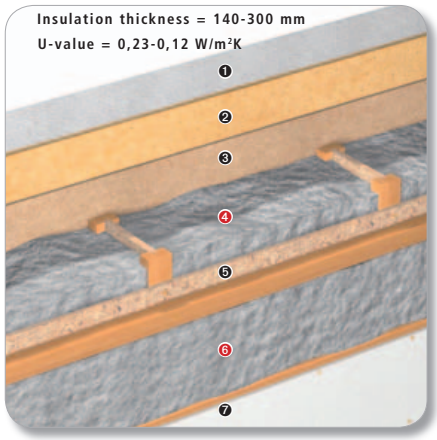
Wall system W1
❶ Wood cladding
❷ Lathing
❸ Wood fibre insulation board
❹ Crossbar/THERMOFLOC fibre
❺ Evenly spaced slats
❻ THERMOFLOC vapour-proof lining
❼ Lathing (installation level)
❽ Plasterboard



Wall system W2
❶ Cement-lime mortar
❷ Wood-wool lightweight building panels
❸ OSB/Plywood
❹ Crossbar/THERMOFLOC fibre
❺ Lathing/THERMOFLOC Blow-in insulation
❻ THERMOFLOC vapour-proof lining
❼ Gypsum fibreboard



Wall system W15
❶ Gypsum fibreboard
❷ Gypsum fibreboard
❸ Gypsum fibreboard
❹ Crossbar/THERMOFLOC fibre
❺ THERMOFLOC vapour-proof lining
❻ Gypsum fibreboard



Wall system W10
❶ Cement-lime mortar
❷ Wood-wool lightweight building panels
❸ Soft fibreboard
❹ Crossbar/THERMOFLOC fibre
❺ OSB/Plywood
❻ Lathing/THERMOFLOC Blow-in insulation
❼ Gypsum fibreboard

Facade System

The challenge in designing facades, besides playing with the aesthetic possibilities, lies mainly in their technical implementation. Through the VECTOR facade system for hung facades, a creative but also safe and economical facade design is possible.

Due to their construction, the individual system components are able to bear high loads while having a low dead weight at the same time.

As a result of the variable side heights, different insulation thicknesses can be created. Furthermore, due to its variability, the VECTOR system has the advantage of being able to compensate for unevenness.

The high flexibility of the facade system makes it possible to have the optimum fastening solution for any type of facade with regard to safety and economy.

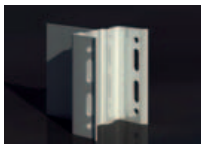
The VECTOR facade system can only be used as of a insulation thickness of 200 mm or more.

THERMOFLOC Insulation System

– for facade insulation
:: compensates for unevenness
:: suitable for any subsurface
:: for maximum insulation thicknesses

VECTOR system components


VECTOR-G


VECTOR-H


VECTOR-S

Choose the specific VECTOR-G depending on the desired insulation thickness. The side heights of 90 to 240 mm facilitate seamless insulation thicknesses of 180 to 330 mm. Fasten according to the plans in the exact stipulated spacing. The fastening materials depend on the structural conditions and statics.

Accommodation of the wood lathe is guaranteed with the VECTOR-H. In the foundation and eaves area, the VECTOR S is mounted as a terminator. For optimum fastening of the gypsum laths, a wood lath that is at least 5 x 6 cm is recommended. Before fastening the VECTOR-H in place, the spaces can be positioned differently making it easier to compensate for unevenness.

The wood that is used must be dry and straight, and can be mounted by means of commercial wood screws.

Medium density or hard wood fibre boards are suitable for separation of the compartments. The installation must be done continuously in order to facilitate blowing out the construction.

Besides the diversity of facade materials, there are also other important influencing factors that must be taken into consideration for a safe and economical fastening system.

The VECTOR facade system can be used for solid wood structures as well as for renovation of existing walling and reinforced concrete construction.

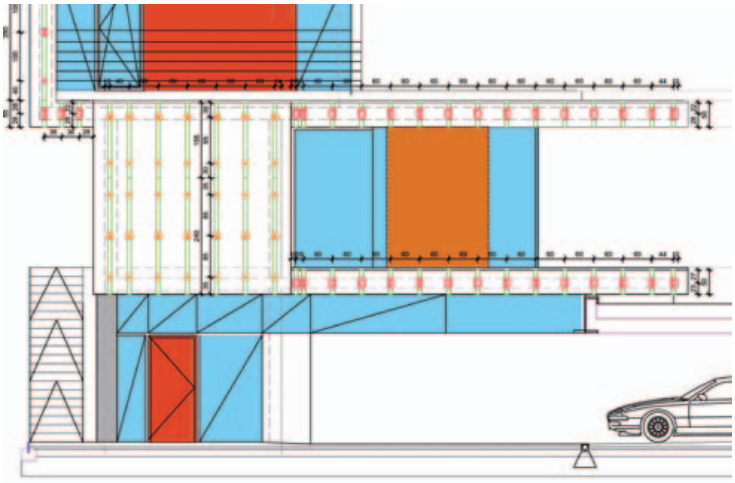
All surfaces like plaster facades, open wood facades and facades made of board materials are possible.

Facade System

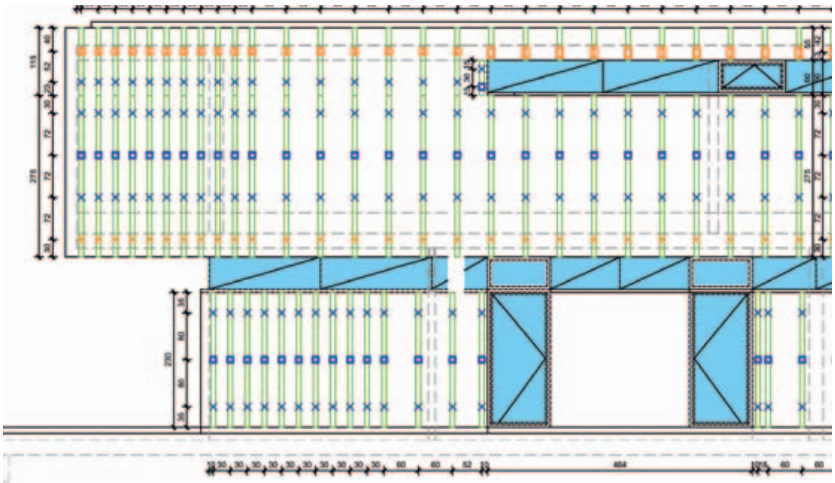
VECTOR stands for state-of-the art technology in facade fastening systems which is supplemented by a number of services.

This combination forms the basis for professional handling of specific facade projects. In particular, this includes preparation of the statics of the property, preparation of installation plans as well as determination of the quantities that are needed. This way, we guarantee that our customers always have customised and economically optimised solutions. Besides the completed VECTOR checklist (download at www.thermofloc.com), also send us the construction plans for the project and all relevant project data. Structural engineers as well as technicians will then analyse the property statics and determine the individual selection of VECTOR connectors that is optimised for the project, taking into consideration the local wind loads, material or weight of the facade being used and country-specific constraints and standards.

The property statics form the basis of the installation plan that is prepared (see illustration). You will receive the calculation of your material requirements for blow-in insulation and necessary fastening systems in the form of a detailed material requirements list.



Example of an installation guide for VECTOR system brackets.



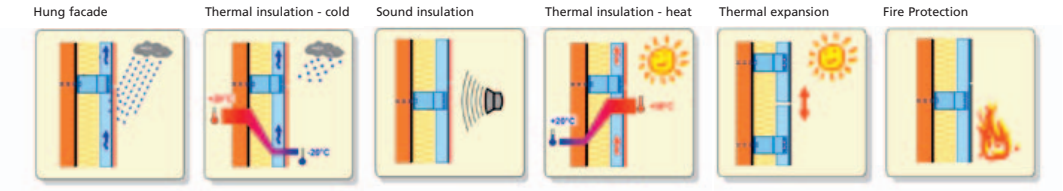
- vector G 90 + vector S (floating point) dowel 10x80
- vector G 90 + vector S (anchor point) dowel 10x80
- vector G 120 + vector S (floating point) dowel 10x80
- vector G 120 + vector S (anchor point) dowel 10x80

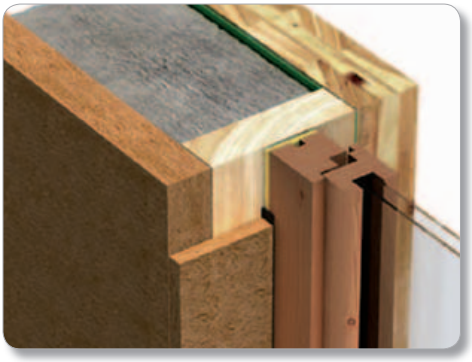
- vector G 150 + vector S (floating point) dowel 10x80
- vector G 150 + vector S (anchor point) dowel 10x80
- vector G 180 + vector S (floating point) dowel 10x80
- vector G 180 + vector S (anchor point) dowel 10x80

THERMOFLOC Dämm-System – for facade insulation

:: thermal bridge free construction

:: economic installation





DETAILS / TIPS

In the window area, we recommend installing a sub-frame. That way, the gypsum laths can be easily fastened, for example. The hollow spaces are filled with THERMOFLOC blow-in insulation.

In the foundation and eaves area, it is necessary to seal the compartments with waterproof panels. The plaster joint uses an L-section and special plaster profiled sections.

INSULATION TABLE FOR PLASTERED FACADES

Determination of the required insulation efficiency = U-Value W/m² K

Description	Angle size	Thermofloc Insulation with Vector H and 5x6 lath	Lath boards in mm							
			40		60		80		100	
vector G	90	150 - 180	220	0,186	240	0,171	260	0,158	280	0,146
vector G	120	180 - 210	250	0,164	270	0,152	290	0,141	310	0,132
vector G	150	210 - 240	280	0,146	300	0,137	320	0,128	340	0,121
vector G	180	240 - 270	310	0,132	330	0,124	350	0,117	370	0,111
vector G	210	270 - 300	340	0,121	360	0,114	380	0,108	400	0,103
vector G	240	300 - 330	370	0,111	390	0,105	410	0,100	430	0,095

TFPearls

For all cavity walling, we now have the "light" insulation solution in our product range, i.e. our TFPearls. Due to the special surface structure of the foamed polystyrene, the TFPearls are water-repellent and open to diffusion. In the small cavity structures that arise in the insulation layer due to the spherical shape of the 3-5 mm TFPearls, both water as well as water vapour can be easily transported away. This guarantees an insulation layer that is always dry and a dry inner wall even if the outer shell is wet, for example because of driving rain. Since the shape of the TFPearls is stable, they retain their insulating properties for a long time and constantly as well.

You can insulate completely dust-free with TFPearls. The blown-in TFPearls fill the cavities in the walling perfectly and there is no waste. Insulation projects done later in old buildings can be handled quickly and economically and above all easily.

TFPearls are very environmentally friendly since they are free of CFCs and HCFCs. The completely filled cavities in the intermediate wall provide a noticeably improved room climate and also provide protection against pest and rodent infestations.

TFPearls can be processed with any conventional blow-in machine.

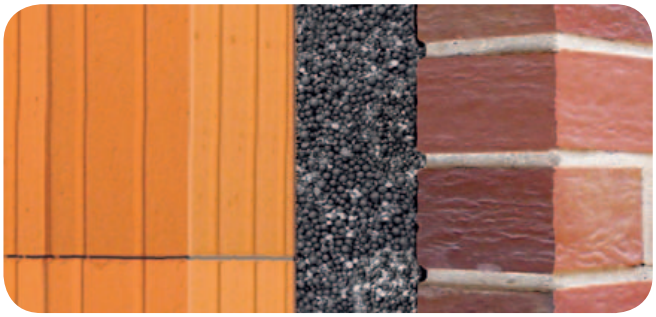
THERMOFLOC Insulation System

– for perfectly filled cavities
:: for cavity walling

To install TFPearls, holes with a diameter of 22 mm are placed every 0.8 – 1.2 metres at the intersection of horizontal and vertical joints using a fixed pattern.

Afterwards, the TFPearls are blown through these holes into the air layer between the wall shells. The drill holes are then sealed again carefully. By the way, the TFPearls can be used easily with any blow-in machine. Only a special nozzle attachment is necessary.

Thanks to the hollow space between the TFPearls, the function of the cavity walling remains intact. Moisture and water continue to be transported away without reaching the inner wall. Moisture transport from the inside to the outside is also permissible. A wall insulated with TFPearls does not require any subsequent maintenance and does not have to be impregnated.



TFPearls	
Approval	Z-23.12-1665
Components	Polystyrene - expanded polystrene - pellets
Thermal co-efficient	λ_D = 0,034 W/m²K
Bulk weight	ca. 22-26 kg/m³
Particle size	betw. 4mm and 8mm diameter
Fire class	B2
Water vapour diffusion resistance value	μ = 5
Degree of setting in cavity	0,5%
Colour	Grey
Delivery form	Big Bag = 0,8 m³
	100-120 Big Bags / truck

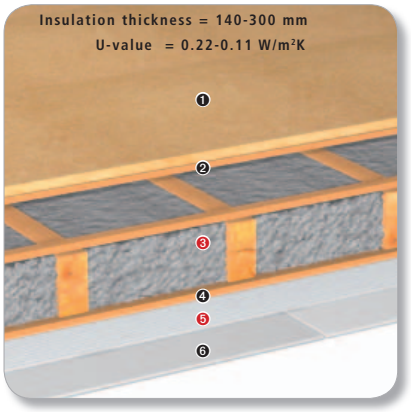
Floor Filling

Unlike the blow-in insulation, THERMOFLOC floor filling is processed by hand and used exclusively as a non-pressure-resistant insulation at the horizontal level (ceiling on the top storey, between joists in a wood-joist floor construction). In order to ensure better manual processing, the insulation material is less compressed in the packaging.

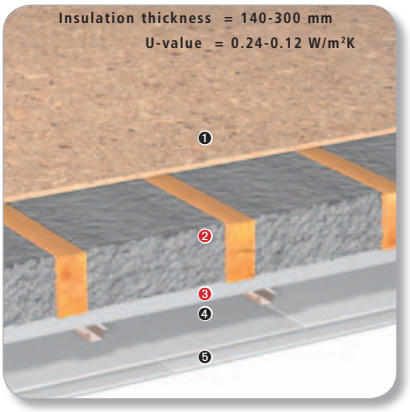
THERMOFLOC Floor Filling is available in 12 kg sacks, with 24 sacks per pallet. The insulation material is simply poured on evenly to achieve the desired insulation thickness and then spread to form a level surface. Material consumption is approx. 35 kg/m³. The technical data is identical to the blow-in insulation.

THERMOFLOC Insulation System - makes things comfortably warm everywhere

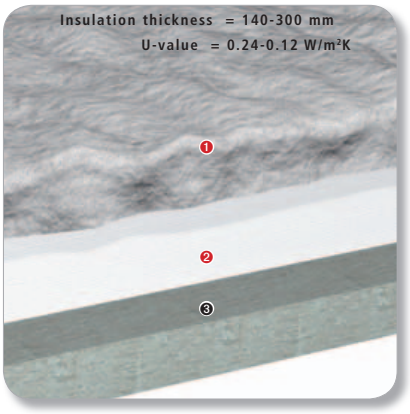
:: Roof insulation :: Floor insulation



Floor construction DB1 Tie-beam insulation
❶ Wood wool board
❷ Subfloor/rough floor
❸ Tie beams/THERMOFLOC blow-in insulation
❹ Evenly spaced slats
❺ THERMOFLOC vapour-proof lining
❻ Plasterboard



Floor construction DB3 Ceiling
❶ OSB/Plywood
❷ Beams/THERMOFLOC blow-in insulation
❸ THERMOFLOC vapour-proof lining
❹ Spring rails
❺ Gypsum wallboard, 2-layer



Insulation of a ceiling on the top storey of a building
❶ Beams/THERMOFLOC blow-in insulation
❷ THERMOFLOC vapour-proof lining
❸ Concrete ceiling

THERMOFLOC – THE FILM (DVD)

You can request this film about production, handling and practical application from Peter Seppele Ges.m.b.H. in 14 languages, or download this information under www.thermofloc.com

THERMOFLOC Floor Filling	
Approval and monitoring	ETA-05/0186, CE-number
Components	Newspapers, with borates as preservative agents
Thermal co-efficient	λ_D = 0.039 W/m²K
Water vapour diffusion resistance factor	μ = 1
Water absorption	10 cm Insulation thickness/14,5 kg /m² see ETA page 76
Flow resistance	6.1 kPa s/m²
Fire classification as per EN 13501-1	B-s2,d0
Resistance to mould	Class 0
Metallic corrosion	No potential for metallic corrosion
Harmlessness to health	Free of hazardous substances as defined by ETA-05/0186

Insulation pellets

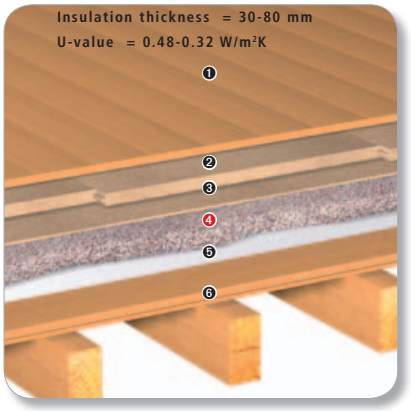
THERMOFLOC Insulation Pellets are granules made from cellulose fibres, which can be used for floor construction. The granules, which are 3 – 8 mm in size, are simply poured to the desired overall height and then spread to form a level surface. In this way, subfloor constructions can be created with an installation height of 30 mm – 80 mm.

Due to the high piled weight (500 kg/m³), THERMOFLOC Insulation Pellets are particularly suited for the construction of supporting insulation layers, resulting in outstanding noise insulation. No matter whether in a concrete ceiling or a wooden beam ceiling - the insulation qualities of both types of construction can be markedly improved using THERMOFLOC Insulation Pellets.

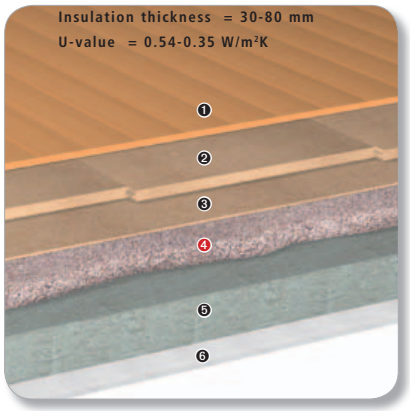
THERMOFLOC Insulation System

- one must simply insist on it

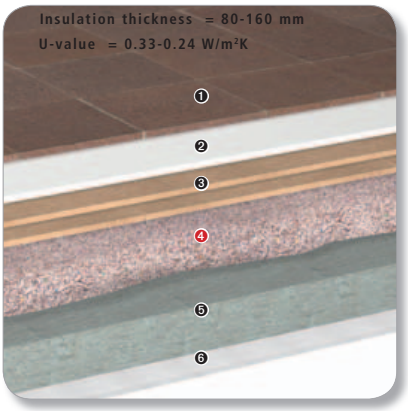
:: Floor insulation :: Roof insulation



Floor construction DB7 Ceiling
❶ Timber floor board
❷ Soft fibre N+F
❸ Soft fibre cover panel
❹ THERMOFLOC Insulation Pellets
❺ Waterproof layer
❻ Fireproof sheathing



Floor construction DB14 Ceiling
❶ Timber floor board
❷ Soft fibre N+F
❸ Soft fibre cover panel
❹ THERMOFLOC Insulation Pellets
❺ Concrete ceiling
❻ Ceiling plaster



Floor construction DB15 Ceiling
❶ Stoneware
❷ Gypsum fibreboard
❸ Softwood fibre
❹ THERMOFLOC Insulation Pellets
❺ Concrete ceiling
❻ Ceiling plaster

THERMOFLOC Insulation Pellets	
Particle size	3-8 mm
Piled weight	500 kg/m³
Piled height	80 mm max. per layer
Fire class	B2
Thermal conductivity	λ_D = 0.07 W/m²K
Pressure resistance	6.320 kg with 10% compression
Water vapour diffusion	μ = 1
Material consumption	40 l per m² (piled height 40 mm), 60 l per m² (piled height 60 mm)

Delivery form: 40 litre sacks/36 sacks per pallet/1.44m³

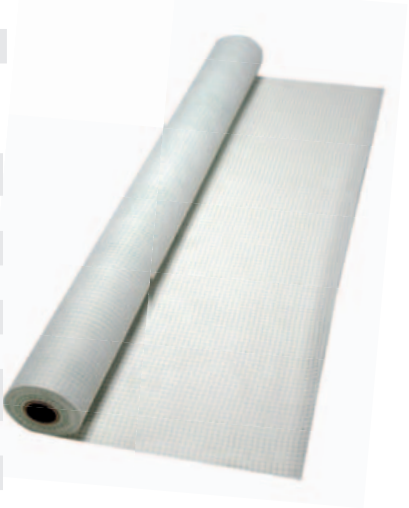
Vapour-Proof Lining

THERMOFLOC Vapour-Proof Lining is a vapour-proof and air-tight material which protects constructions against damp. It can be used for wall and roof constructions in the interior of buildings. Thanks to its additionally reinforced structure, it has greater tear strength.

Art. No. 5139 (Width 150 cm)
with imprint

THERMOFLOC VAPOUR-PROOF LINING 150 cm	
Raw material	Reinforced polypropylene fibrous lining
Tear strength	100 N / 5cm, additionally reinforced
Weight per m²	approx. 75 g/m²
Elongation at tear	> 30 %
SD value	10 m
Fire class	Fire code B2; used on interior of roofs and walls
Roll width	150 cm
Roll length	50 running metres
m² per roll	75 m²

Art. No. 5168 (Width 300 cm)
without imprint



THERMOFLOC VAPOUR-PROOF LINING 300 cm	
Raw material	Reinforced polypropylene fibrous lining
Tear strength	100 N / 5 cm, additionally reinforced
Weight per m2	approx. 100 g/m²
Elongation at tear	>25 %
SD value	10 m
Fire class	Fire code B2; used on interior of roofs and walls
Roll width	300 cm
Roll length	50 running metres
m² per roll	150 m²

Paper Vapour Retarder

Art. No. 5175

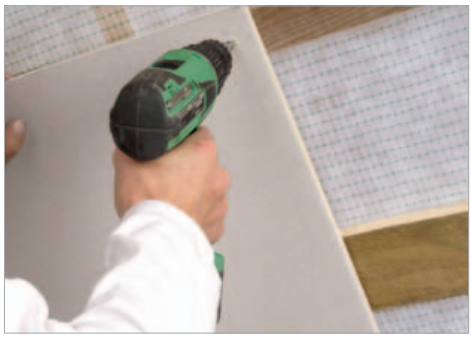
THERMOFLOC PAPER VAPOUR RETARDER 100 cm	
Raw material	Kraft paper, fabric, HDPE, fibrous lining
Weight per m²	approx. 150 g/m²
SD value	10 m
Fire class	B2
Roll width x roll length	100 cm x 40 running metres
m² per roll	40 m²

THERMOFLOC Insulation System - insulated with quality components

:: Roof insulation :: Wall insulation





Area of application:

THERMOFLOC Vapour-Proof Lining is used on the interior of ventilated and non-ventilated roof constructions and in the walls of wooden crossbar structures. The use of THERMOFLOC Vapour-Proof Lining prevents weak points in the construction due to draughts, thus preventing the penetration of moisture into the thermal insulation.

Installation instructions:

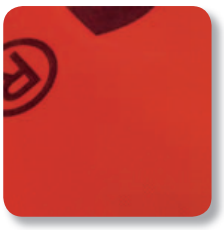
THERMOFLOC Vapour-Proof Lining is fastened to the substructures by means of tacking or gluing. The lining must be installed with the foil side facing inwards to the room, i.e. with the fibrous side facing the thermal insulation. A lengthwise installation of the Vapour-Proof Lining is to be recommended in the case of THERMOFLOC Blow-in Insulations. Should it be necessary to install it crosswise, the points where adhesive tape is used must be covered with continuous lathing in order to prevent THERMOFLOC Adhesive Tape from becoming detached due to the blow-in pressure. The areas to be stuck down must be free of grease, dust and silicone, and also completely dry.

Sheathing rolls for the roof and walls

THERMOFLOC Roof Sheathing Rolls protect the construction from driving rain and thus prevent any penetration of moisture into the roof or wall structure. The rolls are UV stable, particularly tear-resistant and extremely open to diffusion. Roof Sheathing Rolls are installed overlapping on the outside of the roof, under the roof covering, to provide optimal protection against wind and rain. The counter lathing is nailed or tacked onto the Roof Sheathing Rolls, and thus fixed in place at the same time.

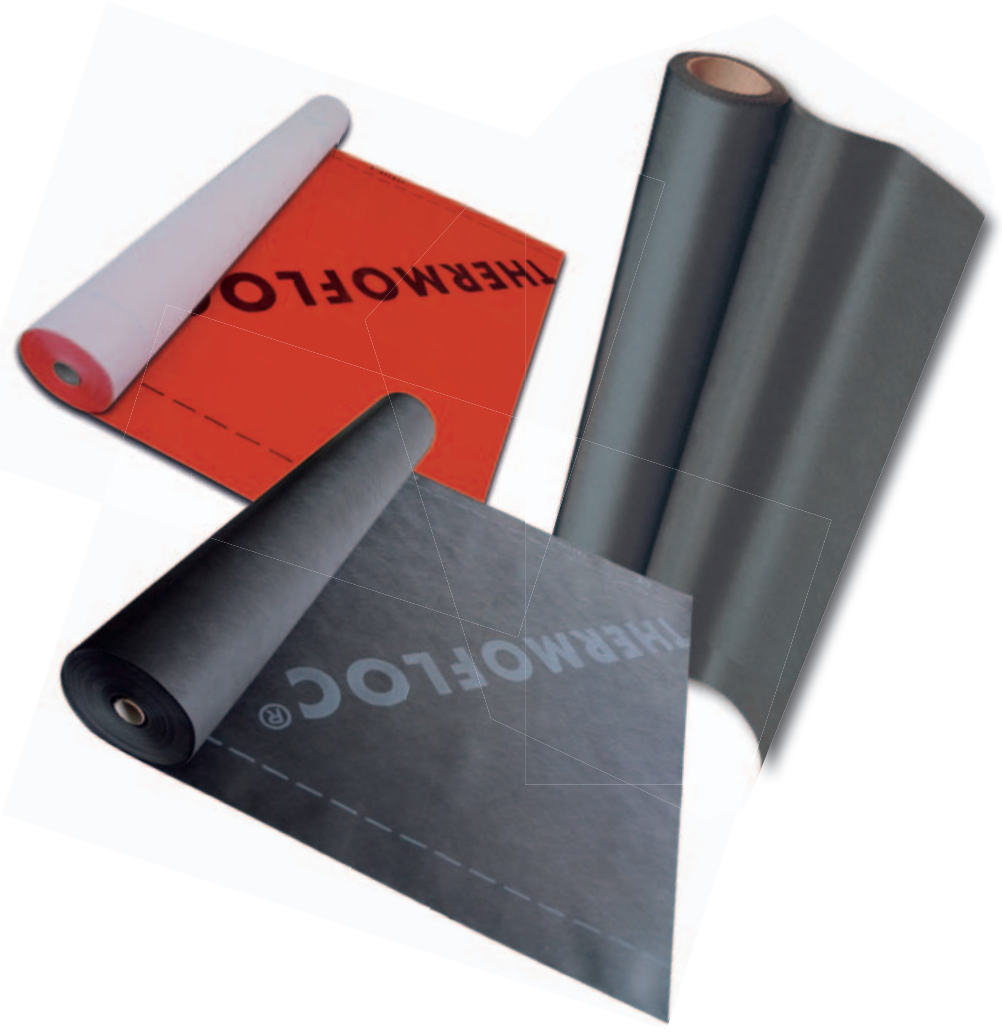
The weatherproof THERMOFLOC facade sheathing rolls consist of coated nonwoven polyester and are therefore absolutely stable against UV light, windproof and weatherproof. Hence, it is well suited for outer sheathing with MDF panels (e.g.: DWD panels) and thermal insulation of all types, as well as for installation behind partly open facades, so-called gap sheathing.

Art. No. 5176



Art. No. 5177

Art. No. 5178



THERMOFLOC Dämm-System - selected quality for
:: Roof insulation :: Wall insulation

Art. No. 5176

ROOF SHEATHING ROLL, RED	TECHNICAL DATA
Raw material	3-ply polypropylene fibrous lining
Tear strength	250 N / 5 cm
Weight per m²	135 g/m²
Elongation at tear	> 60 %
SD value	0.04 m, extremely open to diffusion
Fire class	B2
Outdoor exposure	Max. 4 months
Nail tear strength	250 N
Roll width	150 cm
Roll length	50 running metres
24 rolls per pallet / 1800 m²	

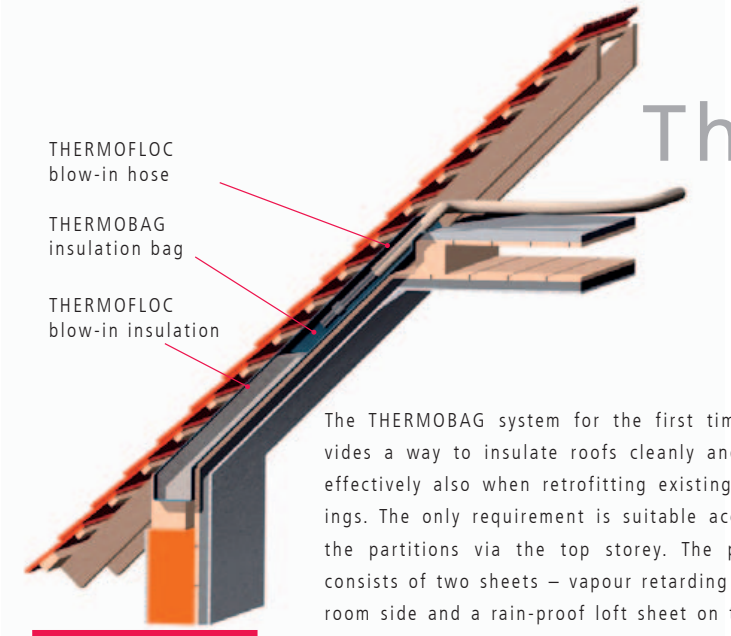
Art. No. 5177

ROOF SHEATHING ROLL XL, BLACK	TECHNICAL DATA
Raw material	3-ply polypropylene fibrous lining
Tear strength	lengthwise 400 N crosswise 310 N / 5 cm
Weight per m²	260 g/m²
Elongation at tear	> lengthwise 40 % / crosswise 50 %
SD value	0.10 m, extremely open to diffusion
Fire class	B2
Outdoor exposure/water column	Max. 4 months / 5000 mm
Nail tear strength	200 / 170 N
Roll width	150 cm
Roll length	50 running metres
24 rolls per pallet / 1800 m²	

Art. No. 5178

FACADE SHEATHING ROLL	TECHNICAL DATA
Raw material	coated polyester fleece
Tear strength	lengthwise 206 N crosswise 160 N /5 cm
Weight per m²	160 g/m²
Elongation at tear	> lengthwise 50 % crosswise 50 %
SD value	0.09 m
Fire class	E
UV-stability	permanent
Temperature resistance	-40°C to +150°C
Nail tear strength	120 / 140 N / 20 cm
Roll width	150 cm
Roll length	50 running metres
24 rolls per pallet / 1800 m²	

Thermobag



Important: With the Thermobag, the roof covering and the interior finishing remain untouched!

The THERMOBAG system for the first time provides a way to insulate roofs cleanly and cost-effectively also when retrofitting existing buildings. The only requirement is suitable access to the partitions via the top storey. The product consists of two sheets – vapour retarding on the room side and a rain-proof loft sheet on the top side. For the installation, the sheets are cut to the required length and the bottom opening is sealed with staples and adhesive tape. Afterwards, the resulting THERMOBAG is carefully pushed into the compartment with a rod and filled with THERMOFLOC blow-in insulation. Only professionally installed insulation guarantees you optimum insulating characteristics by choosing the right filling quantity.

THERMOFLOC Insulation System - for later, easy and efficient

:: Roof renovation

:: Roof insulation

1. Cut the THERMOBAG to length and seal on one side. After the prepared Thermobags are cut to the respective compartment lengths, they are folded accordingly and sealed on one side with staples.

2. Fill the compartment space. With a great deal of feeling and with the help of rods, the still empty THERMOBAGS are put into the optimum position in the compartment space.

3. Now, the THERMOBAGS can be inflated with THERMOFLOC blow-in insulation until the compartment space is completely filled. Then, the bags are securely sealed with staples and adhesive tape. The rafter insulation is finished. Due to the given size of the compartment space, there are limits to the thickness of the insulation layer. Maximum insulation thicknesses up to 20 cm are possible.

Thermobag - Benefits that are convincing:

- disassembly of the interior trim (interior finishing) or the roof covering is not necessary
- clear improvement to summer heat protection
- heating costs drop noticeably
- cost-effective insulation method – pays for itself in just a few years
- the insulating measure is usually finished in one day making it very customer friendly

Adhesive Products

The adhesive products are specially adapted to the Thermofloc system. The adhesive tape or alternatively the universal glue are used for airtight sealing of Thermofloc vapour-proof lining and roof and wall sheathing rolls.

In addition, they can be used for providing air-tight sealing at joint connections on wood boards (e.g. OSB boards, plywood boards, etc.).

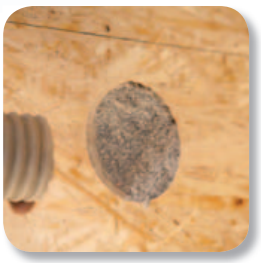
Art. No. 5151

THERMOFLOC Adhesive Tape	Technical specifications
Raw material	Polyethylene adhesive tape
Roll width	5 cm
Roll length	25 running metres
Box	12 rolls
Pallet	60 boxes
The adhesive coating consists of solvent and plasticizer-free acrylate	

Reinforced green polyethylene adhesive tape with acrylate glue, for airtight sealing of areas where THERMOFLOC Vapour-Proof Linings are perforated or overlapping.

Art. Nr. 5156

White Adhesive Tape	Technical specifications
Raw material	Polyethylene adhesive tape
Roll width	20 cm
Roll length	20 running metres
Box	1 rolls
Pallet	112 boxes
The adhesive coating consists of solvent and plasticizer-free acrylate.	

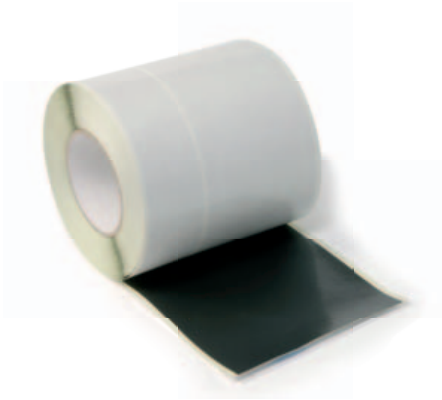


White universal adhesive tape for sealing blow-in opening

THERMOFLOC Insulation System - Adhesive products seal and glue perfectly

:: Roof insulation :: Wall insulation

:: Floor insulation



Art. No. 5157

Black Adhesive Tape	Technical specifications
Raw material	Polyethylene adhesive tape
Roll width	14.6 cm
Roll length	25 running metres
Box	4 rolls
Pallet	80 boxes
The adhesive coating consists of solvent and plasticizer-free acrylate.	

Universal black adhesive tape on a polyethylene basis, with carrier material reinforcement layer and release paper with perforation slits for sealing blow-in openings.

Art. No. 5170

THERMOFLOC Universal Glue	Technical specifications
Material	Acrylate glue
Temperature resistance	-20°C to +80°C
Processing temperature	from -10°C to max. +50°C
Properties	short drying time, high expandability
Box/contents	20 units/310 ml
Pallet	60 boxes
Free of softening agents, solvents and halogen compounds – store frost protected	

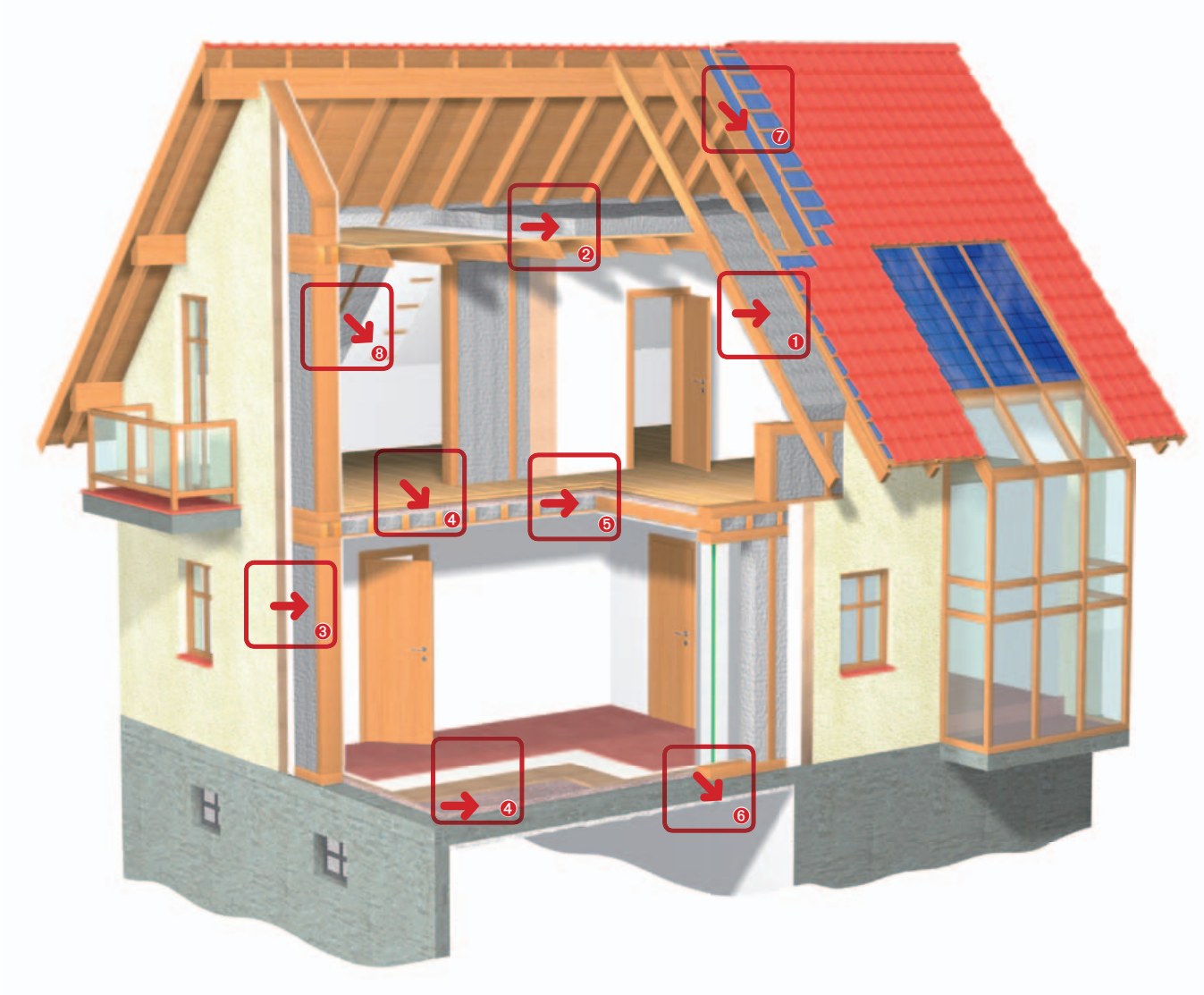
Permanent and elastic acrylate glue for connections of vapour retarders and vapour barriers of all types, also for PE, aluminium and PA on substrates such as plaster, wood, concrete, carpet, edging and so on as per DIN 4108-7 and SIA 180.

THERMOFLOC MANUAL

THERMOFLOC®
Intelligent Insulation System

THERMOFLOC TECHNICAL CATALOGUE

THERMOFLOC Insulating Systems - from the cellar to the roof!



1. **Thermofloc blow-in insulation**
   as insulation between the rafters in the roof
2. **Thermofloc blow-in insulation**
   blown on as an open layer to insulate ceilings on the top stories of buildings
3. **Thermofloc blow-in insulation**
   for insulating outer walls
4. **Thermofloc insulation pellets**
   as a supporting floor substructure
5. **Thermofloc floor filling**
   for insulating hollow spaces in intermediate ceilings
6. **Thermofloc blow-in insulation**
   sprayed onto the underside of cellar ceilings
7. **Thermofloc roof sheathing rolls**
8. **Thermofloc vapour-proof lining**

THERMOFLOC BLOW-IN INSULATION

Thermofloc blow-in insulation made of cellulose fibres - Efficient insulation for energy cost reduction under climate and ecology perspectives:

The blow-in insulation obtained from newspapers is characterised in particular by the fact that both in the cold as well as warm seasons, it insulates optimally and hence considerably reduces energy costs for heating in the winter and for air-conditioning in the summer. Building projects are being conducted in more than 18 European countries with natural Thermofloc insulation, and every day the number of builders increases who are convinced of the benefits of a Thermofloc insulation system.

THERMOFLOC FLOOR FILLING

Thermofloc floor filling – flakes made of cellulose fibres - In contrast to the blow-in insulation, Thermofloc floor filling is processed by hand and used exclusively as a non-pressure-resistant insulation at the horizontal level (ceiling on the top storey, between joists in a wood-joist floor construction). In order to ensure better manual processing, the insulation material is less compressed in the packaging. Thermofloc Floor Filling is available in 12 kg sacks, with 24 sacks per pallet. The insulation material is simply poured on evenly to achieve the desired insulation thickness and then spread to form a level surface. Material consumption is approx. 35 kg/m³. The technical data is identical to the blow-in insulation.

THERMOFLOC INSULATION PELLETS

Thermofloc insulation pellets, granules made of cellulose fibres - This can be used for floor construction. The granules with a grain size of 3–8 mm are simply poured to the desired overall height and then spread to form a level surface.

That way under-floor constructions can be created with an overall height of 30 mm–100 mm. Thermofloc insulation pellets are suitable for the construction of load bearing insulation layers because of the material's high bulk weight (500 kg/m³), and it has excellent sound insulation values. It doesn't matter whether you have a concrete slab or a wooden floor, with Thermofloc insulation pellets, the insulating properties can be improved considerably with both types of construction.

THERMOFLOC BLOW-IN TECHNIQUE

Thermofloc is installed by means of specially equipped blowing machines. The insulation is pumped into hoses under air pressure and transported further into the hollow spaces of the building components where it is compressed in accordance with the material handling instructions to produce an uninterrupted, complete insulation layer.

The special handling technique has considerable advantages both for the person installing the insulation as well as for the builder. The builder benefits through having an uninterrupted insulation layer that is free of thermal bridges.

www.thermofloc.com

Insulating Systems

Thermal Protection

Triggered by the oil crisis in the seventies, western countries started to develop a sustainable way to deal with energy. Through the crisis, in which one had to sharply limit energy consumption, western countries became aware of the dependency on fossil fuels. Reducing this dependency was the challenge shortly after the oil crisis. Since the provision of heating energy for our buildings demanded one-third of total energy consumption, the carefree way of dealing with energy consumption in buildings had also fallen under public scrutiny by then. The U-value moved into the foreground as a decisive key value for the energy requirement of a building. The term itself and the size of the U-value soon became synonymous with energy-saving construction.

In the past few years, there has been a thorough change in the motivation for having constantly lower U-values. Through the awareness of the greenhouse effect and the research for the causes of it, the still, relatively carefree way of dealing with energy has once again caught the public's eye. The greatest causes for the greenhouse effect were identified to be excessive emissions of carbon dioxide (CO^2) and simultaneous overexploitation of the rainforests. Reduction of the emission of CO^2 was agreed on in multinational summit meetings. All countries committed to reduce the emission of the greenhouse gas CO^2 by at least one-half by a specific point in time.

Thermal optimisation of a building shell provides a reduction of the energy required for heating by up to one-quarter. Due to the high proportion of the total energy requirement that goes into heating energy for buildings, the savings potential and hence the savings of CO^2 emissions are high. For these reasons, the requirements of the quality of the thermal shell of a building are becoming constantly greater in the form of thermal insulation regulations.

Basically, the most comfortable climate possible is to be created for the user of a building through optimised thermal insulation of the building shell. This comfortable climate, however, is not only determined by the lowest possible U-value of the exterior building components, but other factors also have a decisive affect. An attempt was made in some publications to specify limits for such a comfortable room climate. A multitude of input parameters were given in these publications that were to describe the subjective sensation of comfortableness. In addition to the temperature of the surrounding surfaces (that is directly connected to the U-value), the given parameters also included room humidity, air movement, the amount of activity, and also the clothing that is worn.

However, more than the winter months have to be taken into account for a comfortable climate in a building.
It is possible to have an uncomfortable climate in a room in the summer months as well. This is the result of excessive heating of the room cause by the influx of solar energy. In order to prevent this climate from occurring, which is often described as a barracks climate in wooden buildings, it is necessary to provide adequately dimensioned thermal masses in the structural elements. In the summer months, the sun warms the outside surface of the exterior building components during the course of the day. In the night, the exterior building components cool down once again.

As a result, there is a so-called thermal wave that "flows through" the building component. The duty of summer thermal protection is to find out how well the building component can dampen and delay this wave. With an appropriately large time delay of the maximum temperature peaks and/or suitable damping of the temperature peaks, one obtains a balanced and pleasant living and working climate.

For the summer thermal protection of a building component, it is not only the thermal conductivity of the component that is decisive, but the gross density and the specific thermal capacity as well. As popular term in this connection is the temperature conductivity.

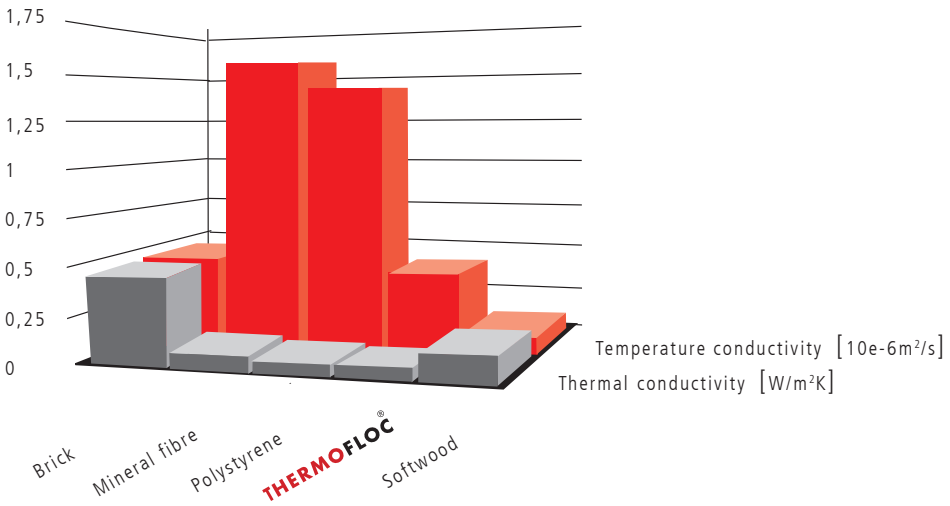
The temperature conductivity gives a simple overview of the suitability of different building materials.
The lower the thermometric conductivity, the better the effect on summer thermal protection.

$$a = \frac{\lambda}{c \cdot \rho} \left[\frac{m^2}{s} \right]$$

a Temperature conductivity
λ Thermal conductivity
c Thermal capacity
ρ Gross density

An insulating material should fulfil both requirements, i.e. low thermal conductivity for winter thermal protection and emission reduction as well as low temperature conductivity for summer thermal protection.

Thermofloc meets these two requirements to a very high degree. In winter, Thermofloc is a very good thermal insulation, and in the summer it helps to keep the temperatures in a building at a tolerable level.

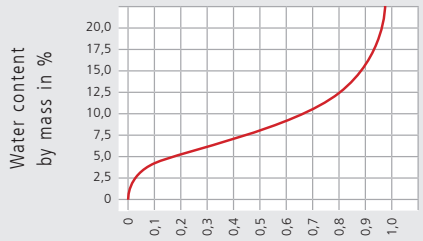


Moisture protection

The reason that a good room climate is ascribed to many wooden houses is only partly due to the very low temperature conductivity. The main reasons are the other positive characteristics of natural building materials. Wood can absorb and store moisture in a very wide range without being jeopardised by this increased moisture. This characteristic of building materials is called the sorption capacity. The course of how moisture is absorbed via the relative humidity of the room air at a constant temperature is called sorption isotherm.

During an increase of the room air humidity from 50% to 60%, wood can absorb 5 kg of water and also release it again. As a result, wooden surfaces that are untreated or treated with natural coatings have a balancing effect on the moisture balance and counteract humidity peaks.

Thermofloc has values that are similar to wood because it does originate from wood. This means that the use of Thermofloc in wooden houses results in a high moisture storage capacity potential because of the combined effect of the two building materials, i.e. wood and Thermofloc.



This potential, however, can only be exploited if the surfaces on the room side are not too sealed. Naturally, a good, moisture-storing building material cannot balance moisture that is present in a building in a volume that is too high. Lasting moisture penetration of the structure must be avoided in any case.

The avoidance of inadmissible quantities of moisture is grouped under the term ‚moisture protection'. In order to be able to assess the impact of moisture, the mechanisms that lead to the occurrence of moisture in a building must first be known.

There are three ways for moisture to get into a building:

- building moisture
- rainwater and leaks
- water vapour transport processes

Building moisture is the necessary quantity of water that exists in the built-in structural elements during the construction of a structure. Through this building moisture, large quantities of moisture get into the structure, especially for concrete structures or structures made of masonry.
With wooden structures, the quantity of moisture that is brought in through this process can usually be neglected. One exception is the use of fresh wood that has not been pre-dried. When using fresh wood, one must be sure to use open diffusing structures so that the moisture that is introduced can escape from the building once again.

Moisture that is brought into the structure through rainwater must be prevented through suitable sealing elements. In the event that rainwater unintentionally gets into the building, then one must make sure that the moisture can escape from the structure. Penetration of moisture through leaks in the installation lines or other fittings can never be completely excluded. The type of construction that is chosen must make it possible to quickly discover the location of a leak, and on the other hand not seriously hamper the moisture from escaping.

During water vapour transport processes, two transport processes are differentiated. One type of transport process is called water vapour diffusion and the other is called water vapour convection.

The moisture introduced through water vapour convection is approximately 10 times greater than through water vapour diffusion. Therefore, convection in buildings must be prevented through adequately well planned and executed sealing.

With water vapour diffusion, the loss of humidity (condensation) can take place through 4 processes:

- Primary condensation:
  Here, condensation appears in the back ventilation levels of a building through high exposure of water vapour to the cold outside surfaces of the building.
- Secondary condensation:
  Here, warm moist air is drawn into the back ventilation space and then forms on the still cold outside surfaces of the building. This secondary condensation often occurs in the transition months.
- Surface condensation:
  Here, the inside surface temperature of the exterior structural elements exceeds the threshold temperature of the room air and condensate occurs on the surface.
- Condensation on the inside of a building:
  Here, condensate forms on the inside of a building due to the unfavourable layer sequence.

An appropriately good thermal insulation of the exterior structural elements is sufficient to prevent surface condensate. The danger of surface condensation in modern structures can almost be excluded due to the very good standard of thermal insulation. Condensation on the inside of structural elements cannot always be prevented. Therefore, DIN 4108 contains information on how to assess the suitability of types of buildings.

Requirements as per DIN 4108:
DIN 4108 makes it possible to show the suitability of the construction with regard to moisture protection in two ways. It specifies structural elements for which no calculated confirmation is necessary. Since the part of the DIN that deals with climate-related moisture protection is currently being revised, and in the future more wooden structures will be considered to be exempt of confirmation both for the walls as well as the ceilings and roofs, we are only drawing reference to this future standard here.

For all other constructions that are not exempt from confirmation, a calculated confirmation of the condensate mass must be carried out as per DIN 4108-5. The calculated condensate mass must then meet the following requirements:
Requirements as per DIN 4108-3 3.2.1:

a) It must be possible for water that occurs on the inside of the structural element during the thawing period to escape back into the environment.
b) Building materials that come into contact with the condensate must not be damaged (e.g. through corrosion, mould).
c) For roof and wall structures, the condensate mass may not exceed a total of 1.0 kg/m^2.
d) If condensate forms on surfaces of contact that are not able to absorb the water, then a condensate mass of 0.5 kg/m^2 must not be exceeded to limit running off and dripping (e.g. surface of contact of fibre insulation or air layers on one side and a vapour barrier or concrete layers on the other side).
e) For wood, an increase of the moisture content of more than 5% by mass and 3% for wooden building materials is inadmissible (wood wool lightweight building panels and multilayer lightweight building panels according to DIN 1101 are excluded from this).

Sound Transmission

Different types of sound are differentiated in DIN 4109.

Airborne sound is sound that propagates in the air.

Structure-borne sound is sound that propagates in solid materials.

Impact sound is sound caused by walking on a floor, stairs, or the like, which occurs as structure-borne sound and partly as airborne sound in the room below.

The task of sound insulation is to protect the users of buildings against inadmissibly loud noises. The requirements are defined in DIN 4109. Here, the required sound insulation rate (req. $R'_{w,R}$) and the required impact sound insulation rate (req. $L'_{n,w}$) of a structural partition element are specified including the sound transmission via flanking structural elements.

STRUCTURAL ELEMENT	DIN 4109	
	req. $R'_{w,R}$ db	req. $L'_{n,w}$ db
Ceilings under generally useable attics, e.g. drying lofts, storage rooms and their accesses	53	53
Ceilings above cellars, hallways, staircases under common rooms	52	53
Ceilings above passages, driveways of common garages and the like under social rooms	55	53
Apartment partition walls and walls between different work rooms	53	-
Staircase walls and walls beside building hallways	52	-
Walls of playrooms or similar common rooms	55	-
Walls between bedrooms; walls between hallways and bedrooms	47	-
Ceilings between seminar rooms or similar rooms	55	53

Sound Insulation

In order to be able to gather strength for everyday life, people need quiet in their short amounts of free time. In our hectic world with constant background noise from computers, traffic, hi-fi systems and mobile telephones, this quiet is becoming rarer and more and more treasured.

Here, it is important to know that the perception of ambient noise is a very subjective perception. Two different noises with the same noise intensity can be perceived as pleasant (music) as well as unpleasant (the neighbour's hammer drill).

Even one and the same source of noise can trigger different feelings in different people (loud music in a disco).

We call unpleasant sounds 'noise'. It is the job of the sound insulation to prevent these unpleasant sounds. When considering sound insulation, some subjective assessment criteria must first be excluded. This is necessary to be able to give sound a measurable parameter.

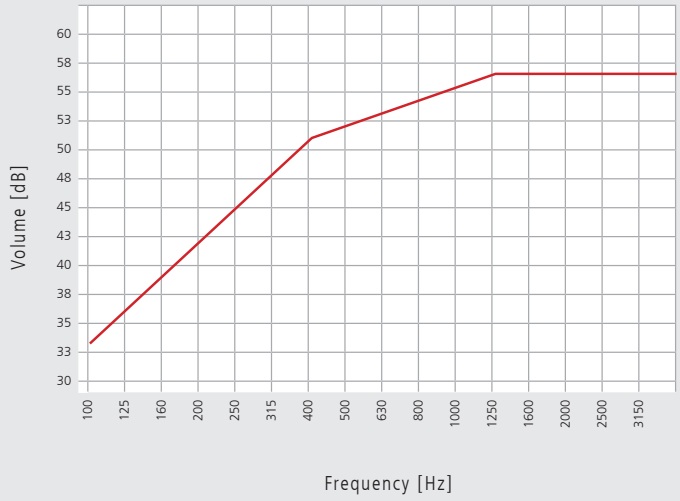
Sound refers to physical vibrations and waves in the air. These sound waves cause our eardrums to vibrate, which our brains interpret as sounds, tones or even noise. Through modern measuring methods, it is possible to record the noise vibrations exactly. However, the connection between the ear and perception cannot be captured with measuring devices.

Since people can perceive great differences in the sound pressure fluctuations of sound waves in the frequency range of human hearing (approx. 16 to 20,000 Hz), the noise level is given in dB instead of the absolute value of the sound pressure fluctuations. However, the loudness of a noise as perceived by someone is not solely dependent on these pressure fluctuations, but also on the corresponding frequency of the noise. In order to be able to classify the loudness of a noise with a single number, an assessment was introduced that is adapted to human auditory sensation.

The suitability can be proven through measurements including these byways or via the calculation method in Supplement 1 of DIN 4109.

Rating curve for single number value of noise (A-rating)

The single number value of the noise assessed according to the A-rating curve corresponds to the value at 500 Hz.



The following calculation method is given in Supplement 1 of DIN 4109:

$$R'_{w,R} = \left(10^{\frac{-R'_{w,R}}{10}} + \sum_{i=1}^{n} 10^{\frac{-R'_{L,w,R,i}}{10}} \right) dB$$

$R_{w,R}$	Calculation value in dB of the assessed sound insulation level of the structural partition element without longitudinal channelling via flanking structural elements
$R'_{L,w,R,i}$	Calculation value in dB of the assessed building longitudinal sound insulation level of the i-th flanking structural element in the building;
n	is the number of flanking structural elements (usually n=4)

The mathematical determination of the assessed longitudinal sound insulation level $R'_{L,w,R,I}$ of a flanking structural element according to DIN 52 271 makes use of the following equation:

$$R'_{L,w,R,i} = R'_{L,w,R,i} + 10\lg \frac{S_T}{S_0} - 10\lg \frac{l_i}{l_0}\ dB$$

$R_{L,w,R,i}$	Calculation value of the assessed laboratory sound insulation level in dB of the i-th flanking structural element according to DIN 52 217 from measurements or according to the application examples in DIN 4109
S_T	Surface area of the partition wall in m^2
S_0	Reference surface area in m^2 (for walls $S_0 = 10\ m^2$)
l_i	Common edge length in m between the dividing structural element and the flanking structural element
l_0	Reference length in m • for ceilings, suspended ceilings, floors 4.5 m • walls 2.8 m

The logarithmic components are very small for rooms with a room height of approx. 2.5 m to 3 m and a partition wall width of approx. 4 m to 5 m. Hence, the equation can be simplified as follows:

$$R'_{L,w,R,i} = R'_{L,w,R,i}\ dB$$

For the assessment of the impact sound insulation, three areas of a ceiling must be differentiated for the assessment of the building. The impact sound insulation of a ceiling is dependent on the quality of the actual supporting structure, the suitability of the floor construction, and the characteristics of a suspended ceiling, if there is one. The following calculation method is given in Supplement 1 of DIN 4109 to determine the assessed standard impact sound level;

$$L'_{n,w,R,i} = L'_{n,w,eq,R} - \Delta L_{w,R}$$

$$(TSM_R = TSM_{eq} = VM_R)$$

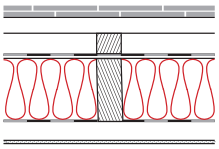
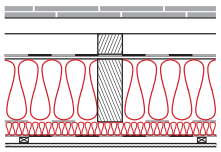
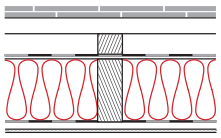
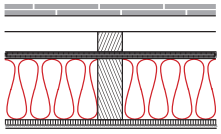
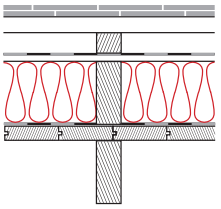
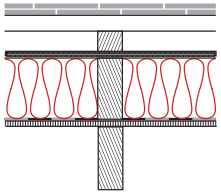
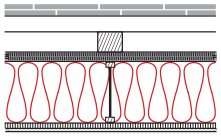
$L_{n,w,eq,R}$	Equivalent assessed standard impact sound level (equivalent impact sound insulation level) of the solid ceiling
$(TSM_{eq,R})$	without ceiling support (calculation value)
$dL_{w,R}$	Impact sound improvement level of the ceiling support (calculation value)

(VM_R)

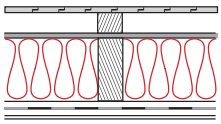
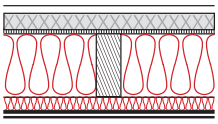
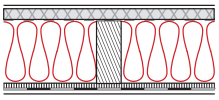
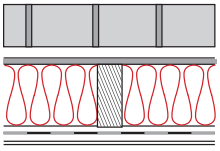
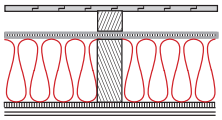
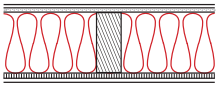
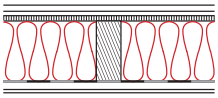
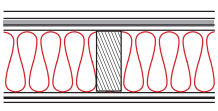
In the tables of Supplement 1 of DIN 4109, there are values for $L_{n,\,w,\,eq,R}$ for solid ceilings and wooden beam ceilings. Calculation values depending on the dynamic rigidity are given for the impact sound improvement level of the ceiling support in Supplement 1 of DIN 4109. According to the latest studies, Thermofloc insulation pellets can be classified with a rigidity class of up to 50 MN/m², and hence provide an impact sound improvement level of 22 dB for solid ceilings with screed.

Empirical values for sound insulation levels $R_{w,R}$ and $L_{n,w,R}$ for Thermofloc structures are given in this document. These values must be confirmed with measurements. Results from test bench measurements can be used as calculation values for longitudinal sound insulation level $R'_{L,w,R,i}$. Independent of this, these values can also be taken from Supplement 1 of DIN 4109.

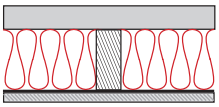
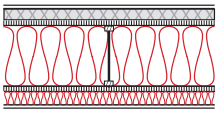
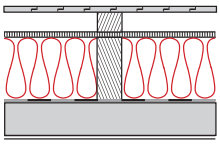
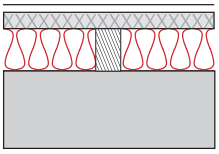
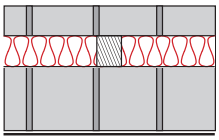
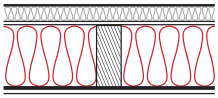
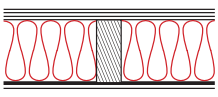
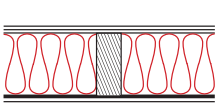
Roof Structures

No	PICTURE	CONSTRUCTION	Thickness [mm]	THERMOFLOC® Insulation thickness [mm]	U-value [W/m²k]	Diffusion assessment	Storage mass efficiency [kg/m²]	Storage capacity [W/m²k]	Amplitude damping [-]	Phase shift [h]	R_{WR} [dB]	L_{nW} [dB]	Fire protection
D1		Roof covering Roof lathing 4/5 Counter lathing 5/8 Underlay Roof sheathing Rafters/THERMOFLOC fibre Vapour barrier Lathing e=50 (Heraklith) Gypsum wallboard	40 50 23 140-300 0.1 50 15	140 160 180 200 220 240 260 280 300	0.21 0.19 0.17 0.16 0.15 0.13 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	36.9	2.8	64.1	16.0	48		F60-B
D2		Roof covering Roof lathing 4/5 Counter lathing 5/8 Roof sheathing Rafters/THERMOFLOC fibre Lathing 2-6 cm Vapour barrier Lathing, installation level Gypsum wallboard Possibly 2. layer gypsum wallboard	40 50 120-140 20-60 30 15 15	140 160 180 200 220 240 260 280 300	0.25 0.22 0.19 0.18 0.16 0.15 0.14 0.13 0.12	OK OK OK OK OK OK OK OK OK	18.8	1.4	19.4	12.6	43		F30-B
D3		Roof covering Roof lathing 4/5 Counter lathing 5/8 Roof sheathing Rafters/THERMOFLOC fibre Vapour barrier Balancing lathing Gypsum wallboard	40 50 140-300 0.1 24 12.5	140 160 180 200 220 240 260 280 300	0.25 0.22 0.19 0.18 0.16 0.15 0.14 0.13 0.12	OK OK OK OK OK OK OK OK OK	16.7	1.3	17.2	12.5	42		F30-B
D4		Roof covering Roof lathing 4/5 Counter lathing 5/8 Bit. soft fibreboard Rafters/THERMOFLOC fibre OSB/Plywood Gypsum wallboard	40 50 19 140-300 12.5 12.5	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	33.9	2.6	41.0	13.7	49		F30-B
D5		Roof covering Roof lathing 4/5 Counter lathing 5/8 Underlay Roof sheathing On edge/THERMOFLOC fibre Vapour barrier Fireproof sheathing Rafters visible	40 50 24 140-300 0.1 38	140 160 180 200 220 240 260 280 300	0.23 0.20 0.18 0.17 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	51.1	3.9	71.1	15.5	44		F30-B
D6		Roof covering Roof lathing 4/5 Counter lathing 5/8 Bit. soft fibreboard Rafters/THERMOFLOC fibre OSB/Plywood Rafters visible	40 50 19 140-300 12.5	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	24.1	1.8	29.4	13.9	41		F30-B
D7		Roof covering Roof lathing 4/5 Counter lathing 5/8 Bit. soft fibreboard Doub. web T-beam/THERMOFLOC fibre OSB/Plywood Gypsum wallboard	40 50 35 140-360 15 12.5	140 180 220 260 300 340 400	0.22 0.18 0.15 0.13 0.11 0.10 0.09	OK OK OK OK OK OK OK	39.9	3.0	128.9	17.4	49		F30-B

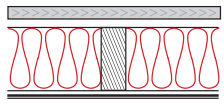
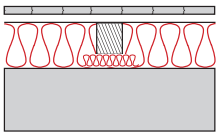
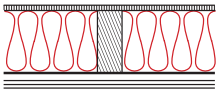
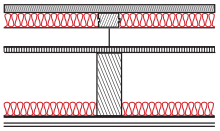
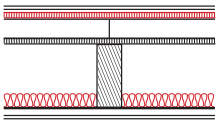
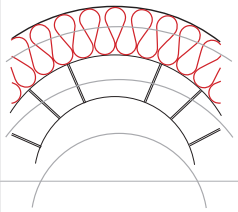
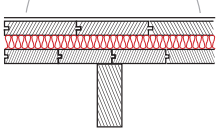
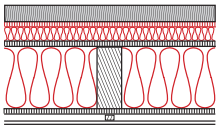
Wall Structures

No	PICTURE	CONSTRUCTION	Thickness [mm]	THERMOFLOC® Insulation thickness [mm]	U-value [W/m²k]	Diffusion assessment	Storage mass efficiency [kg/m²]	Storage capacity [W/m²k]	Amplitude damping [-]	Phase shift [h]	R_{WR} [dB]	L_{nW} [dB]	Fire protection
W1		Wood cladding Lathing Wood fibre insulation board Crossbar/THERMOFLOC Fibre Evenly spaced slats Vapour barrier (sd=2,3m) Lathing (installation level) Gypsum wallboards	20 40 15 140-300 23 0.1 30 15	140 160 180 200 220 240 260 280 300	0.23 0.21 0.19 0.17 0.15 0.14 0.13 0.12 0.12	OK OK OK OK OK OK OK OK OK	35.6	2.7	18.5	7.5	45		F30-B
W2		Cement-lime mortar Wood-wool lightweight building panels OSB/Plywood Crossbar/THERMOFLOC Fibre Lathing/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Gypsum wallboards	25 50 19 120-240 20-60 0.1 15	140 160 180 200 220 240 260 280 300	0.21 0.19 0.17 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	18.8	1.4	51.8	18.1	50		F30-B
W3		Cement-lime mortar Wood-wool lightweight building panels Crossbar/THERMOFLOC Fibre OSB/Plywood Vapour barrier (sd=2,3m) Gypsum wallboard	15 35 140-300 12.5 0,1 12.5	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	33.9	2.6	46.4	15.4	46		F30-B
W4		Facing masonry Lathing Wood fibre insulation board Crossbar/THERMOFLOC Fibre Evenly spaced slats Vapour barrier (sd=2,3m) Lathing Gypsum wallboard	125 40 15 140-300 23 0.1 30 15	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	35.8	2.7	38.2	17.2	52		F90-B F30-B
W5		Facades (clinker, wood, plaster) Lathing bit. soft fibreboard Crossbar/THERMOFLOC Fibre OSB/Plywood Gypsum wallboard	20 40 19 140-300 12.5 12.5	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	18.8	1.4	32.6	15.8	43		F30-B
W6		Gypsum wallboard Gypsum fibreboard Crossbar/THERMOFLOC Fibre OSB/Plywood Gypsum wallboard	12.5 20 140 12.5 12.5	80 100 120 140 160 180 200	0.24 0.22 0.19 0.17 0.16 0.15 0.14	OK OK OK OK OK OK OK	33.2	2.5	12.6	9.6	46		F30-B
W7		Cement-lime mortar Gypsum wallboards OSB/Plywood Crossbar/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Lathing Gypsum wallboards	12.5 12.5 15 140-300 0.1 30 15	140 160 180 200 220 240 260 280 300	0.24 0.21 0.19 0.17 0.16 0.15 0.13 0.13 0.12	OK OK OK OK OK OK OK OK OK	35.8	2.7	6.9	6.8	46		F30-B
W8		Cement-lime mortar Wood soft fibre board Gypsum wallboards Crossbar/THERMOFLOC Fibre Gypsum wallboards Vapour barrier (sd=2,3m) Gypsum wallboards	12.5 12.5 15 140-300 15 0.1 15	140 160 180 200 220 240 260 280 300	0.23 0.21 0.19 0.17 0.15 0.14 0.13 0.12 0.12	OK OK OK OK OK OK OK OK OK	26.8	2.0	18.5	7.5	46		F90-B

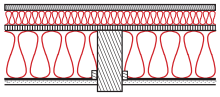
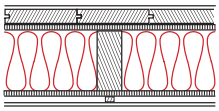
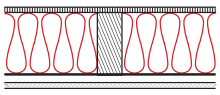
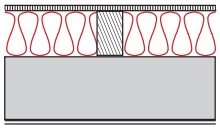
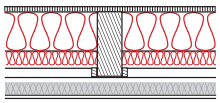
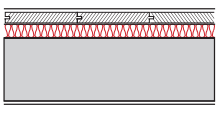
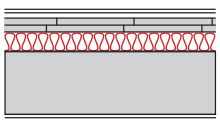
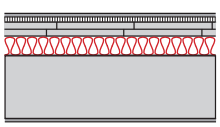
Wall Structures

No	PICTURE	CONSTRUCTION	Thickness [mm]	THERMOFLOC® Insulation thickness [mm]	U-value [W/m²k]	Diffusion assessment	Storage mass efficiency [kg/m²]	Storage capacity [W/m²k]	Amplitude damping [-]	Phase shift [h]	R_{WR} [dB]	L_{nW} [dB]	Fire protection
W9		Square-cut log Crossbar/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Profile timber formwork	70 80-200 0.1 30	80 100 120 140 160 180 200	0.33 0.28 0.24 0.21 0.19 0.17 0.16	OK OK OK OK OK OK OK	49.4	3.8	41.3	11.7	41		F30-B
W 10		Cement-lime mortar Wood-wool lightweight building panels Soft fibreboard Crossbar/THERMOFLOC Fibre OSB/Plywood Lathing/THERMOFLOC Fibre Gypsum wallboard	12,5 25 16 140-360 18 60 15	200 220 240 260 300 340 380 420	0.16 0.15 0.14 0.13 0.11 0.10 0.09 0.08	OK OK OK OK OK OK OK OK	19.2	1.5	292.3	22.6	50		F30-B
W 11		Wood casing Lathing Soft fibreboard Lathing/THERMOFLOC Fibre Plywood board Gypsum wallboard	20 40 19 140-300 95 15	140 160 180 200 220 240 260 280 300	0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11 0.11	OK OK OK OK OK OK OK OK OK	53.2	4.1	99.7	11.0	45		F30-B
W 12		Cement-lime mortar Wood-wool lightweight building panels Lathing/THERMOFLOC Fibre Masonry	10 25 40-200 360	40 60 80 100 120 140 160 180 200	0.40 0.33 0.28 0.24 0.21 0.19 0.17 0.16 0.15	OK OK OK OK OK OK OK OK OK	61.2	4.7	294.3	16.9	54		F90
W 13		Vertically perforated bricks THERMOFLOC Fibre or TFPearls Vertically perforated bricks Interior plaster	125 60-220 250 15	60 80 100 120 140 160 180 200 220	0.37 0.31 0.26 0.23 0.21 0.19 0.17 0.15 0.14	OK OK OK OK OK OK OK OK OK	78.6	6.0	151.5	15.1			F90
W 14		Plastering system MW thermal insul. composite system Gypsum fibreboard Crossbar/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Gypsum fibreboard	1 40 12.5 140-300 0.1 12.5	140 160 180 200 220 240 260 280 300	0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11 0.11	OK OK OK OK OK OK OK OK OK	7.5	0.6	13.7	13.5			F30-B F90-B
W 15		Gypsum fibreboard Gypsum fibreboard Gypsum fibreboard Crossbar/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Gypsum fibreboard	12.5 12.5 12.5 140-300 0.1 12.5	140 160 180 200 220 240 260 280 300	0.24 0.22 0.19 0.18 0.16 0.15 0.14 0.13 0.12	OK OK OK OK OK OK OK OK OK	7.5	0.6	7.8	11.1	63		F30-B F90-B
W 16		Calcium silicate board Gypsum fibreboard Crossbar/THERMOFLOC Fibre Vapour barrier (sd=2,3m) Gypsum fibreboard	10 15 140-300 0.1 12.5	140 160 180 200 220 240 260 280 300	0.25 0.22 0.19 0.18 0.16 0.15 0.14 0.13 0.12	OK OK OK OK OK OK OK OK OK	7.4	0.6	7.6	10.7	63		F30-B F90-B

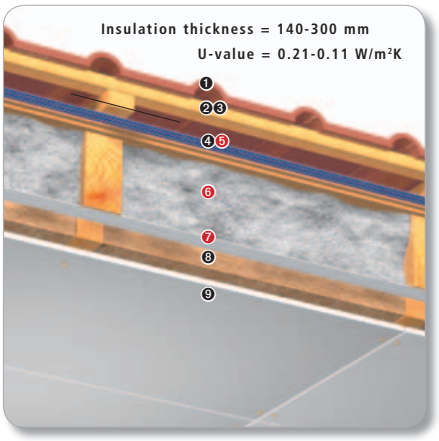
Ceiling and Floor Structures

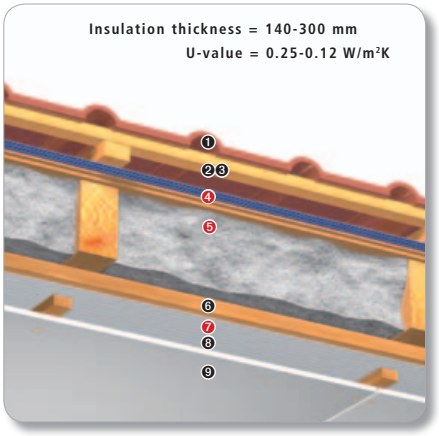
No	PICTURE	CONSTRUCTION	Thickness [mm]	THERMOFLOC® Insulation thickness [mm]	U-value [W/m²k]	Diffusion assessment	Storage mass efficiency [kg/m²]	Storage capacity [W/m²k]	Amplitude damping [-]	Phase shift [h]	R_{WR} [dB]	L_{nW} [dB]	Fire protection
DB1		Wood wool board Subfloor Tie beams/THERMOFLOC Fibre Evenly spaced slats Vapour barrier Gypsum wallboards	35 23 140-300 23 0.1 15	140 160 180 200 220 240 260 280 300	0.22 0.20 0.18 0.16 0.15 0.14 0.13 0.12 0.11	OK OK OK OK OK OK OK OK OK	13.8	1.1	7.4	7.4	48	73	F30-B
DB2		Strip flooring Subfloor Cushioning wd./THERMOFLOC Fibre Solid ceiling	22 24 50-160 180	50 60 70 80 90 100 120 140 160	0.48 0.43 0.38 0.35 0.32 0.29 0.25 0.22 0.20	OK OK OK OK OK OK OK OK OK	318.1	24.2	185.7	11.8	55	51	F90
DB3		OSB/Plywood Beams/THERMOFLOC Fibre Vapour barrier Spring rails Gypsum wallboard, 2-layer	19 140-300 0.1 30 30	140 160 180 200 220 240 260 280 300	0.24 0.21 0.19 0.17 0.16 0.15 0.14 0.13 0.12	OK OK OK OK OK OK OK OK OK	18.7	1.4	21.3	13.3	52	59	F60-B
DB4		Timber floor Wood fibre insulation board Concrete paving stone OSB/Plywood Beams/THERMOFLOC Fibre Spring rails Gypsum wallboards	21 40 50 22 60-220 30 12.5	60 80 100 120 140 160 180 200 220	0.32 0.27 0.24 0.21 0.19 0.17 0.16 0.15 0.13	OK OK OK OK OK OK OK OK OK	11.7	0.9	43.4	13.0	55	53	F30-B
DB5		Gypsum fibre dry screed Impact sound insulation board Concrete paving stone OSB/Plywood Beams/THERMOFLOC Fibre Spring rails Gypsum wallboards	25 20 50 22 60-220 30 12.5	60 80 100 120 140 160 180 200 220	0.36 0.30 0.26 0.23 0.20 0.18 0.17 0.15 0.14	OK OK OK OK OK OK OK OK OK	11.7	0.9	28.1	12.3	57	50	F30-B
DB6		THERMOFLOC Fibre Natural stone	140-300 250	140 160 180 200 220 240 260 280 300	0.23 0.20 0.18 0.17 0.15 0.14 0.13 0.12 0.12	OK OK OK OK OK OK OK OK OK	117.2	8.9	217.2	10.8			
DB7		Timber floor board Soft fibre N-F Soft fibre cover panel THERMOFLOC Pellets Waterproof layer Fireproof sheathing	25 40 8 30-100 0.1 40	30 40 50 60 70 80 90 100	0.48 0.45 0.42 0.40 0.38 0.36 0.34 0.32	OK OK OK OK OK OK OK OK	49.4	3.8	10.7	8.3	40	73	F30-B
DB8		Screed Impact sound insulation board THERMOFLOC Pellets OSB/Plywood Beams/THERMOFLOC Fibre OSB/Plywood Lathing Gypsum wallboard	50 20 30-100 22 220 22 30 12.5	25 26 27 28 29 30 31 32	0.20 0.20 0.19 0.19 0.18 0.18 0.17 0.17	OK OK OK OK OK OK OK OK	47.2	3.6	420.2	5.7	58	51	F30-B

Ceiling and Floor Structures

No	PICTURE	CONSTRUCTION	Thickness [mm]	THERMOFLOC® Insulation thickness [mm]	U-value [W/m²k]	Diffusion assessment	Storage mass efficiency [kg/m²]	Storage capacity [W/m²k]	Amplitude damping [-]	Phase shift [h]	R_{WR} [dB]	L_{nW} [dB]	Fire protection
DB9		Timber floor board THERMOFLOC Pellets OSB/Plywood Beams/THERMOFLOC Fibre Panelling	20 30-100 30 160 25	190 200 210 220 230 240 250 260	0.18 0.18 0.17 0.17 0.17 0.16 0.16 0.15	OK OK OK OK OK OK OK OK	38.1	2.9	82.1	15.3	50	67	F30-B
DB 10		Timber floor board Soft fibre N-F Soft fibre cover panel OSB/Plywood Beams/THERMOFLOC Fibre OSB/Plywood Lathing Gypsum wallboard	20 40 8 19 180-340 19 30 15	180 200 220 240 260 280 300 320 340	0.23 0.22 0.20 0.19 0.18 0.17 0.16 0.16 0.15	OK OK OK OK OK OK OK OK OK	47.2	3.6	422.4	23.9	48	73	F30-B
DB 11		OSB/Plywood Beams/THERMOFLOC Fibre Waterproof layer Laths Gypsum wallboard	19 140-300 0.1 30 15	140 160 180 200 220 240 260 280 300	0.38 0.35 0.31 0.29 0.27 0.25 0.23 0.22 0.20	OK OK OK OK OK OK OK OK OK	13.9	1.1	4.2	6.8	48	73	F30-B
DB 12		Timber floor board Lathing/THERMOFLOC Fibre Reinforced concrete ceiling Ceiling plaster	20 60-220 160 10	60 80 100 120 140 160 180 200 220	0.70 0.58 0.50 0.44 0.39 0.35 0.32 0.29 0.27	OK OK OK OK OK OK OK OK OK	301.1	22.9	93.6	9.1	60	57	F90
DB 13		OSB/Plywood Beams/THERMOFLOC Pellets + Fibre Curtain insulation layer Lathing Air Plaster base Ceiling plaster	19 110-190 30 30 50 35 10	110 120 130 140 150 160 170 180 190	0.26 0.25 0.24 0.24 0.22 0.21 0.21 0.21 0.20	OK OK OK OK OK OK OK OK OK	31.3	2.4	450.6	23.1	48	65	F60-B
DB 14		Timber floor board Soft fibre N-F Soft fibre cover panel THERMOFLOC Pellets Concrete ceiling	20 40 8 30-100 160	30 40 50 60 70 80 90 100	0.54 0.50 0.47 0.44 0.41 0.39 0.37 0.35	OK OK OK OK OK OK OK OK	310.9	23.7	44.7	8.7	55	54	F90
DB 15		Stoneware Gypsum fibreboard Wood soft fibre board THERMOFLOC Pellets Reinforced concrete ceiling	25 2x20 80-160 160	80 90 100 110 120 130 140 150 160	0.33 0.32 0.30 0.29 0.28 0.27 0.26 0.25 0.24	OK OK OK OK OK OK OK OK OK	314.0	23.9	125.5	10.2	54	57	F90
DB 16		Floor Covering Flooring panel Wood soft fibre board THERMOFLOC Pellets Reinforced concrete ceiling	18 2x20 80-160 160	80 90 100 110 120 130 140 150 160	0.41 0.39 0.36 0.35 0.33 0.32 0.30 0.29 0.28	OK OK OK OK OK OK OK OK OK	313.8	23.9	93.5	8.9	54	57	F90

ROOF





Roof system D1, full rafter insulation
additional storage mass efficiency inside

❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ Underlay
❺ THERMOFLOC Roof sheathing
❻ Rafters/THERMOFLOC Fibre
❼ THERMOFLOC Vapour barrier
❽ Lathing e=50 (Heraklith)
❾ Gypsum wallboard

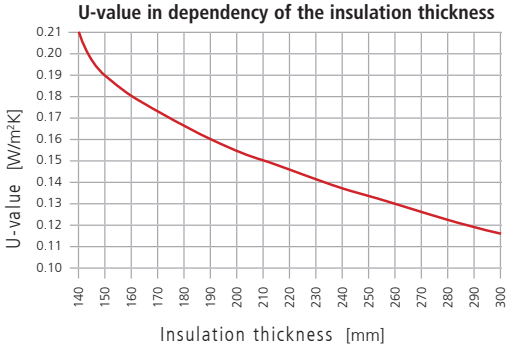
Roof system D2, full rafter insulation
with installation level

❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ THERMOFLOC Roof sheathing
❺ Rafters/THERMOFLOC Fibre
❻ Lathing 2-6 cm
❼ THERMOFLOC Vapour barrier
❽ Lathing, installation level
❾ Gypsum wallboard, Possibly 2. layer gypsum wallb.

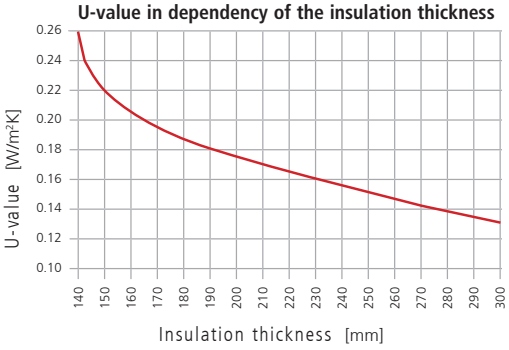
TECHNICAL DATA		
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	38.99 [kg/m²]	
Storage capacity	2.82 [W/m²K]	
Phase shift	15.99 [h]	
Amplitude damping	64.14 [-]	
Moisture protection	suitable	DIN 4108
Fire	F60-B	DIN 4102
Noise	R_{WR}= 48 dB	DIN 4109

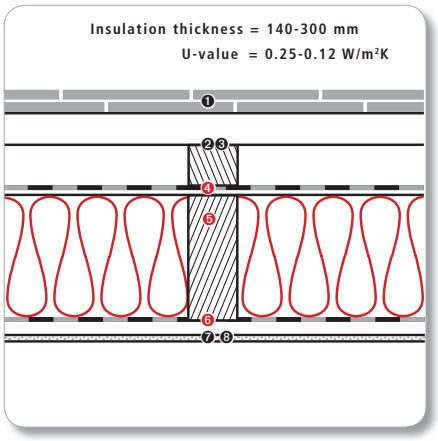
U= 0.14 [W/m²K]	DIN 4108
18.77 [kg/m²]	
1.43 [W/m²K]	
12.61 [h]	
19.44 [-]	
suitable	DIN 4108
F30-B	DIN 4102
R_{WR}= 43 dB	DIN 4109

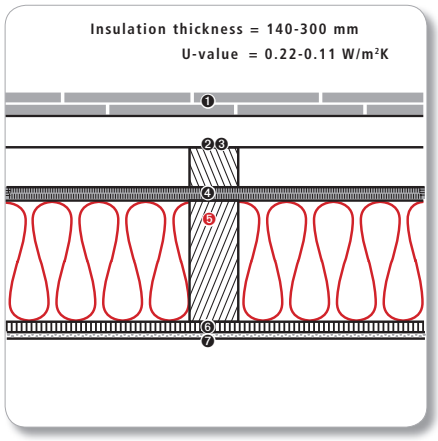
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Roof system D3, full rafter insulation
with balancing lathing and roof sheathing

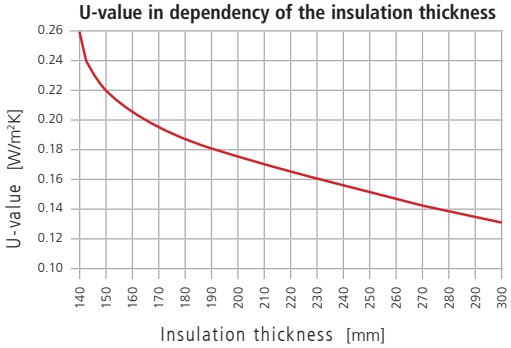
❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ THERMOFLOC Roof sheathing
❺ Rafters/THERMOFLOC Fibre
❻ THERMOFLOC Vapour barrier
❼ Balancing lathing
❽ Gypsum wallboard

Roof system D4, full rafter insulation
with OSB and soft fibreboard

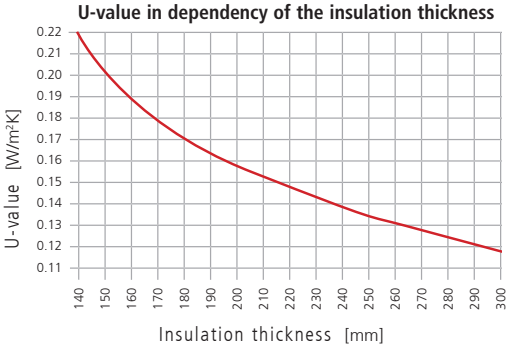
❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ bit. soft fibreboard
❺ Rafters/THERMOFLOC Fibre
❻ OSB/Plywood
❼ Gypsum wallboard

TECHNICAL DATA				
Thermal Protection	U= 0.14 [W/m²K]	DIN 4108	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	16.70 [kg/m²]		38.89 [kg/m²]	
Storage capacity	1.27 [W/m²K]		2.58 [W/m²K]	
Phase shift	12.47 [h]		13.66 [h]	
Amplitude damping	17.21 [-]		40.99 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 42 dB	DIN 4109	R_{WR}= 49 dB	DIN 4109

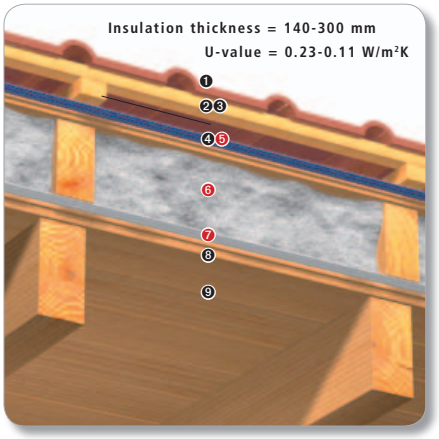
U-value in dependency of the insulation thickness

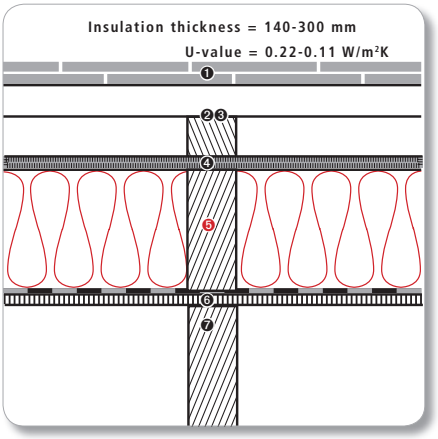


U-value in dependency of the insulation thickness



ROOF





Roof Structure with Insulation above Rafters D5, outside roof sheathing, open diffusing roof sheathing

- ❶ Roof covering
- ❷ Roof lathing 4/5
- ❸ Counter lathing 5/8
- ❹ Underlay
- ❺ THERMOFLOC Roof sheathing
- ❻ On edge/THERMOFLOC Fibre
- ❼ THERMOFLOC Vapour barrier
- ❽ Fireproof sheathing
- ❾ Rafters visible

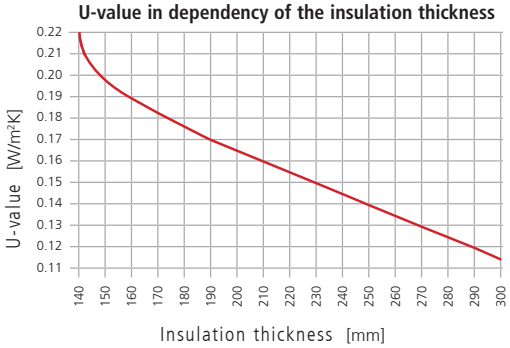
Roof Structure with Insulation above Rafters D6
with OSB and soft fibreboard

- ❶ Roof covering
- ❷ Roof lathing 4/5
- ❸ Counter lathing 5/8
- ❹ bit. soft fibreboard
- ❺ Rafters/THERMOFLOC Fibre
- ❻ OSB/Plywood
- ❼ Rafters visible

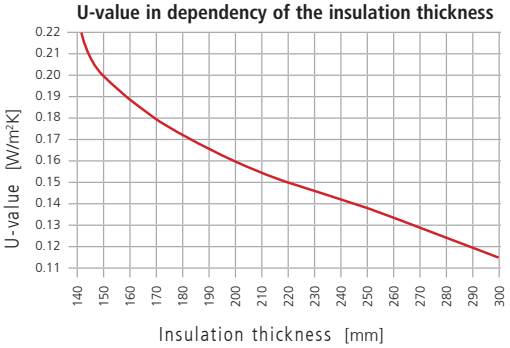
TECHNICAL DATA		
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	24.07 [kg/m²]	
Storage capacity	1.83 [W/m²K]	
Phase shift	13.90 [h]	
Amplitude damping	29.42 [-]	
Moisture protection	suitable	DIN 4108
Fire	F30-B	DIN 4102
Noise	R_{WR}= 41 dB	DIN 4109

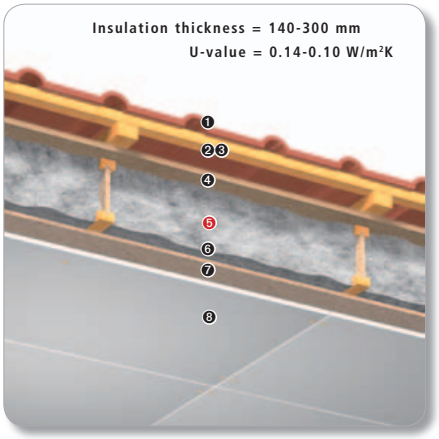
U= 0.13 [W/m²K]	DIN 4108
13.9 [kg/m²]	
1.83 [W/m²K]	
13.90 [h]	
29.4 [-]	
suitable	DIN 4108
F30-B	DIN 4102
R_{WR}= 41 dB	DIN 4109

U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness



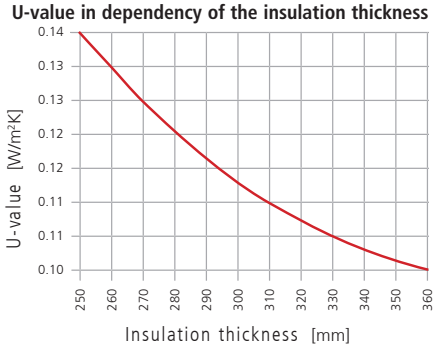


Roof Structure, Passive House D7

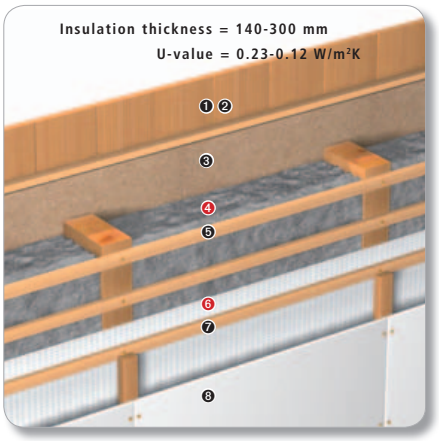
❶ Roof covering
❷ Roof lathing 4/5
❸ Counter lathing 5/8
❹ bit. soft fibreboard
❺ Double web T-beam/THERMOFLOC Fibre
❼ OSB/Plywood
❽ Gypsum wallboard

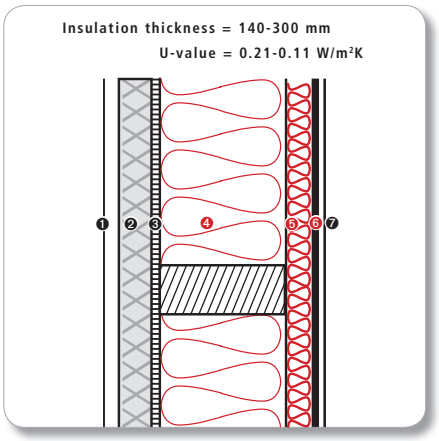
TECHNICAL DATA		
Thermal Protection	U= 0.10 [W/m²K]	DIN 4108
Storage mass efficiency	39.93 [kg/m²]	
Storage capacity	3.04 [W/m²K]	
Phase shift	17.44 [h]	
Amplitude damping	128.8 [-]	
Moisture protection	suitable	DIN 4108
Fire	F30-B	DIN 4102
Noise	RWR= 49 dB	DIN 4109

U-value in dependency of the insulation thickness



WALL





Outside Wall with Wood Covering W1
outside lathing diagonal,
wood cladding vertical or horizontal

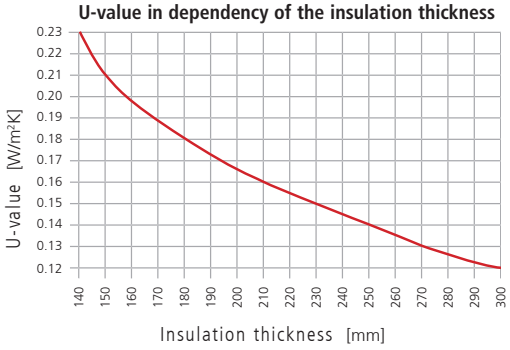
- ❶ Wood cladding
- ❷ Lathing
- ❸ Wood fibre insulation board
- ❹ Crossbar/THERMOFLOC Fibre
- ❺ Evenly spaced slats
- ❻ THERMOFLOC Vapour barrier
- ❼ Lathing (installation level)
- ❽ Gypsum wallboards

Outside Wall, Plastered W2
Mineral plaster on wood wool lightweight building panel

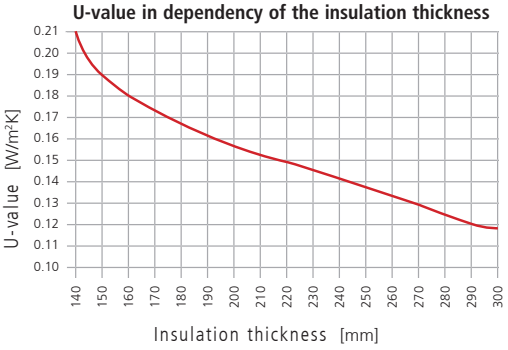
- ❶ Cement-lime mortar
- ❷ Wood-wool lightweight building panels
- ❸ OSB/Plywood
- ❹ Crossbar/THERMOFLOC Fibre
- ❺ Lathing/THERMOFLOC Fibre
- ❻ THERMOFLOC Vapour barrier
- ❼ Gypsum wallboards

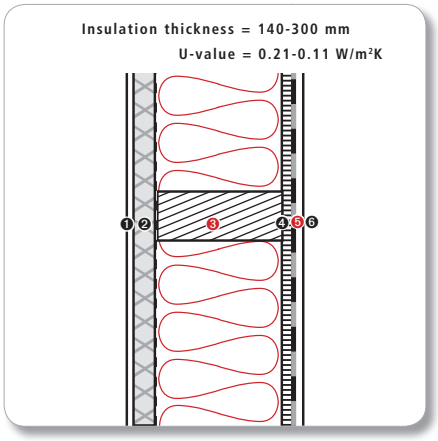
TECHNICAL DATA				
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	35.6 [kg/m²]		18.8 [kg/m²]	
Storage capacity	2.7 [W/m²K]		1.4 [W/m²K]	
Phase shift	7.5 [h]		18.1 [h]	
Amplitude damping	18.5 [-]		51.8 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 45 dB	DIN 4109	R_{WR}= 50 dB	DIN 4109

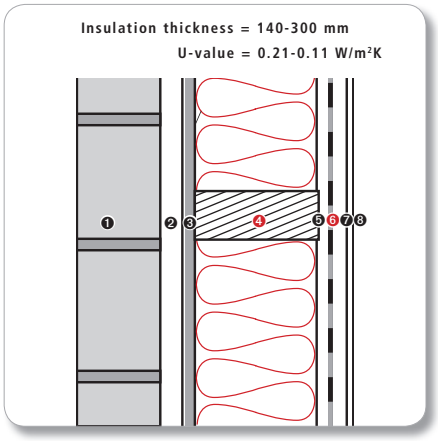
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Outside Wall, Plastered W3

Mineral plaster on gypsum lath, installation level inside

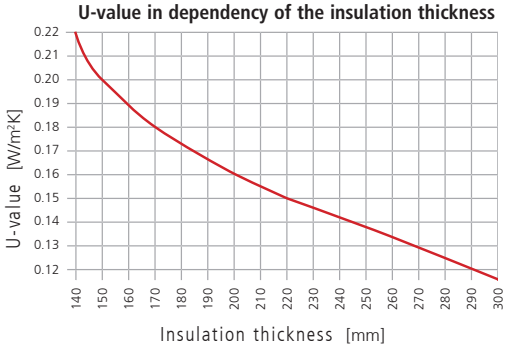
❶ Cement-lime mortar
❷ Wood-wool lightweight building panels
❸ Crossbar/THERMOFLOC Fibre
❹ OSB/Plywood
❺ THERMOFLOC Vapour barrier
❻ Gypsum wallboard

Outside Wall with Face Walling W4

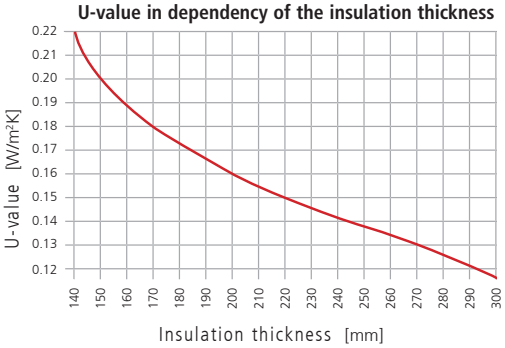
❶ Facing masonry
❷ Lathing
❸ Wood fibre insulation board
❹ Crossbar/THERMOFLOC Fibre
❺ Evenly spaced slats
❻ THERMOFLOC Vapour barrier
❼ Lathing
❽ Gypsum wallboard

TECHNICAL DATA				
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	39.1 [kg/m²]		35.8 [kg/m²]	
Storage capacity	2.6 [W/m²K]		2.7 [W/m²K]	
Phase shift	15.4 [h]		17.2 [h]	
Amplitude damping	46.4 [-]		38.2 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B/F90-B	DIN 4102
Noise	R_{WR}= 46 dB	DIN 4109	R_{WR}= 52 dB	DIN 4109

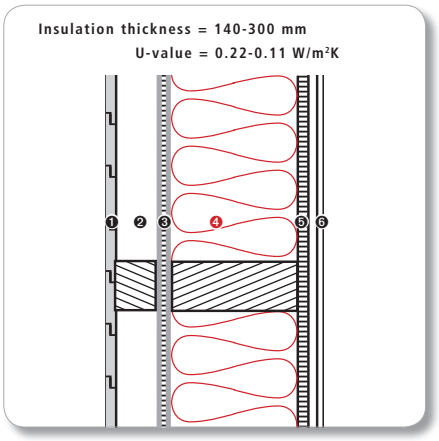
U-value in dependency of the insulation thickness

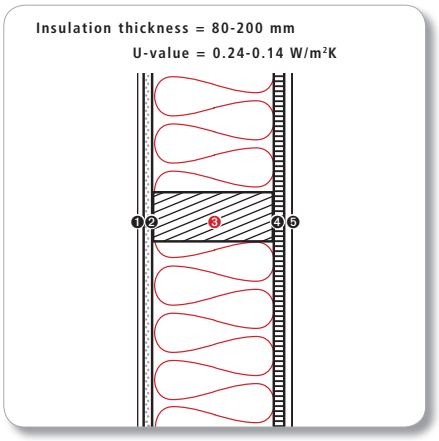


U-value in dependency of the insulation thickness



WALL

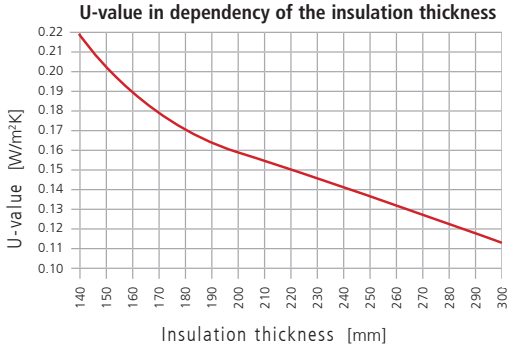




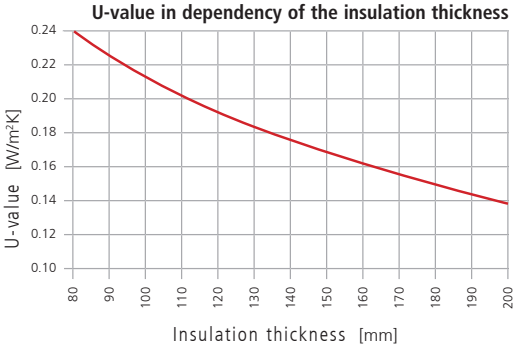
Outside Wall W5	Building Partition Wall W6 (F30-B/F90-B)
❶ Facades (clinker, wood, plaster)	❶ Gypsum wallboard
❷ Lathing	❷ Gypsum fibreboard
❸ bit. soft fibreboard	❸ Crossbar/THERMOFLOC Fibre
❹ Crossbar/THERMOFLOC Fibre	❹ OSB/Plywood
❺ OSB/Plywood	❺ Gypsum wallboard
❻ Gypsum wallboard	

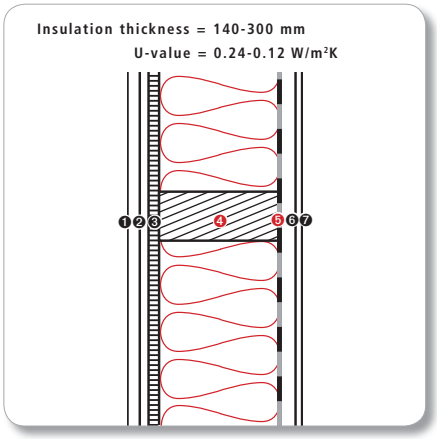
TECHNICAL DATA				
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108	U= 0.17 [W/m²K]	DIN 4108
Storage mass efficiency	18.8 [kg/m²]		33.2 [kg/m²]	
Storage capacity	1.4 [W/m²K]		2.5 [W/m²K]	
Phase shift	15.8 [h]		9.6 [h]	
Amplitude damping	32.6 [-]		12.6 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 43 dB	DIN 4109	R_{WR}= 46 dB	DIN 4109

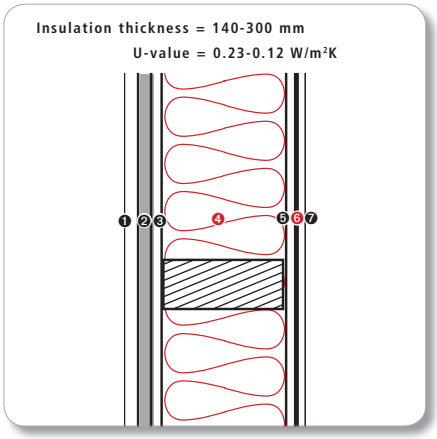
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Outside Wall, Plastered W7
Mineral plaster on gypsum lath, installation level inside

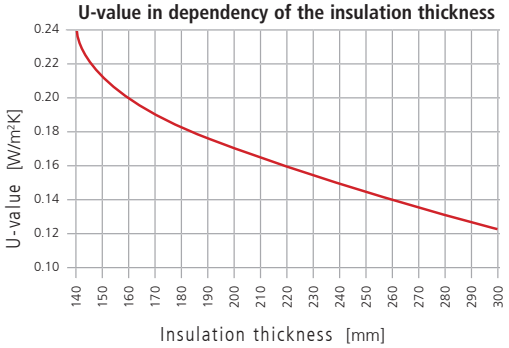
❶ Cement-lime mortar
❷ Gypsum wallboards
❸ OSB/Plywood
❹ Crossbar/THERMOFLOC Fibre
❺ THERMOFLOC Vapour barrier
❻ Lathing
❼ Gypsum wallboards

Outside Wall, Plastered W8
Mineral plaster on gypsum lath, F90-B

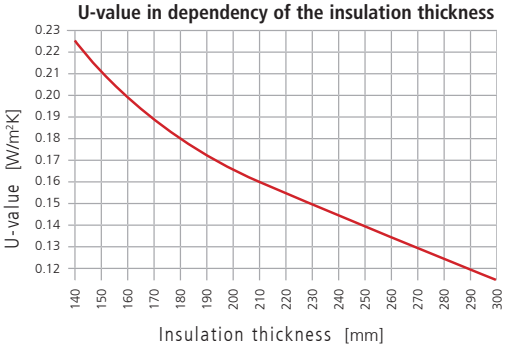
❶ Cement-lime mortar
❷ Wood soft fibre board
❸ Gypsum wallboards
❹ Crossbar/THERMOFLOC fibre
❺ Gypsum wallboards
❻ THERMOFLOC Vapour barrier
❼ Gypsum wallboards

TECHNICAL DATA				
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	35.8 [kg/m²]		26.8 [kg/m²]	
Storage capacity	2.7 [W/m²K]		2.0 [W/m²K]	
Phase shift	6.8 [h]		7.5 [h]	
Amplitude damping	6.9 [-]		18.5 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F90-B	DIN 4102
Noise	R_{WR}= 46 dB	DIN 4109	R_{WR}= 46 dB	DIN 4109

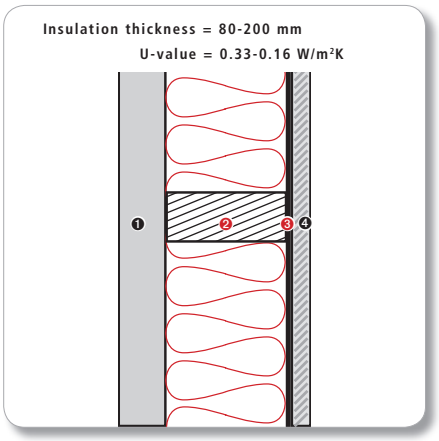
U-value in dependency of the insulation thickness

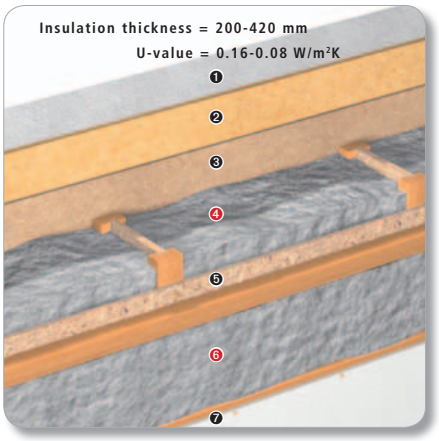


U-value in dependency of the insulation thickness



WALL





Outside Wall, Log House W9

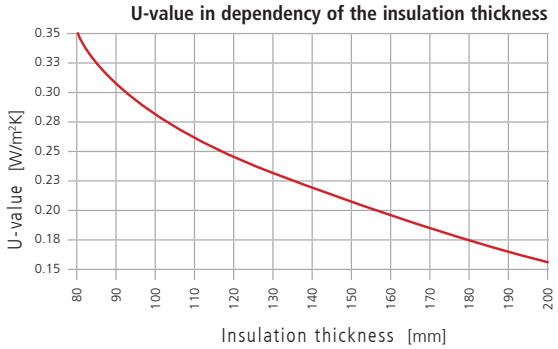
❶ Square-cut log
❷ Crossbar/THERMOFLOC Fibre
❸ THERMOFLOC Vapour barrier
❹ Profile timber formwork

Outside Wall, Passive House W10

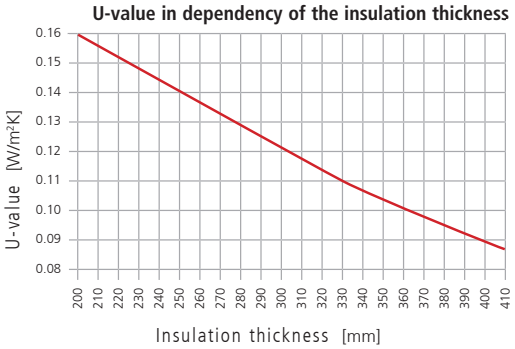
❶ Cement-lime mortar
❷ Wood-wool lightweight building panels
❸ Soft fibreboard
❹ Crossbar/THERMOFLOC Fibre
❺ OSB/Plywood
❻ Lathing/THERMOFLOC Fibre
❼ Gypsum wallboard

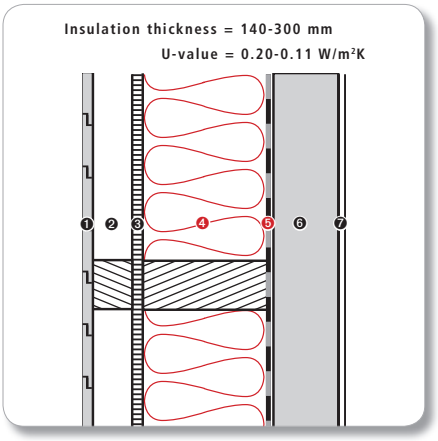
TECHNICAL DATA				
Thermal Protection	U= 0.16 [W/m²K]	DIN 4108	U= 0.10 [W/m²K]	DIN 4108
Storage mass efficiency	49.4 [kg/m²]		19.2 [kg/m²]	
Storage capacity	3.8 [W/m²K]		1.5 [W/m²K]	
Phase shift	11.7 [h]		22.6 [h]	
Amplitude damping	41.3 [-]		292.3 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 41 dB	DIN 4109	R_{WR}= 50 dB	DIN 4109

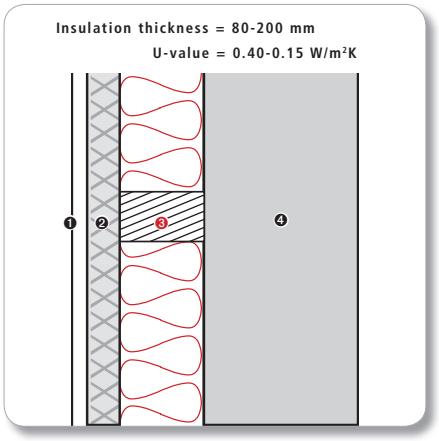
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Outside Wall, Solid Wood Panels W11

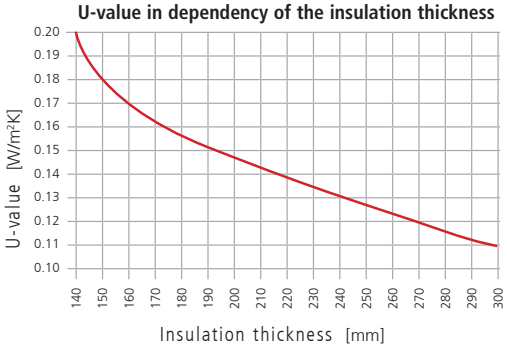
❶ Wood casing
❷ Lathing
❸ Soft fibreboard
❹ Lathing/THERMOFLOC Fibre
❺ THERMOFLOC Vapour barrier
❻ Plywood board
❼ Gypsum wallboard

Outside Wall, Outside Insulation W12
on solid masonry

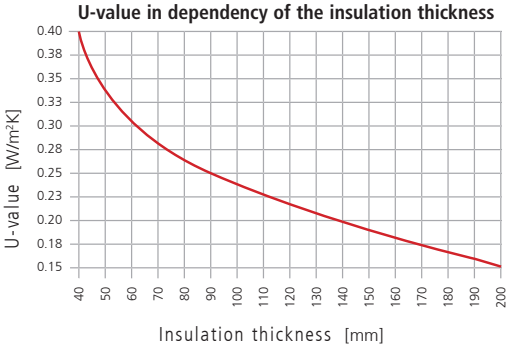
❶ Cement-lime mortar
❷ Wood-wool lightweight building panels
❸ Lathing/THERMOFLOC Fibre
❹ Masonry

TECHNICAL DATA				
Thermal Protection	U= 0.12 [W/m²K]	DIN 4108	U= 0.17 [W/m²K]	DIN 4108
Storage mass efficiency	53.2 [kg/m²]		61.2 [kg/m²]	
Storage capacity	4.1 [W/m²K]		4.7 [W/m²K]	
Phase shift	11.0 [h]		16.9 [h]	
Amplitude damping	99.7 [-]		294.3 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F90	DIN 4102
Noise	R_{WR}= 45 dB	DIN 4109	R_{WR}= 54 dB	DIN 4109

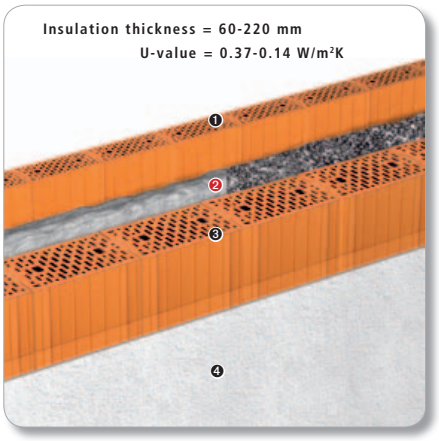
U-value in dependency of the insulation thickness

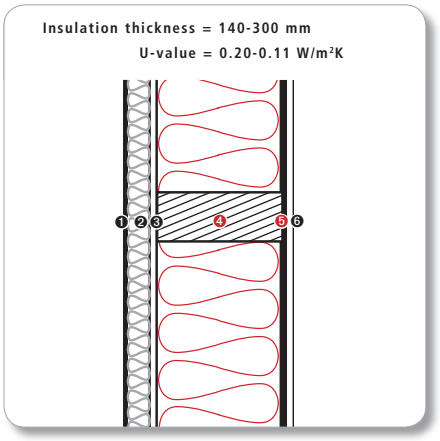


U-value in dependency of the insulation thickness



WALL





Outside Wall with Core Insulation W13

❶ Vertically perforated bricks
❷ THERMOFLOC Fibre or TFPearls
❸ Vertically perforated bricks
❹ Interior plaster

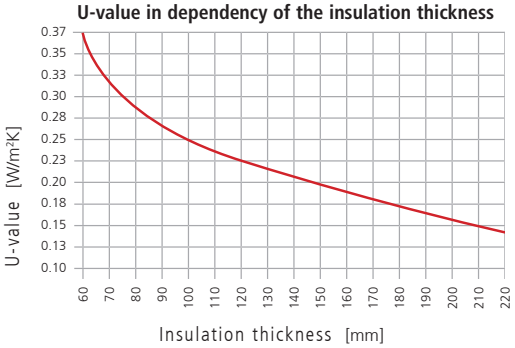
Building End Wall W14 (F30-B/F90-B)

Mineral wool thermal insulation composite system

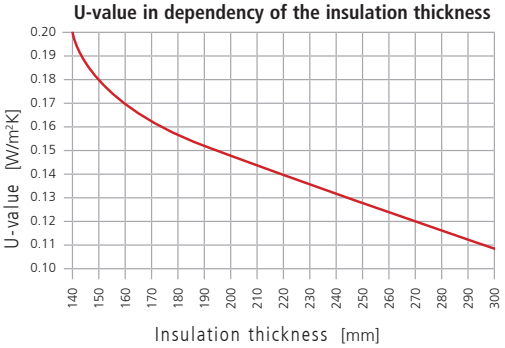
❶ Plastering system
❷ MW thermal insul. composite system
❸ Gypsum fibreboard
❹ Crossbar/THERMOFLOC Fibre
❺ THERMOFLOC Vapour barrier
❻ Gypsum fibreboard

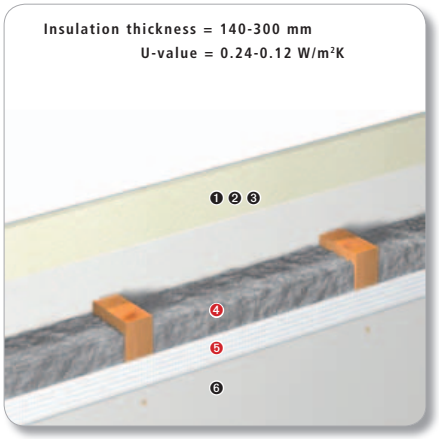
TECHNICAL DATA				
Thermal Protection	U= 0.26 [W/m²K]	DIN 4108	U= 0.14 [W/m²K]	DIN 4108
Storage mass efficiency	78.6 [kg/m²]		7.5 [kg/m²]	
Storage capacity	6.0 [W/m²K]		0.6 [W/m²K]	
Phase shift	15.1 [h]		13.5 [h]	
Amplitude damping	151.5 [-]		13.7 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F90	DIN 4102	F30-B/F90-B	DIN 4102
Noise	not determined	DIN 4109	not determined	DIN 4109

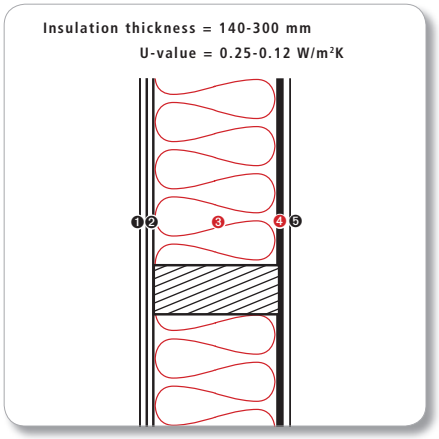
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Building End Wall W15
(F30-B/F90-B)
3x planking

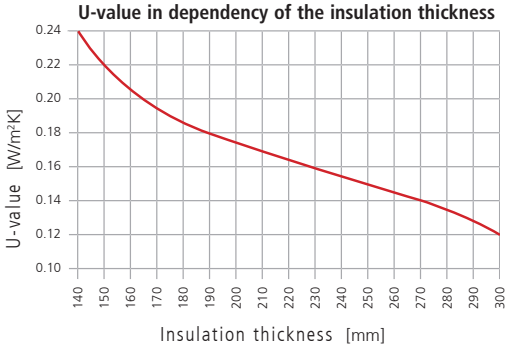
❶ Gypsum fibreboard
❷ Gypsum fibreboard
❸ Gypsum fibreboard
❹ Crossbar/THERMOFLOC Fibre
❺ THERMOFLOC Vapour barrier
❻ Gypsum fibreboard

Building End Wall W16
(F30-B/F90-B)
with calcium silicate board

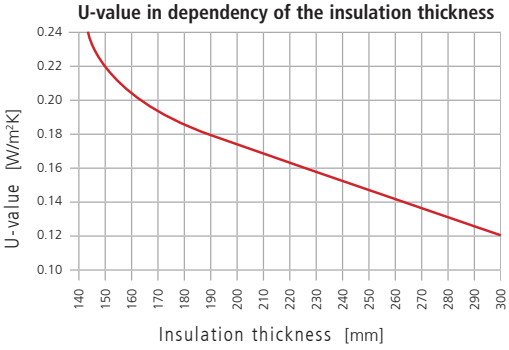
❶ Calcium silicate board
❷ Gypsum fibreboard
❸ Crossbar/THERMOFLOC Fibre
❹ THERMOFLOC Vapour barrier
❺ Gypsum fibreboard

TECHNICAL DATA				
Thermal Protection	U= 0.14 [W/m²K]	DIN 4108	U= 0.14 [W/m²K]	DIN 4108
Storage mass efficiency	7.5 [kg/m²]		7.4 [kg/m²]	
Storage capacity	0.6 [W/m²K]		0.6 [W/m²K]	
Phase shift	11.1 [h]		10.7 [h]	
Amplitude damping	7.8 [-]		7.6 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B/F90-B	DIN 4102	F30-B/F90-B	DIN 4102
Noise	R_{WR}= 63 dB	DIN 4109	R_{WR}= 63 dB	DIN 4109

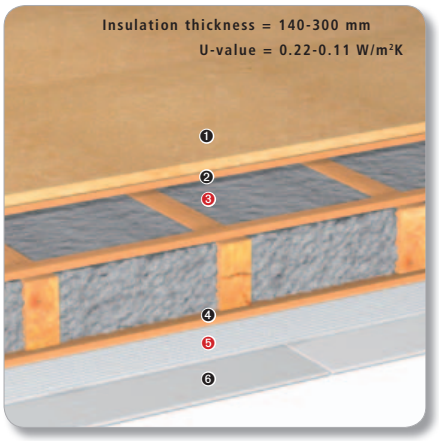
U-value in dependency of the insulation thickness

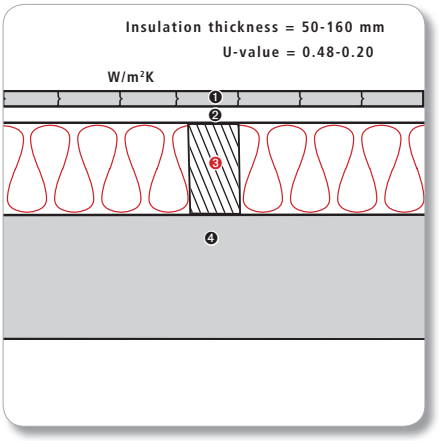


U-value in dependency of the insulation thickness



CEILINGS
FLOORS





Braced Ceiling DB1
uppermost storey ceiling, possible to walk on top

❶ Wood wool board
❷ Subfloor
❸ Tie beams/THERMOFLOC Fibre
❹ Evenly spaced slats
❺ THERMOFLOC Vapour barrier
❻ Gypsum wallboards

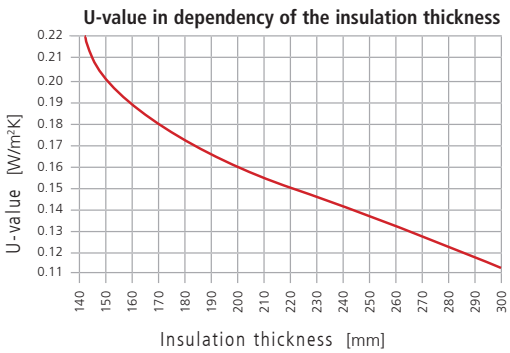
Storey Ceiling DB2
Storey ceiling with subfloor on cushioning wood between living rooms

❶ Strip flooring
❷ Subfloor
❸ Cushioning wd./THERMOFLOC Fibre
❹ Solid ceiling

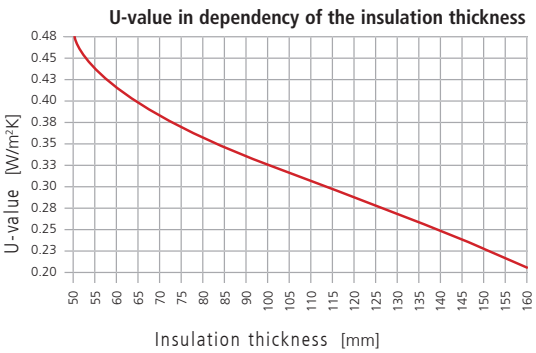
TECHNICAL DATA		
Thermal Protection	U= 0.13 [W/m²K]	DIN 4108
Storage mass efficiency	13.8 [kg/m²]	
Storage capacity	1.1 [W/m²K]	
Phase shift	7.4 [h]	
Amplitude damping	7.4 [-]	
Moisture protection	suitable	DIN 4108
Fire	F30-B	DIN 4102
Noise	R_{WR}= 48 dB, L_{NW}= 73 dB	DIN 4109

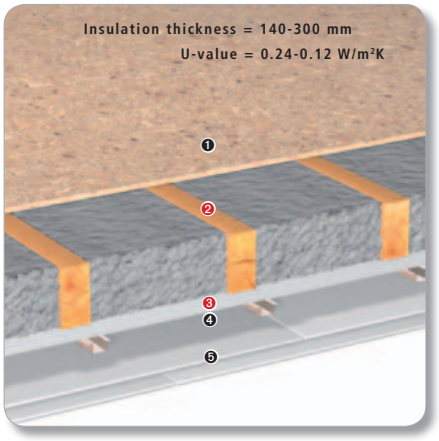
U= 0.25 [W/m²K]	DIN 4108
318.1 [kg/m²]	
24.2 [W/m²K]	
11.8 [h]	
185.7 [-]	
suitable	DIN 4108
F90	DIN 4102
R_{WR}= 55 dB, L_{NW}= 51 dB	DIN 4109

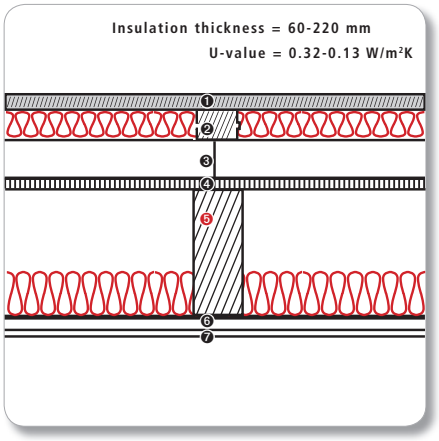
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Storey Ceiling DB3
with suspended counter ceiling

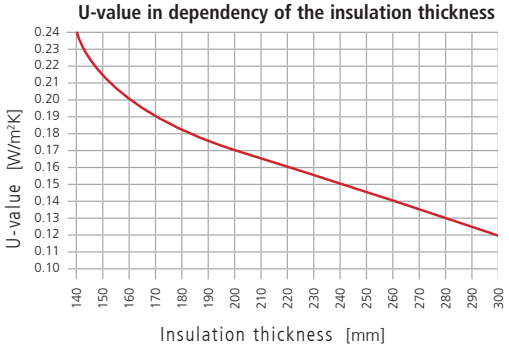
❶ OSB/Plywood
❷ Beams/THERMOFLOC Fibre
❸ THERMOFLOC Vapour barrier
❹ Spring rails
❺ Gypsum wallboard, 2-layer

Storey Ceiling DB4
for apartment partition ceilings, timber floors

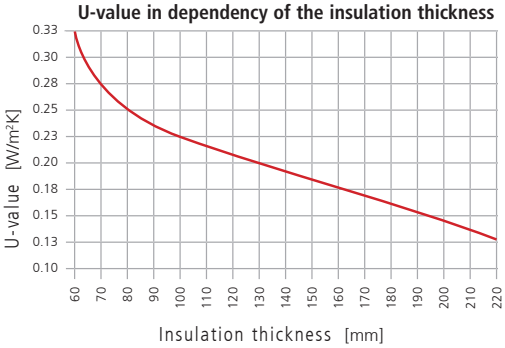
❶ Timber floor
❷ Wood fibre insulation board
❸ Concrete paving stone
❹ OSB/Plywood
❺ Beams/THERMOFLOC Fibre
❻ Spring rails
❼ Gypsum wallboards

TECHNICAL DATA				
Thermal Protection	U= 0.14 [W/m²K]	DIN 4108	U= 0.16 [W/m²K]	DIN 4108
Storage mass efficiency	18.7 [kg/m²]		11.7 [kg/m²]	
Storage capacity	1.4 [W/m²K]		0.9 [W/m²K]	
Phase shift	13.3 [h]		13.0 [h]	
Amplitude damping	21.3 [-]		43.4 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F60-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 52 dB, L_{NW}= 59 dB	DIN 4109	R_{WR}= 55 dB, L_{NW}= 53 dB	DIN 4109

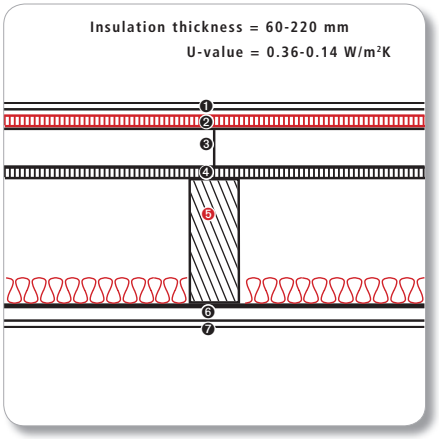
U-value in dependency of the insulation thickness

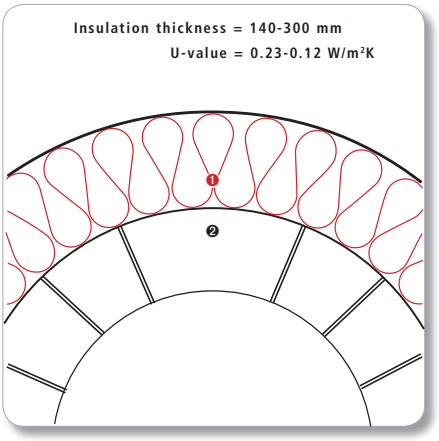


U-value in dependency of the insulation thickness



CEILINGS
FLOORS





Storey Ceiling DB5
for apartment partition ceilings, dry screed

- ❶ Gypsum fibre dry screed
- ❷ Impact sound insulation board
- ❸ Concrete paving stone
- ❹ OSB/Plywood
- ❺ Beams/THERMOFLOC Fibre
- ❻ Spring rails
- ❼ Gypsum wallboards

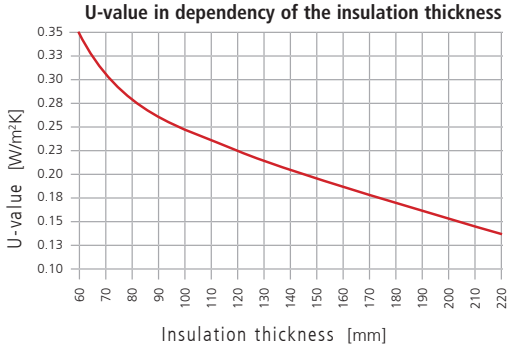
Vaulted Ceiling DB6

- ❶ THERMOFLOC Fibre
- ❷ Natural stone

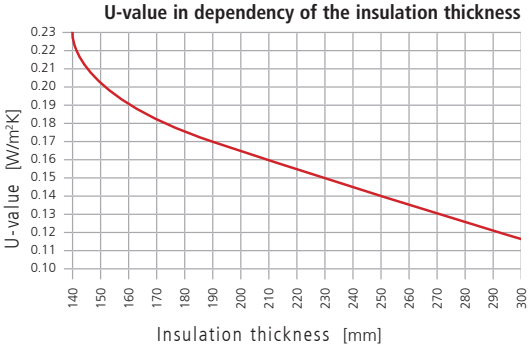
TECHNICAL DATA		
Thermal Protection	U= 0.17 [W/m²K]	DIN 4108
Storage mass efficiency	11.7 [kg/m²]	
Storage capacity	0.9 [W/m²K]	
Phase shift	12.3 [h]	
Amplitude damping	28.1 [-]	
Moisture protection	suitable	DIN 4108
Fire	F30-B	DIN 4102
Noise	R_{WR}= 57 dB, L_{NW}= 50 dB	DIN 4109

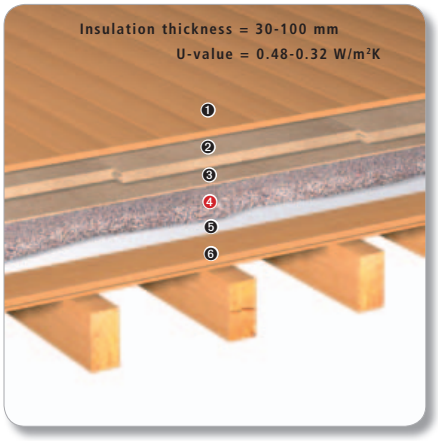
U= 0.13 [W/m²K]	DIN 4108
117.2 [kg/m²]	
8.9 [W/m²K]	
10.8 [h]	
217.2 [-]	
suitable	DIN 4108
	DIN 4102
not determined	DIN 4109

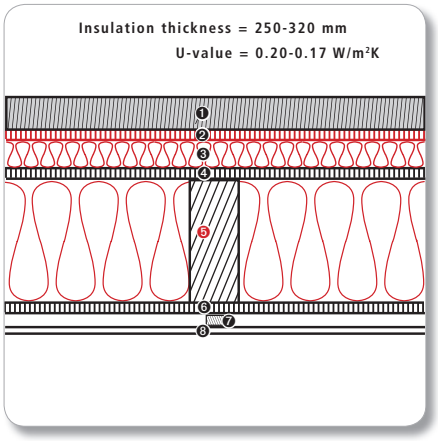
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Storey Ceiling DB7
Exposed beam ceiling

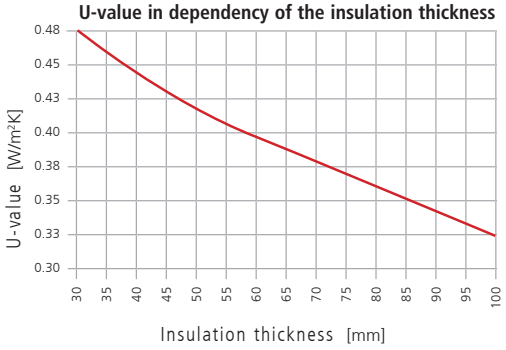
❶ Timber floor board
❷ Soft fibre N-F
❸ Soft fibre cover panel
❹ THERMOFLOC Pellets
❺ Waterproof layer
❻ Fireproof sheathing

Storey Ceiling DB8
Wooden beam ceiling with concrete screed

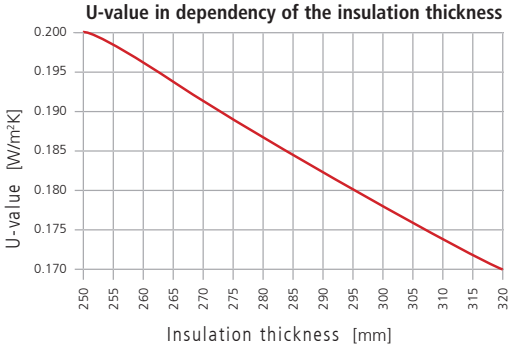
❶ Screed
❷ Impact sound insulation board
❸ THERMOFLOC Pellets
❹ OSB/Plywood
❺ Beams/THERMOFLOC Fibre
❻ OSB/Plywood
❼ Lathing
❽ Gypsum wallboard

TECHNICAL DATA				
Thermal Protection	U= 0.36 [W/m²K]	DIN 4108	U= 0.18 [W/m²K]	DIN 4108
Storage mass efficiency	49.4 [kg/m²]		47.2 [kg/m²]	
Storage capacity	3.8 [W/m²K]		3.6 [W/m²K]	
Phase shift	8.3 [h]		5.7 [h]	
Amplitude damping	10.7 [-]		420.2 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 40 dB, L_{NW}= 73 dB	DIN 4109	R_{WR}= 58 dB, L_{NW}= 51 dB	DIN 4109

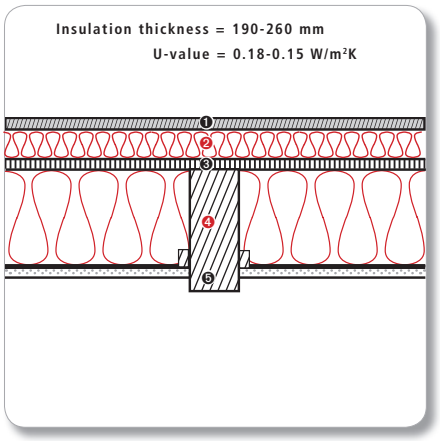
U-value in dependency of the insulation thickness

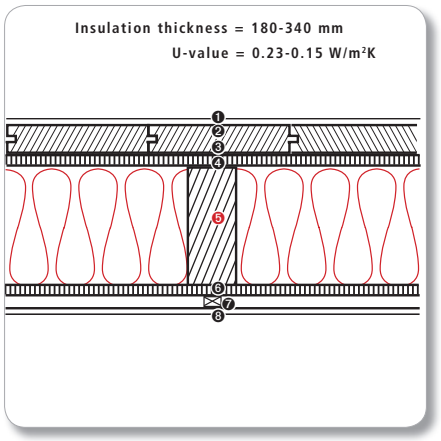


U-value in dependency of the insulation thickness



CEILINGS
FLOORS





Storey Ceiling DB9
Floating timber floor

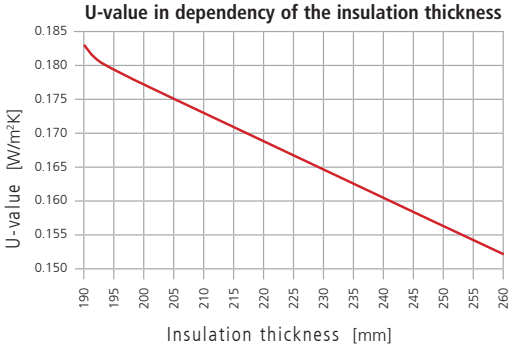
❶ Timber floor board
❷ THERMOFLOC Pellets
❸ OSB/Plywood
❹ Beams/THERMOFLOC Fibre
❺ Panelling

Storey Ceiling DB10
Wooden beam ceiling with dry screed

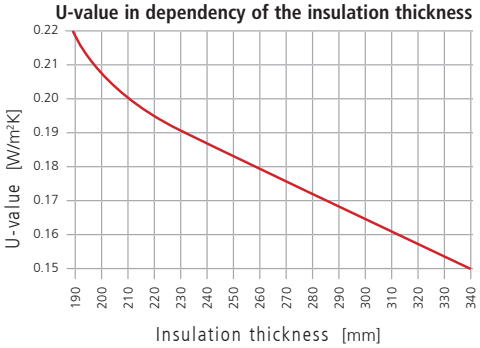
❶ Timber floor board
❷ Soft fibre N-F
❸ Soft fibre cover panel
❹ OSB/Plywood
❺ Beams/THERMOFLOC Fibre
❻ OSB/Plywood
❼ Lathing
❽ Gypsum wallboard

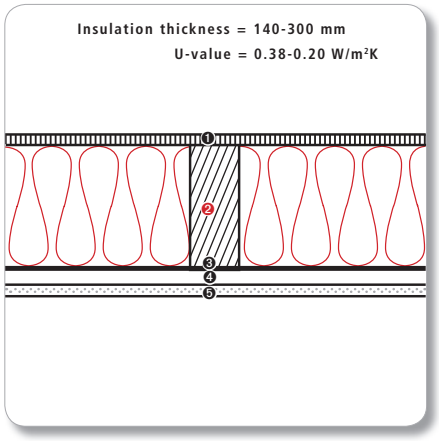
TECHNICAL DATA				
Thermal Protection	U= 0.16 [W/m²K]	DIN 4108	U= 0.16 [W/m²K]	DIN 4108
Storage mass efficiency	38.1 [kg/m²]		47.2 [kg/m²]	
Storage capacity	2.9 [W/m²K]		3.6 [W/m²K]	
Phase shift	15.3 [h]		23.9 [h]	
Amplitude damping	82.1 [-]		422.4 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F30-B	DIN 4102
Noise	R_{WR}= 50 dB, L_{NW}= 67 dB	DIN 4109	R_{WR}= 48 dB, L_{NW}= 73 dB	DIN 4109

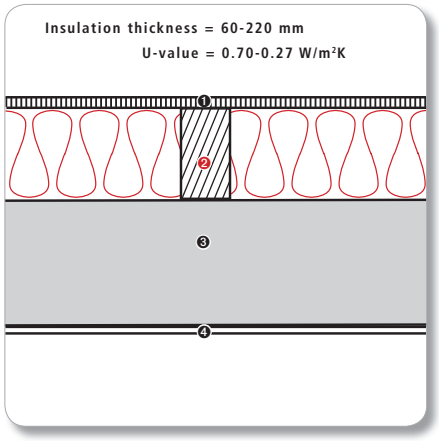
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Storey Ceiling DB11
Wooden beam ceiling

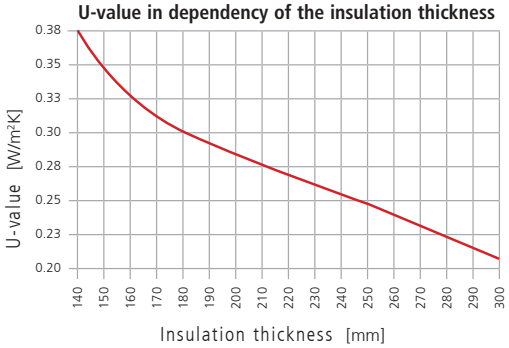
❶ OSB/Plywood
❷ Beams/THERMOFLOC Fibre
❸ Waterproof layer
❹ Laths
❺ Gypsum wallboard

Storey Ceiling DB12
Solid cellar ceiling

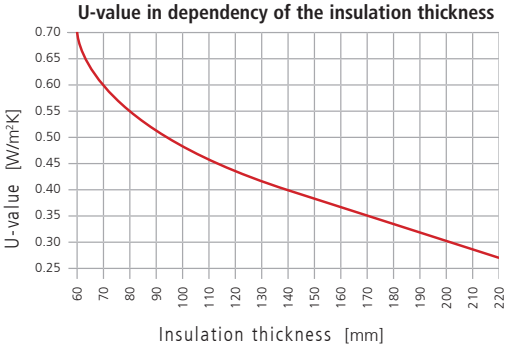
❶ Timber floor board
❷ Lathing/THERMOFLOC Fibre
❸ Reinforced concrete ceiling
❹ Ceiling plaster

TECHNICAL DATA				
Thermal Protection	U= 0.23 [W/m²K]	DIN 4108	U= 0.32 [W/m²K]	DIN 4108
Storage mass efficiency	13.9 [kg/m²]		301.1 [kg/m²]	
Storage capacity	1.1 [W/m²K]		2.4 [W/m²K]	
Phase shift	6.8 [h]		9.1 [h]	
Amplitude damping	4.2 [-]		93.6 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F30-B	DIN 4102	F90	DIN 4102
Noise	R_{WR}= 48 dB, L_{NW}= 73 dB	DIN 4109	R_{WR}= 55 dB, L_{NW}= 57 dB	DIN 4109

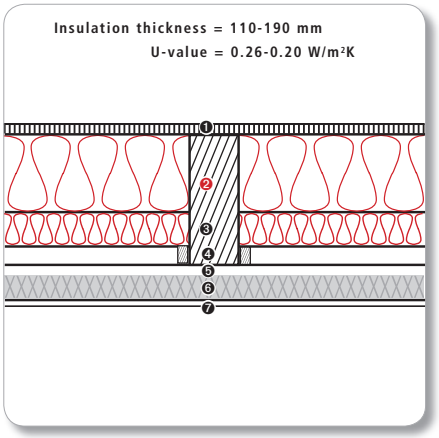
U-value in dependency of the insulation thickness

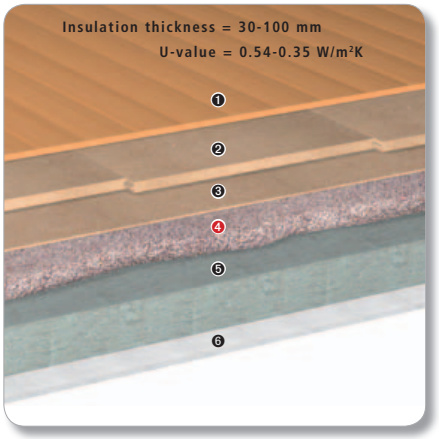


U-value in dependency of the insulation thickness



CEILINGS
FLOORS





Storey Ceiling DB13
Wooden beam ceiling, old stock

❶ OSB/Plywood
❷ Beams/THERMOFLOC Pellets + Fibre
❸ Curtain insulation layer
❹ Lathing
❺ Air
❻ Plaster base
❼ Ceiling plaster

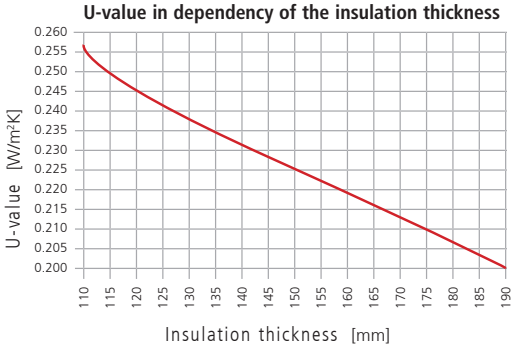
Storey Ceiling DB14
Solid ceiling

❶ Timber floor board
❷ Soft fibre N-F
❸ Soft fibre cover panel
❹ THERMOFLOC Pellets
❺ Concrete ceiling
❻ Ceiling plaster

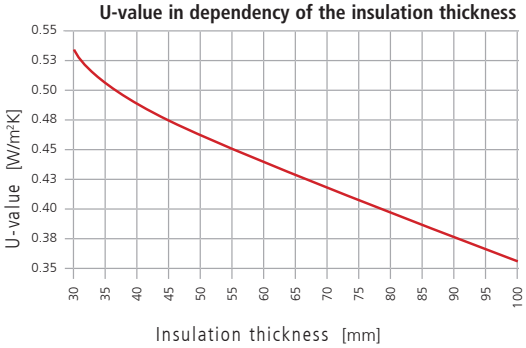
TECHNICAL DATA		
Thermal Protection	U= 0.21 [W/m²K]	DIN 4108
Storage mass efficiency	31.3 [kg/m²]	
Storage capacity	2.4 [W/m²K]	
Phase shift	23.1 [h]	
Amplitude damping	450.6 [-]	
Moisture protection	suitable	DIN 4108
Fire	F60-B	DIN 4102
Noise	R_{WR}= 48 dB, L_{NW}= 65 dB	DIN 4109

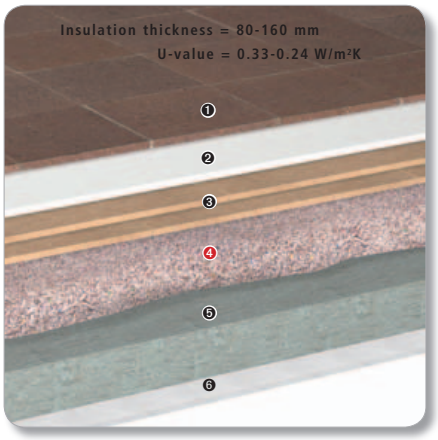
U= 0.39 [W/m²K]	DIN 4108
310.9 [kg/m²]	
23.7 [W/m²K]	
23.1 [h]	
450.6 [-]	
suitable	DIN 4108
F90	DIN 4102
R_{WR}= 55 dB, L_{NW}= 54 dB	DIN 4109

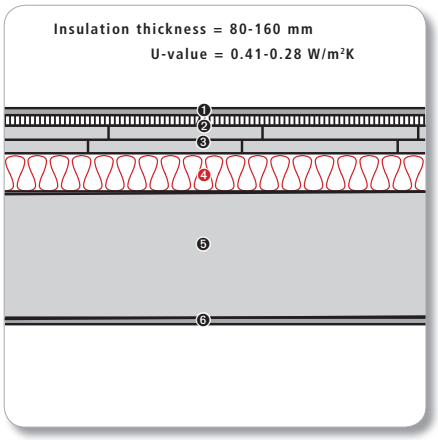
U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness







Storey Ceiling DB15
Wet room with dry screed

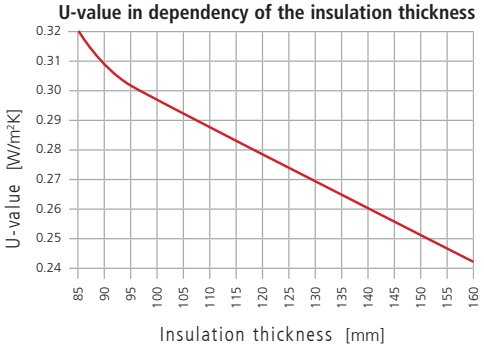
- ❶ Stoneware
- ❷ Gypsum fibreboard
- ❸ Wood soft fibre board
- ❹ THERMOFLOC Pellets
- ❺ Reinforced concrete ceiling
- ❻ Ceiling plaster

Storey Ceiling DB16
Dry screed

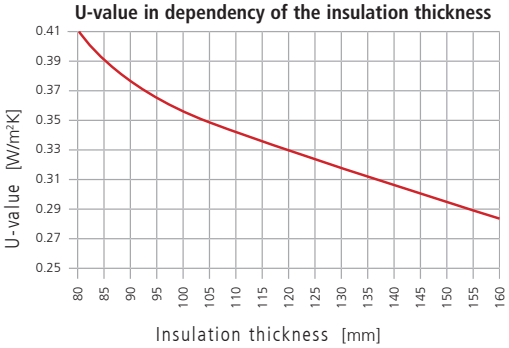
- ❶ Floor Covering
- ❷ Flooring panel
- ❸ Wood soft fibre board
- ❹ THERMOFLOC Pellets
- ❺ Reinforced concrete ceiling
- ❻ Ceiling plaster

TECHNICAL DATA				
Thermal Protection	U= 0.26 [W/m²K]	DIN 4108	U= 0.30 [W/m²K]	DIN 4108
Storage mass efficiency	314.0 [kg/m²]		313.8 [kg/m²]	
Storage capacity	23.9 [W/m²K]		23.9 [W/m²K]	
Phase shift	10.2 [h]		8.9 [h]	
Amplitude damping	125.5 [-]		93.5 [-]	
Moisture protection	suitable	DIN 4108	suitable	DIN 4108
Fire	F90	DIN 4102	F90	DIN 4102
Noise	R_{WR}= 54 dB, L_{NW}= 57 dB	DIN 4109	R_{WR}= 54 dB, L_{NW}= 57 dB	DIN 4109

U-value in dependency of the insulation thickness



U-value in dependency of the insulation thickness



COMPARISON OF DIFFERENT INSULATING MATERIALS					
Comparison criterion	Units	Thermofloc	Rock wool	Glass wool	Polystyrene (EPS)
1.) SYSTEMATICS OF INSULATING MATERIALS					
Classification based on raw material		organic/natural	inorganic/synthetic	inorganic/synthetic	organic/synthetic
Raw materials		90% newspaper and 10% boron salts	95% diabase, basalt, 5% binding agent, phenol formaldehyde-resin, mineral oil	quartz sand, soda, borax, sodium-sulph., formaldehyde-resin, mineral oil	styrene (from mineral oil), benzene, pentane, bromine compound
Delivery unit		loose in a sack	slab, mat, felt	slab, mat, felt	slab
2.) MECHANICAL PROPERTIES					
Available thickness in	mm	20 - 400	20 - 180	20 - 220	10 - 40
Density	kg/m³	30 - 80	30 - 90	15 - 50	12 - 20
Tensile strength	N/mm²	-	0.0007 - 0.8	0.005	0.15 - 0.52
Bond strength	N/mm²	-	0.00012 - 0.0075	0.005 - 0.015	0.09 - 0.22
3.) THERMAL PROTECTION RELATED PROPERTIES					
Thermal conductivity	W/(mK)	0.037	0.035 - 0.040	0.035 - 0.040	0.035 - 0.040
Insulation thickness for U-value of 0.30	mm	130	130	130	130
Application temperature range Min/Max	°C	-50 to 100	-100 to 750	-100 to 500	-100 to 100
Specific thermal capacity	J/kgK	1946	850	850	1210
Temperature conductivity		13	90	90	26
Temperature amplitude ratio (TAR) for 10 cm thickness	%	77	92	95	98
Time lag (1/TAR) for 10 cm thickness	h	3.4	1.9	1.5	1
4.) MOISTURE-RELATED PROPERTIES					
Water vapour diffusion resistance factor	μ	1/2	1	1	50 bis 100
Equilibrium moisture content at 23°C/80% r.h.	masses %	10-20	0.1 - 1.5	0.1 - 1	5
Sorption capacity	(yes/no)	yes	no	no	no
Normal dampness	masses %	10	1.5	1.5	2
Hydroscopicity	(yes/no)	yes	no	no	no
pH value		7.8 - 8.3	7/9	8/10	6.5 - 7.5
5.) FIRE PROTECTION RELATED CRITERIA					
Fire protection class	A,B1,B2	B2 - B1	B1 - A	B1 - A	B2 - B1
Fire resistance class		F30 - F90	F30 - F90	F30 - F90	F30 - F90
Smoke formation	(yes/no)	no	yes	yes	yes
Drop formation	(yes/no)	no	yes	yes	yes
Fire behaviour in the event of a fire		does not melt	melts	melts	melts
Flashpoint	°C	260	-	390	388
6.) SOUND INSULATION RELATED CRITERIA					
Absorptive capacity at 125 Hz	-	0.12	0.05 - 0.19	0.10 - 0.79	-
Absorptive capacity at 250 Hz	-	0.8	0.34 - 0.88	0.26 - 0.79	-
Absorptive capacity at 1,000 Hz	-	0.85	0.92 - 0.99	0.71 - 0.97	-
Absorptive capacity at 2,000 Hz	-	0.95	0.92 - 1.06	0.96 - 0.95	-
Longitudinal flow resistance	kPa s/m²	8 - 19	-	5 - 35	-
Dynamic stiffness	MN/m²	50* * only insulation pellets	-	25/5	60 - 100
7.) PROCESSING-RELATED CRITERIA					
Practical use		very good	satisfactory	satisfactory	good
Processing method		automatic	manual	manual	manual
Waste	(yes/no)	no	yes	yes	yes
Fine dust pollution during installation		low to medium	low to medium	low to medium	no pollution
Suitable for do-it-yourselfers	(yes/no)	no	yes	yes	yes
Health protection when working		Dust mask	Dust mask, gloves	Dust mask, gloves	not necessary
8.) ECOLOGICAL CRITERIA					
Energy consumption during manufacture	kWh/m³	5	600	550	650
MI value		1.7	4	4.7	11
Environmental mark		IBO	Blauer Engel	Blauer Engel	
Packaging		PE and paper sack	PE packaging	PE packaging	PE packaging
Reusability		yes	conditional	conditional	conditional
Disposal		compostable	dump	dump	dump
Primary energy amortisation time	month	1.5	6	2.5	8
Raw material availability		unlimited	unlimited	unlimited	limited
9.) BUILDING BIOLOGY CRITERIA					
Gas emissions		none	not known	not known	not known
10.) USABILITY					
Expected usability time	years	60	30 - unlimited	30 - unlimited	50

T1 (OPEN INJECTION IN CEILING OR FLAT ROOF AREAS)

Cellulose insulation, thermal conductivity 0.040, fire class B2, with reduced borate content (max. 10 M%), insulation thickness ……..cm, delivery and with 10% surcharge for open injection to the desired insulation thickness in the ceiling or flat roof areas in accordance with the manufacturer's processing guidelines.

Amount in m²: .....

e.g. Thermofloc B2 or equivalent: .....

Wages .....
Miscellaneous .....
Flat price ...../m² Flat price .....

T2 (CONDENSED INJECTION IN ROOF AREAS)

Cellulose insulation, thermal conductivity 0,040, fire classification B2, with reduced borate content (max. 10 M%), insulation thickness …….cm, delivery and with compacting factors in accordance with the manufacturer's processing guidelines in the roof area between the rafters applied joint-free, cavity filling, and settlement free – incl. open and airtight sealing of the injection openings.

Amount in m²: .....

e.g. Thermofloc B2 or equivalent: .....

Wages .....
Miscellaneous .....
Flat price ...../m² Flat price .....

T3 (CONDENSED INJECTION IN WALL AREAS)

Cellulose insulation, thermal conductivity 0,040, fire classification B2, with reduced borate content (max. 10 M%), insulation thickness …….cm, delivery and with compacting factors in accordance with the manufacturer's processing guidelines in the wall area between the rafters applied joint-free, cavity filling, and settlement free – incl. open and airtight sealing of the injection openings.

Amount in m²: .....

e.g. Thermofloc B2 or equivalent: .....

Wages .....
Miscellaneous .....
Flat price ...../m² Flat price .....

T4 (CONDENSED INJECTION IN CEILING AREA)

Cellulose insulation, thermal conductivity 0,040, fire classification B2, with reduced borate content (max. 10 M%), insulation thickness …….cm, delivery and with compacting factors in accordance with the manufacturer's processing guidelines in the ceiling area applied joint-free, cavity filling, and settlement free – incl. open and airtight sealing of the injection openings.

Amount in m²: .....

e.g. Thermofloc B2 or equivalent: .....

Wages .....
Miscellaneous .....
Flat price ...../m² Flat price .....

T5 (CSO SPRAYING PROCESS)

Cellulose insulation, thermal conductivity 0,040, fire classification B2, with reduced borate content (max. 10 M%), insulation thickness …….cm, delivery and with compacting factors in accordance with the manufacturer's processing guidelines on walls sprayed on joint-free, cavity filling, and settlement free by means of the CSO process.

Amount in m²: .....

e.g. Thermofloc B2 or equivalent: .....

Wages .....
Miscellaneous .....
Flat price ...../m² Flat price .....

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THERMOFLOC®
Intelligent Insulation System

THERMOFLOC OIB-ETA

MANUAL

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Authorised and notified according to Article 10 of the Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products

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Europäische technische Zulassung ETA-05/0186

(English translation, the original version is in German language)

Handelsbezeichnung *Trade name*	**THERMOFLOC**
Zulassungsinhaber *Holder of approval*	**Peter Seppele Gesellschaft m.b.H.** **Bahnhofstrasse 79** **9710 Feistritz/Drau**
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	**Dämmstoff aus losen, ungebundenen Zellulosefasern** *Insulation material made of loose, free cellulose fibres*
Geltungsdauer vom *Validity from* bis *to*	**15.11.2010** **14.11.2015**
Herstellwerk *Manufacturing plant*	Werk 1
Diese Europäische technische Zulassung umfaßt *This European technical approval contains*	**11 Seiten inklusive 0 Anhänge** *11 pages including 0 Annexes*
Diese Europäische technische Zulassung verlängert This European technical approval extends	**ETA-05/0186 mit Geltungsdauer von 15.11.2005 bis 15.11.2010** *ETA-05/0186 with validity from 15.11.2005 to 15.11.2010*

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I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Österreichisches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2];
- Kärntner Akkreditierungs- und Baustoffzulassungsgesetz vom 16. Dezember 1993. LGBl. K Nr. 24/1994 idF. LGBl. K Nr. 78/1998 und idF. K Nr. 31/2001;
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex of Commission Decision 94/23/EC[3].

2 The Österreichisches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by the Österreichische Institut für Bautechnik, in particular after information by the Commission on the basis of Article 5 (1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of the Österreichisches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

[1] Official Journal of the European Communities N° L 40, 11.02.1989, p. 12
[2] Official Journal of the European Communities N° L 220, 30.08.1993, p. 1
[3] Official Journal of the European Communities N° L 17, 20.01.1994, p. 34

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II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of products and intended use

1.1 Definition of products

This European technical approval applies to the following insulation product made of loose, free cellulose fibres:

THERMOFLOC

This product consists of cellulose fibres made from waste paper by mechanical crushing. During this manufacturing process the fibres are provided with a fire protection equipment (boric salts, boric acid) and serves for the production of insulation layers by means of machine processing. The machine processing is carried out in dry conditions or under the addition of water. The insulation product is depending on the area of application and processing produced with different densities (density range **25 - 65 kg/m³**)

The waste paper used in the manufacturing process has to fulfil the following quality criteria

glazed paper content	0 %
humidity	≤ 12 %

1.2 Intended use

The insulation product made of cellulose fibres is used as non loadable insulating material mainly for intended uses where vertical or horizontal cavities are completely filled or horizontal, arched or moderately pitched (≤ 10°) exposed areas are covered.

Area of application for walls
- Machine processed cavity insulation material for exterior walls of timber frame constructions
- Machine processed cavity insulation material for interior walls of timber frame constructions.

Area of application for roofs
- Machine processed cavity insulation material for pitched roofs without ventilation (full rafter insulation)
- Machine processed cavity insulation material for flat roofs with upper covering and non ventilated cavity under the waterproofing

Area of application for ceilings / floors
- Machine processed exposed insulation material not subject to foot traffic for ceilings under non habitable attics (thermal insulation layer between or above the load-bearing structure)
- Machine processed cavity insulation material between floor-joists under floor constructions for insulation or cavity damping

The insulation product made of cellulose fibres shall not be used in structures where it will be exposed to wetting or weathering and in such with a border to earth.

The corrosion developing capacity of the insulation product has not been determined. Suitable measures might be necessary to avoid corrosion of metal parts of the construction in contact.

The provisions made in this ETA are based on an assumed intended working life of the insulation product of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

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2 Characteristics of products and methods of verification

2.1 Composition and manufacturing process

The insulation product shall as far as its composition and manufacturing process is concerned correspond to the product subject to the approval tests. Details of composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

2.2 Density

The density of the insulating materials is determined according to standard ISO/CD 18393[4]. Depending on the area of application the density ranges stated in Table 1 are to be observed and controlled by the installer.

Table 1: density range depending on the area of application

area of application	density range kg/m³
Vertical: machine processed cavity insulation in exterior-, interior walls,	42-65
Pitched: machine processed cavity insulation in roofs (pitch >10°)	42-65
Horizontal: machine processed cavity insulation in flat roofs and floor constructions	42-65
Horizontal: machine processed exposed insulation not subject to foot traffic on ceiling constructions (pitch ≤ 10°)	25-44

In case of machine processing under the addition of water the density shall be at least 45 kg/m³. Independent of the area of application the density shall not exceed the value of 55 kg/m³.

2.3 Settlement

The settlement is determined according to ISO/CD 18393 following the test methods stated in Table 2. The maximum values of settlement stated in Table 2 are not exceeded for the given minimum density.

Table 2: Settlement depending on the test method

Test method according to ISO/CD 18393	settlement %	density kg/m³	settled density kg/m³
Method A – Settling by impact excitation	6,3	24,8	30,3
Method C – Settling of wall cavity insulation by vibration	0	42,2	42,2
Method D – Settling by specified climatization	7,7	28,8	31,2

2.4 Water absorption

The water absorption of the products is determined according to European standard EN 1609, method A[5]. The mean water absorption at a density of 30/60 kg/m³ and a sample thickness of 100 mm did not exceed **14,5/35,19 kg/m²**.

[4] ISO/CD 18393:2002-08 Thermal insulation – Accelerated ageing of thermal insulation materials – Assessment of settling of loose-fill thermal insulation used in attic and closed cavity applications

[5] EN 1609: 1996-11 Thermal insulation products for building applications - Determination of short-term water absorption by partial immersion

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2.5 Water vapour diffusion resistance factor

The water vapour permeability of the product is determined in accordance with EN 12086[6] climatic condition A. The water vapour permeability does not exceed **μ = 2,0**.

2.6 Airflow resistance

The airflow resistance of the products is determined according to European standard EN 29 053, method A[7]. The mean longitudinal airflow resistance at a density of 30 kg/m³ is at least **6,1 kPa s/m²**.

2.7 Thermal conductivity

a) **machine processed in dry conditions**

The thermal conductivity of the products is determined according to EN 12667[8]. The declared value of thermal conductivity is determined according to EN 10 456[9].

The fractile value of thermal conductivity for the density range of 25 kg/m³ - 65 kg/m³ is $\lambda_{(10,dry,90/90)}$ **= 0,0376 W/(m•K)** representing at least 90 % of the production with a confidence limit of 90%

The limit value of thermal conductivity for the density range of 25 kg/m³ - 65 kg/m³ is $\lambda_{(10,dry,limit)}$ **= 0,0380 W/(m•K)** representing the total production. The manufacturer is responsible for keeping the limit during production.

The declared value of thermal conductivity for the density range of 25 kg/m³ - 65 kg/m³is $\lambda_{D(23,50)}$ **= 0,039 W/(m•K)** – **category 1**determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

The declared value of thermal conductivity for the density range of 25 kg/m³ - 65 kg/m³ is $\lambda_{D(23,50)}$ **= 0,039 W/(m•K)** – **category 2** determined by conversion of the $\lambda_{(10,dry,limit)}$ value.

For conversion of humidity the following applies:
- the moisture content mass by mass at 23 °C/50 % relative humidity: $u_{23,50}$ **= 0,071 kg/kg**
- the moisture content mass by mass at 23 °C/80 % relative humidity: $u_{23,80}$ **= 0,13 kg/kg**
- the moisture content conversion coefficient mass by mass: $f_{u1\ (dry-23/50)}$ **= 0,34 kg/kg**
  $f_{u2\ (23/50-23/80)}$ **= 0,45 kg/kg**

b) machine processed in wet conditions

The thermal conductivity of the products is determined according to EN 12667[10]. The declared value of thermal conductivity is determined according to EN 10 456[11].

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[6] EN 12086:1997 Thermal insulating products for building applications - Determination of water vapour transmission properties

[7] EN 29 053: 1993-03 Acoustics - Materials for acoustical applications - Determination of airflow resistance

[8] EN 12667: 2001 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance

[9] EN ISO 10 456: 2000 Thermal insulation - Building materials and products - Determination of declared and design values

[10] EN 12667: 2001 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance

[11] EN ISO 10 456: 2000 Thermal insulation - Building materials and products - Determination of declared and design values

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The fractile value of thermal conductivity for the density range of 45 kg/m³ - 55 kg/m³ is $\lambda_{10,dry,90/90)}$ **= 0,0405 W/(m•K)** representing at least 90 % of the production with a confidence limit of 9 %.

The limit value of thermal conductivity for the density range of 45 kg/m³ - 55 kg/m³ is $\lambda_{10,dry,limit)}$ **= 0,0403 W/(m•K)** representing the total production. The manufacturer is responsible for keeping the limit during production.

The declared value of thermal conductivity for the density range of 45 kg/m³ - 55 kg/m³is $\lambda_{D(23,50)}$ **= 0,042 W/(m•K)** – **category 1**determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

The declared value of thermal conductivity for the density range of 45 kg/m³ - 55 kg/m³ is $\lambda_{D(23,50)}$ **= 0,042 W/(m•K)** – **category 2** determined by conversion of the $\lambda_{(10,dry,limit)}$ value

For conversion of humidity the following applies:
- the moisture content mass by mass at 23 °C/50 % relative humidity: **23,50 = 0,066 kg/kg**
- the moisture content mass by mass at 23 °C/80 % relative humidity: **23,80 = 0,126 kg/kg**
- the moisture content conversion coefficient mass by mass: **fu1 (dry – 23/50) = 0,38 kg/kg**
- **fu2 (23/50 – 23/80) = 0,40 kg/kg**

2.8 Reaction to fire

The reaction to fire of the insulation products is tested by using the test methods relevant for the corresponding reaction to fire class and is classified according to EN 13 501-1[12].
Table 3 shows the reaction to fire classes which apply to the insulation products as a function of their end use application.

Table 3: Reaction to fire classes as a function of the end use application

End use application	Reaction to fire: Class
- installation density of the insulating material 25 kg/m³ to 65 kg/m³, - insulation layer thickness between 100 mm and 200 mm, - end use application without air gap - end use application substrates defined in EN13238[13] for the following standard substrate: "wood based panel": density of the board ≥ 680 ± 50 kg/m³, board thickness ≥ 12 ± 2 mm, reaction to fire of the board: class D, "calcium silicate board": density of the board 870 ± 50 kg/m³, board thickness ≥ 11 ± 2 mm, reaction to fire of the board: class A2	B-s2,d0
- installation density of the insulating material 25kg/m³ to 65 kg/m³, - insulation layer thickness ≥ 40 mm	E

2.9 Resistance to biological actions

The test and the assessment of the resistance to growth of mould fungus has been verified according to the EOTA testing procedure (Annex C of CUAP „In-situ formed loose filled thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009."). The reached **class** of the product is **0**.

2.10 Corrosion developing capacity on metal construction products

No Performance determined

[12] EN 13 501-1:2002-06 Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests

[13] EN 13238:2001 Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates

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2.11 Retention of additives

The test and the assessment of the retention of additives has been verified according to the EOTA testing procedure (Annex F of CUAP „In-situ formed loose filled thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009”). No decrease in the reaction to fire behavior nor resistance to mould growth was determined.

2.12 Dangerous substances

The product consists of cellulose fibres made from waste paper by mechanical crushing under addition of flame retardants (boric salts, boric acid) and complies with the provisions of guidance paper H[14]. It does not contain substances which have to be classified as dangerous according to Directive 67/548/EEC and/or listed in the "Indicative list on dangerous substances" of the EGDS and can be classified as product **type 2** according the EOTA testing procedure (clause 4.3.2 of CUAP „Factory-made thermal insulation material made of vegetable or animal fibres; edition October 2009.”).

A declaration of conformity in this respect was made by the manufacturer.

In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.13 Critical moisture content

No performance determined

3 Evaluation of conformity and CE marking

3.1 Attestation of conformity system

System 3 for **THERMOFLOC** for which the following is valid:
- intended use “any”
- reaction to fire classes E

The system is described in Council Directive (89/106/EEC) Annex III, 2 (ii), Second possibility and is detailed as follows:

a) Tasks of the manufacturer
   - factory production control.

b) Tasks of the approved body
   - initial type-testing of the product

3.1.1 Considering the Euroclass B for the reaction to fire and that a clearly stage in the production process has been identified which results in an improvement of the reaction to fire classification (addition of fire retardant), the system of attestation of conformity specified by the European commission is system 1 described in the Council Directive 89/106/EEC Annex III, 2 (i), First possibility and described as follows:

[14] Guidance paper H: A harmonised approach relating to Dangerous substances under the construction products directive, 18 February 2000

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Certification of the conformity of the product by a notified certification Body on the basis of:

a) Tasks of the manufacturers:

- factory production control
- further testing of samples taken at the factory by the manufacturer in accordance with a control plan

b) Tasks of the Notified Body:

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks for the manufacturer; factory production control

The manufacturer has a factory production control system in his plant and exercises permanent internal control of production.
All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. The factory production control system ensured that the products are always in conformity with the European technical approval.
In the framework of factory production control the manufacturer shall carry out tests and controls in accordance with the control plan[15] which is fixed with this European technical approval.
Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to this control plan which is part of the technical documentation of this European technical approval.

The results of factory production control are recorded and evaluated. The records include at least the following information:
- designation of the products and of the basic materials
- type of control or testing
- date of manufacture of the products and date of testing of the products or basic materials or components
- result of control and testing and, if appropriate, comparison with requirements
- signature of person responsible for factory production control

On request the records shall be presented to the Österreichisches Institut für Bautechnik.

3.2.2 Tasks for approved bodies

3.2.2.1 Initial type-testing of the products

For initial type-testing the results of the tests performed as part of the assessment for the European technical approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between the Österreichisches Institut für Bautechnik and the approved bodies involved.

3.2.2.2 Initial inspection of factory and of factory production control

The approved body shall ascertain that in accordance with the control plan the precautions in the factory, in particular the staff and equipment concerning, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the insulation products with the specifications mentioned in section 2.

[15] The control plan has been deposited at the Österrreichisches Institut für Bautechnik and is handed over only to the approved bodies involved in the attestation of conformity procedure

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3.2.2.3 Continuous surveillance

The approved body shall visit the factory at least twice a year for surveillance. It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan [14)].
Continuous surveillance and assessment of factory production control have to be performed according to the control plan.
The results of product certification and continuous surveillance shall be made available on demand by the certification body or inspection body, respectively, to the Österreichisches Institut für Bautechnik. In cases where the provisions of the European technical approval and the control plan are no longer fulfilled the certificate of conformity shall be withdrawn and the Österreichische Institut für Bautechnik informed immediately.

3.3 CE marking

The CE marking shall be affixed on the products, the packaging or the attached label.
The symbol "CE" shall be accompanied by the following information:
- name or identifying mark of producer and manufacturing plant,
- the last two digits of the year in which the CE marking was affixed,
- number of the European technical approval,
- identification of products (commercial name),
- density range depending on the area of application
- settlement
- water absorption
- water vapour diffusion resistance
- airflow resistance
- declared value of thermal conductivity
- class of reaction to fire[16]

4 Assumptions under which the fitness of the products for the intended use was favourably assessed

4.1 Manufacturing

The thermal insulation products shall correspond as far as their composition and manufacturing process is concerned to the products subject to the approval tests. Composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

4.2 Installation

4.2.1 Parameters for the design of construction works or parts of construction works

4.2.1.1 Design value of thermal conductivity

The design value of thermal conductivity shall be defined in accordance with the relevant national provisions.

4.2.1.2 Nominal thickness for the thermal resistance calculation

When calculating the thermal resistance, the nominal thickness of the insulation layer according to Table 4 shall be applied.

16 European classification of reaction to fire of building materials according to the Commission Decision 2000/147/EG of 8 February 2000 implementing Article 20 of Directive 89/106/EEC on construction products.

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Table 4: Nominal thickness depending on the area of application

area of application	nominal thickness
Vertical: machine processed cavity insulation in exterior-, interior walls,	clear span of the filled cavity
Pitched: machine processed cavity insulation in roofs (pitch >10°)	clear span of the filled cavity
Horizontal: machine processed cavity insulation in flat roofs and floor constructions	clear span of the filled cavity
Horizontal: machine processed exposed insulation not subject to foot traffic on ceiling constructions (pitch ≤ 10°)	up to 25 cm 10 % and over 25 cm installation thickness 15% insulation thickness shall be added to the nominal thickness

For horizontal machine processed installation of exposed insulation not subject to foot traffic the insulation layer shall have a constant installation thickness taking into account the nominal thickness. For that purpose suitable height marks shall be arranged in sufficient distances before the processing. When blowing into closed cavities it shall be made sure by appropriate measures (e. g. control drillings) that the cavity is completely filled with the insulating material.

4.2.1.3 Value of water vapour diffusion resistance

The construction shall be designed and installed in such a way that no harmful condensation occurs within the works

4.2.2 Parameters for the installation in the construction works or parts of construction works

The fitness of the cellulose fibres for the intended use is given under the following condition:

- Installation carried out by appropriate personnel which have adequate experience in installing the material under the supervision of the person responsible for technical matters on site.
- Installation in accordance with the manufacturer's specifications. Concerning this matter the manufacturer has to train the installers. In case of processing under addition of water it shall be ensured that the main share of water is evaporated before closing the cavity. The time period necessary for this depends on the climatic conditions of the surroundings. Only building materials allowing an evaporation of moisture may be used as facings.
- Precise compression of the cellulose fibres
- Installation of constructive measurements to avoid settlement by large cavity thickness

4.2.3 Use of the insulation products as airborne sound insulation

In case of use of the products as airborne sound insulation it is necessary to determine the airborne sound insulation for the specific construction work in question in accordance with the relevant technical rules in force.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

Packaging of the products has to be such that they are protected against moisture during transport and storage unless other measures are foreseen by the manufacturer for this purpose.

5.2 Recommendations on installation

The product has to be protected against moisture during installation.

The processing guidelines of the manufacturer have to be followed.

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5.3 Accompanying information

In the information accompanying CE marking the manufacturer shall indicate that the products shall be protected against humidity during transport, storage and installation.

Furthermore it is the responsibility of the manufacturer to ensure that the information on the installation procedure is shown clearly on the package and/or on an enclosed instruction sheet.

On behalf of Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director

THERMOFLOC MANUAL

THERMOFLOC®
Intelligent Insulation System

THERMOFLOC BLOW-IN TECHNOLOGY

THERMOBLOW®

BLOW-IN TECHNOLOGY

FROM EXPERTS FOR EXPERTS

THERMOBLOW

Insulation Blower- and Sprayer Systems

Benefits at a glance:

- Solid technology
- Simple and quick assembly
- High performance motors
- Variable speed blower
- Simple adjustment of material quantity
- Fill quantity adjustment through slide gate
- Tested quality
- CE-certified
- Convenient dimensions

Sophisticated solid technology for professionals

Meyer's THERMOBLOW 300-2B Insulation Blowing Machine introduced here is a modern and compact blower for cellulose insulation material. It is particularly ideal for those professional companies intending to insulate their own construction sites in a fast and economical manner.

But its durable technology and simple operation as well as its low maintenance requirements make the THERMOBLOW 300-2B also the perfect partner for the professional insulation applicator.

Applicators also appreciate the simple mechanical protection- and relay technology, which allows the expert to service the machine on site - machine downtimes are therefore reduced to a minimum.

Two 1.0 kW blowers ensure economical performance, positive compaction of insulation materials as well as settlement-free processing.

More than nine decades of experience in the production of insulation blowing systems is your assurance that this technology is the right choice.

300-2B

- Technology with outstanding performance

Set-up requires only a few steps

1 - Connection of the control cable

2 - Manual material adjustment through sieve and slide gate

3 - Power display

4 - Remote control

5 - Start blowing

Technical specifications

THERMOBLOW 300-2B Machine Data

Processing capacity (max. theoretical processing capacity)	800 kg/h
Cable for remote control	50 m
Drive motor	1,56 kW
Blower	2 x 1,0 kW 0,30 bar 190 m³/h
Rotary feeder	24 x 24 cm
Weight (without accessories)	130 kg
Dimensions (W x L x H)	660 mm x 970 mm x 1.220 mm
Hose connector	3"
Connected load	230V/16 Amp. – 1 phase

THERMOBLOW

Insulation Blower- and Sprayer Systems

Benefits at a glance:nals

- Solid technology
- High-performance electric motors
- Easy operation via remote control
- High capacity
- High, continuously variable blowing performance
- Variable output of material quantity
- Settlement-free blowing in
- Filling quantity limitation by means of a slide valve
- Pressure control valves
- CE-certified
- Mounted on a steel plate for handling with a forklift

Sophisticated solid technology for professionals

THERMOBLOW 1000 is a modern blow-in machine for cellulose insulation materials as well as other types of loose insulation materials. This machine is recommended for professionals who wish to execute their insulation orders in a professional and timely manner and therefore require a high-performance machine in order to remain competitive in their daily work.

The radio control enables the operator to intervene in the working process at any time and to adjust the settings to the actual situation. The robust construction, the high-performance electric motors and the roots blower ensure a long service life of the product.

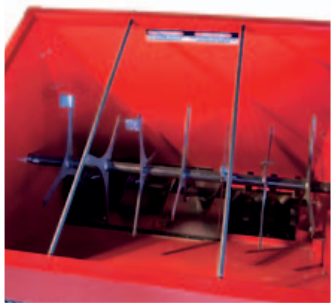
The THERMOBLOW 1000 is the latest development among blow-in machines with a trendsetting state of the art.

More than 90 years of experience in the production of blow-in systems is your assurance that this THERMOBLOW 1000 blow-in machine is the right choice.

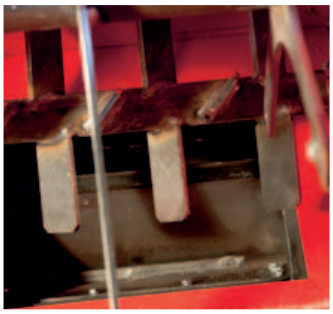
1000

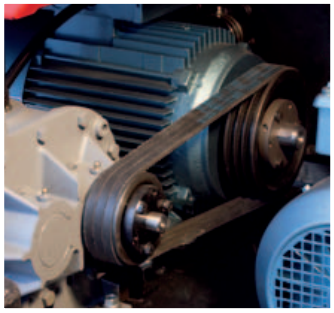
- Technology with outstanding performance

Set-up requires only a few steps



1 - On/off switch with emergency switch
2 -Large opening for quick and easy filling
3 - Powerful and wear-free steel claws
4 - Robust technology for a long service life
5 - Optimal suitability for comprehensive insulation work





Technical specifications

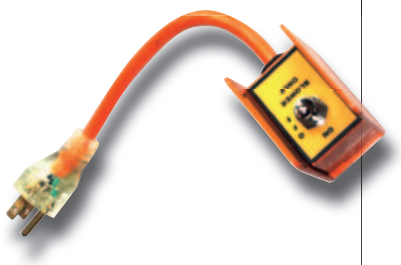
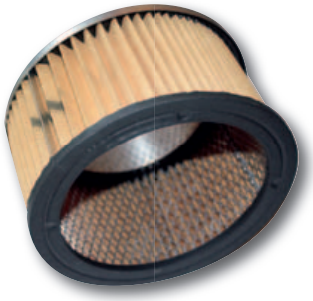
THERMOBLOW 1000 Machine Data

Processing capacity (max. theoretical processing capacity)	1.400 kg/h
Radio remote control	200 m range
Drive motor	3 kW
Cable for remote control	50 m
Blower	4,0 kW
Rotary feeder	36 x 30 cm
Weight (without accessories)	ca. 350 kg
Dimensions (W x L x H)	1.270 mm x 1.040 mm x 1.500 mm
Hose connector	3"
Connected load	400V/16 Amp. – 3 phases

THERMOBLOW

Insulation Blower- and Sprayer Systems

Optional accessories

Hose Sizes 2" - 2,5" - 3"	**Connectors** For various hose sizes	**Clamps** To securely connect the hoses
		
Suction tube (Cleaning at construction site)	**Suction blower** (Cleaning at construction site)	**Sprayer set** With connection to water supply
		
Spare switch for remote control	**Corks** For sealing the holes	**Air filter**
		

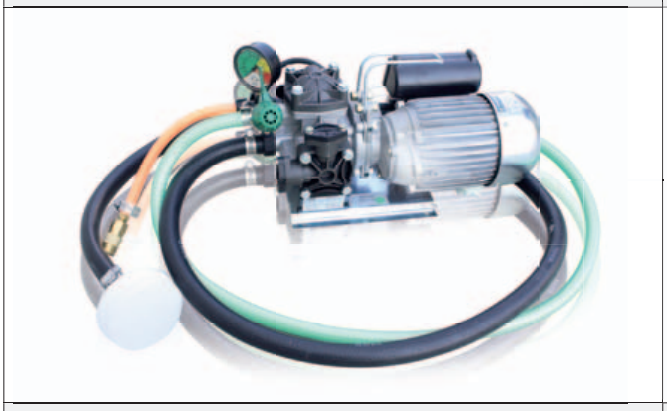
Optional accessories

Hose drum

Hose drum for about 100 m of hose with lock and steel pallet to allow the use of a forklift for transport.

Radio remote control

Water pump



Storz coupling

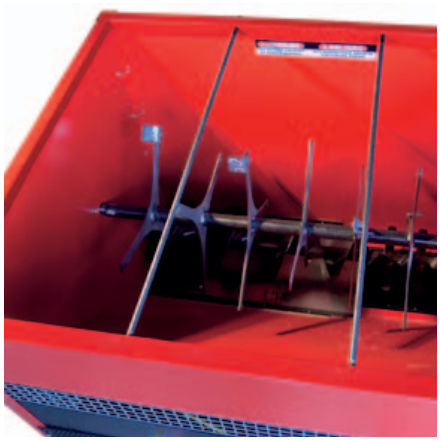
Quick coupling for hoses with long hose nipples – NW 63 mm

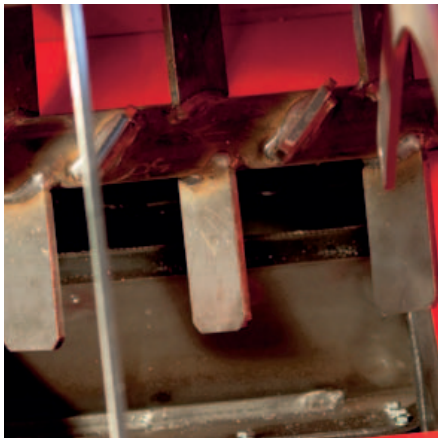
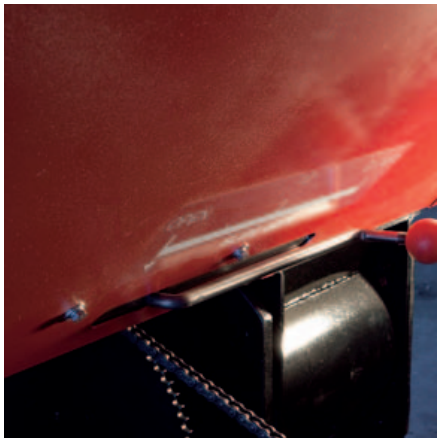
Sealing strips

Pressure hose

For water

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